

Well Child Tamariki Ora Programme Quality Reviews

Prepared for
Ministry of Health
Manatū Hauora

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Well Child Tamariki Ora Programme Quality Reviews

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Quality Review of the 4 – 6 Week Checks: Preface

This report has been prepared for the Ministry of Health by Liz Smith, Litmus Ltd with contribution from Lisa Davies, Kaipuke Consulting and James Reilly, Statistical Insights Ltd. We acknowledge and thank all those who contributed to the quality review of the 4 – 6 week checks, including parents, the New Zealand College of Midwives, The Royal New Zealand College of General Practitioners, The Royal New Zealand Plunket Society, Tamariki Ora providers, District Health Board managers, and national and international experts. We also thank our Advisory Group members, Dr Amanda D'Souza, and Sue Johnston, Artemis Group for their expert advice and input for the duration of the quality review.

We acknowledge the contribution of the WCTO programme Quality Improvement Framework Expert Advisory Group (Appendix 1).

Please contact Liz Smith liz@litmus.co.nz if you have any questions about this report.

This report is the quality report for the 4 – 6 week checks. Appendices for this report (and the reports of the quality review of the Before School Check and new assessment tools [Litmus 2012a and b]) are contained in a separate volume (Litmus 2012c).

1. Executive Summary

1.1 Introduction

Over the past 20 years, changes in the structure of maternity and Well Child Tamariki Ora (WCTO) services have resulted in a lack of clarity about the role of the six week check and the health professional(s) responsible for completing it. Babies and mothers may receive what appear to be very similar checks from their Lead Maternity Carer (LMC at discharge of care), the WCTO providers (the first of the core contacts provided between 4 – 6 weeks and five years) and/or their General Practice Team (GPT, at the immunisation visit). All checks are included in the WCTO National Schedule.

The purpose of this quality review was to review the content and implementation of the Well Child checks conducted at around six weeks, to inform the ongoing policy, delivery and quality improvement of these checks and related services delivered to mothers and babies in the early postnatal period.

1.2 Review approach

A mixed method data collection process was used to inform the quality review of the 4 – 6 week checks including: literature review, discussions with international and national experts and key WCTO stakeholders, DHB stocktake and survey, WCTO provider survey, analysis of WCTO data from WCTO providers, GP survey, case study of service delivery in three District Health Boards (DHBs), focus groups with Māori, Pacific and Pākehā parents in Christchurch, Counties Manukau and Taranaki DHBs, and input from an Expert Advisory Group.

Data collection and the review were conducted between February and June 2012.

1.3 Overview of review findings

Parents/ family and whānau needs

- Parents, like New Zealand society, are a diverse and dynamic group. Parenting is hard and comes with many challenges and much advice. Many parents feel they are judged against an idealised parent construct, and offered advice that does not reflect their reality. Parents feel particularly vulnerable and emotional with the arrival of their baby and, as a result, even innocuous comments can be misconstrued.
- While there is alignment between parents' long-term family/ whānau aspirations and the goals of the WCTO programme, few parents make this explicit connection. The WCTO programme is seen as beneficial in ensuring their baby is 'healthy and normal', thus parental views of the programme lag the current shifts from child health surveillance to child health development. Consequently, as the child grows (and is well) the programme appears to become less relevant.

- Parents are uncertain about exactly what services they are entitled to and when. Parents, in particular Māori and Pacific parents, are not aware they have a choice of WCTO providers.
- Parents who are aware of and use the WCTO programme, expect there will be a mix of service providers. Given the differing roles of LMCs, General Practitioner Teams (GPTs) and WCTO providers, parents did not object to seeing three providers, particularly as the LMC and WCTO providers are undertaking home-based visits.
- The mix of providers meets parents' primary needs that their baby is healthy and normal and if not, ensures they will receive help as needed. The mix of providers offers reassurance at a particularly vulnerable time and ensures connection to future services that can support families long-term.
- Health professionals who do not check the baby are seen by parents as failing to meet their professional obligations to their family/ whānau, and are seen as unprofessional.
- Parents assume that health providers offering services at this time are sharing information to ensure their baby and family/ whānau receive all their entitlements, care and support needed.
- Ideally, parents expect that services their family/ whānau receive from all providers when their baby is 4 - 6 weeks old will:
 - Be relationship-based and offer continuity of care through seeing the same health professional at each visit.
 - Focus on the baby within the context of the family/ whānau.
 - Include time to listen and talk about the family's concerns/ needs.
 - Empower parents to be active participants through offering choice and involvement in decision-making, and respecting parents' knowledge of their baby, children and family. Advice given is flexible and not 'rule-bound'.
 - Is culturally competent, authentic, and confidential.
 - Be knowledgeable and clinically expert particularly in demonstrating that baby is growing and developing normally, and about feeding and sleeping.
 - Connect the family to the wider community networks and other support services.
 - Be accessible when needed by the family and home-based.
 - Offer reassurance.
- For parents who participated in this review, the key service delivery issues are transactionally focused service delivery by WCTO providers, a lack of continuity of health professional, and WCTO providers not keeping to agreed appointments.

Evidence – best practice in delivering well baby checks around six weeks

- The postpartum period is a critical time for a woman, her newborn and her family. The rationale for the six week review is underpinned by:
 - Evidence that the quality of parent-infant relationship is positively correlated to the development and wellbeing outcomes of both the parent and infant.
 - The effectiveness of health promotion and anticipatory guidance to address wider psychosocial and primordial factors impacting on the mother, baby and family/ whānau's short and long-term health and wellbeing.

- Evidence that physical examination of the baby around six weeks will result in a small but significant yield of abnormalities that will require appropriate intervention.
- The literature review did not reveal a definitive, evidence-based best practice six week 'well child' package proven to contribute to their positive long-term health and wellbeing. However, there is consistency across jurisdictions in the content of the health review at six weeks: parent-infant bond and development of baby; parenting and health promotion/ anticipatory guidance; maternal mental health and family wellbeing; and physical examination of the baby.
- The review of literature indicates the content of the six week check is evidence-informed. More research is needed to further strengthen the evidence base, particularly in the New Zealand context and to ensure effectiveness of domains for high-needs Māori, Pacific and other families.

Professional obligations and contract requirements

- A comparison of the contractual requirements and professional obligations of LMCs, WCTO providers and General Practice Teams (GPTs) at 4 – 6 weeks highlights similar checks and assessments are being undertaken. However, the underlying focus and philosophies of these health professionals ensures a complimentary suite of services is provided. For providers, the mix of provision offers reassurance they are meeting their professional duty of care and that nothing has been overlooked.

Current service delivery

- Coverage
 - Quantitative research with parents indicates near universal coverage of at least one health check at six weeks through use of the range of providers (Morton et al 2012).
 - More than half of Māori babies and a third of Pacific babies do not complete core WCTO contact one. While the WCTO data is incomplete, the National Immunisation Register (NIR) data also highlights lower uptake of five month immunisations by Māori and Pacific babies. These findings are of significant concern, given the known health inequalities for Māori and Pacific children.
 - Near universal coverage is achieved by LMCs after birth, which tapers off as expected at six weeks.
 - Less than half of mothers had taken their baby to a GP in the first six weeks after birth, and only a quarter had the six week check done by a GP or in General Practice (Morton et al 2012).

- Access for Māori and Pacific families.
 - Tamariki Ora providers have a key role in targeting Māori and Pacific families/ whānau to access and remain engaged with the WCTO programme. Feedback from Tamariki Ora providers and DHBs suggest they have a Well Child qualified workforce. However, sustaining the current level of capacity and capability within smaller Tamariki Ora providers is particularly challenging due to the lack of training opportunities and time to undertake professional development.
- Content coverage
 - Across the three types of providers there is a lack of data to demonstrate the extent to which the content of the six week check is being delivered by LMCs and GPTs.
 - WCTO data for core contact one show that providers are delivering most of the content, although only half of parents are asked about family violence and half of boys' testes are checked. Improvements are also needed to ensure all mothers are asked sensitive questions, for example about postnatal depression.
- Effectiveness
 - Currently, there is no population-based electronic information system that enables joint data collection and information sharing across all the providers delivering services when the baby is aged between four and six weeks.
 - The level of referrals made by LMCs and GPs is unknown. At core contact one, parenting and breastfeeding support have the highest level of referral. No referrals are being made for family violence, PND, SUDI or injury/ accident. The latter may reflect providers' uncertainty about where to refer to or the perception of a lack of services, particularly for SUDI and injury prevention.
- Monitoring outcomes and quality improvement
 - Outcomes being sought around 4 – 6 weeks for babies and their families/ whānau are not explicit in the WCTO programme, although they are implied.
 - At 4 – 6 weeks, there is no monitoring of outcomes at a population and regional level across the services delivered by LMCs, GPs and WCTO providers. With the newly introduced WCTO database, monitoring of outputs at national and regional will be commencing.
- Quality improvement
 - At present, there is no agreed framework against which to facilitate an intersectoral approach of continuous quality improvement for the WCTO programme at core contact across providers.
 - Monitoring of the quality improvement framework of the WCTO programme would demonstrate the value of the programme and inform national and regional multi-disciplinary teams to discuss how best to enhance the quality of the programme at a system level. This quality improvement framework is currently being developed, together with key indicators.

1.4 Conclusions

- LMCs, GPTs and WCTO providers offer differing but complimentary services to families/ whānau when the baby is around 4 – 6 weeks old that reflect their competencies, relationship with and obligations to families/ whānau and babies.

- The entry point to the WCTO programme lies in the antenatal period through the families/ whānau relationship with their midwife. The 4 – 6 week period therefore marks a time of transition from ideally one trusted and relationship-based service provider (LMC) to other providers who will offer support and services to the families/ whānau during early childhood (WCTO provider) and lifelong (GPT). Ideally, through this transition period there will be a continuation of the negotiated care plan agreed in partnership with families and based on their needs assessment.
- As advocated by WCTO providers, this transition period may be assisted particularly for high needs families/ whānau by a visit antenatally to establish and build an effective relationship. However, whether an antenatal visit by a WCTO provider will result in improved health and wellbeing outcomes for these families/ whānau is not yet proven.
- Near universal coverage of at least one health check at six weeks is achieved through use of the range of providers (WCTO, GPT, LMC). Internationally, well child programmes are shifting to focus on providing a cascade of services. It should not matter how families/ whānau access services; reaching any door should trigger a service cascade. Focus is on a 'place-based approach – a seamless system at a local level'. In this context, the focus is on multiple transition points delivered by a multi-disciplinary team situated in a range of organisations and locations.
- For such an approach to be effective, a shared information system is required containing information on whether the check is completed, the needs assessment and agreed care plan, and actions and interventions. It also requires greater trust across providers relating to their competencies to undertake effective assessment of a newborn.

1.5 Future directions

- At a systems level for the WCTO programme, there is need for an agreed overarching structure and interlinking governance framework with clear accountabilities and responsibilities.

Coherent strategies are needed to ensure all families/ whānau are connected to a WCTO provider and GPT that best meet their service preferences and needs. It is acknowledged that steps are being taken to address this through the Shared Maternity Record Pilot and GP enrolment at birth.

- A quality improvement framework offers the WCTO programme a structure by which the sector as a whole can collectively focus and work together to meet the needs of families/ whānau and work in partnership to empower them to realise their goals and aspirations for their children and family/ whānau. To create cohesion in implementing the framework, a set of agreed sector-wide principles and associated standards are also required.
- Focusing at a system level, suggested quality improvement areas are:

Family/ whānau focus/ parental choice

- Ensure families/ whānau can choose the provider that best fits with their values and needs.
- During the informed consent process inform families/ whānau about the goals of the WCTO programme and demonstrate the alignment with hopes and aspirations for children and family/ whānau.

- Strengthen the family/ whānau partnership through a relationship-based and not transactional-based service to create relevance and ongoing value.
- Develop and use the needs assessment, care plan and additional contacts to appropriately target services and offer the appropriate intensity of support.

Ensuring access to the WCTO programme

- Enable multiple enrolment at birth to ensure the baby and family/ whānau can be identified, followed up and, if consent given, receive appropriate services. Ideally, the baby will receive their NHI number, be enrolled on the NIR, and with a GP and WCTO provider.

Increasing access for vulnerable families

- Increase access to the WCTO programme for Māori and Pacific families is critical and should be a priority area of focus.
- Identify potentially vulnerable families/ whānau antenatally and foster positive relationships that enable WCTO providers and families/ whānau to work together to address wider primordial factors and link to appropriate services.
- Ensure access to more intensive programmes (e.g. the Family Nurse Partnership, FamilyStart/Early Start) and determine whether they are effective in enhancing the long-term health and wellbeing outcomes for high needs families/ whānau.

Improved information sharing and monitoring

- Develop an integrated information system to ensure smooth transfer of families/ whānau and their detailed information across providers in relation to assessments undertaken, referrals and intervention actions, and importantly any areas of particular ongoing concern. The Shared Maternity Record may address this.

Workforce competency and sustainability

- Seek to strengthen WCTO providers' capacity and capability, in particular the sustainability of the Tamariki Ora providers.
- Identify whether there are WCTO workforce shortages and seek collaborative strategies to address these.
- Ensure ongoing engagement by GPTs so the focus of WCTO is embedded into all their interactions with families/ whānau. In this context, identify how to support and engender ongoing training in WCTO specialism for the GPT.
- Have greater clarity of the roles and expectations around the 4 – 6 week period, and for GPTs and WCTO providers across the 0 – 5 years of early childhood.

Content coverage

- Identify key priority areas, and ensure these are completed by providers.
- Ensure that providers use their professional judgement to meet family/ whānau needs.

Referral pathways

- Use the needs assessment to develop a care plan in partnership with families/ whānau to ensure they receive appropriate (and wanted) short and long-term support, services and interventions.
- Ensure clear referral pathways and evidence-informed interventions are available and providers have capacity to effectively and manage timely referrals.
- Facilitate access and remove cost, transport and other access barriers.

Monitor outputs and outcomes

- Develop an agreed outcomes framework for the 4 – 6 week checks.
- Table 1 offers a suggested outcomes framework which requires further review and sector-wide consultation.

Table 1: Suggested outcomes being sought from the 4 – 6 week checks

Components	Outcomes 4 - 6 weeks
Health and development assessments	Parents are knowledgeable and understand the stages of their children's development
	Parents have the skills to parent positively
	Parents are reassured
	Parents access appropriate services to meet short and long-term needs
	Family violence / abuse/ neglect is reduced
	Mothers with postnatal depression receive prompt support
	Parent/ child bonding is fostered
Interventions and support	High proportion of congenital, inherited or acquired conditions identified by 6 weeks
	Babies growth and development is monitored
Promotion of health and development	Increased breastfeeding rates
	Reduction in SUDI
	Infants put on their back to sleep from birth
	Increased immunisation at 6 weeks (fully vaccinated)
	Reduction in injuries
	Reduction in babies being shaken
	Parents connected to support networks
	Parents cope with sleeping, crying and other issues
Decrease in parent smoking and increase in smokefree environments	

Quality Improvement Framework

- Develop a quality improvement framework for the WCTO programme as a whole to:
 - foster inter-agency discussions about the WCTO programme results at a local and regional level to create a greater multi-disciplinary team focus on population level results
 - agree changes to the WCTO programme locally and regionally to enhance families/ whānau experience of the service and to identify ways to improve service delivery that will affect positive health and wellbeing outcomes.

Governance and accountability

- Develop regional and local multi-disciplinary governance structures in relation to completion of the 4 – 6 week checks, and other core contacts, similar to the B4SC, to have leadership, governance and clinical oversight of the WCTO programme.
- Ensure clinical supervision and referral reviews are in place and maintained. For smaller Tamariki Ora providers consider local collaborative models to ensure these structures and processes are sustainably established.

Foster multi-agency connections and collaborations

- Foster multi-agency connections and collaborations across WCTO providers at national, DHB and local levels.
- Foster a multi-sector approach to create more effective pathways to address primordial factors that contribute to health inequities.

Ongoing development of the WCTO evidence-base for New Zealand

- Continue to monitor the international evidence and seek to test in the New Zealand context.
- Recognising New Zealand's unique context and challenges, consideration is needed on how to develop local innovations and solutions.
- Set up a Technical Advisory Group to review evidence and make suggested recommendations to the WCTO programme.

1.6 Suggested research areas

This review has identified a number of future research areas which, if undertaken, would strengthen the evidence-base for the WCTO programme. Based on the findings of this quality review, the priority research areas below reflect the need to increase access to the WCTO programme for Māori and Pacific families, and ensure the relevancy of the WCTO programme to all families long-term.

- Research into understanding how 'parenting' concepts differ between ethnic groups and associated implications for the WCTO programme.
- Research to explore the underlying reasons for low coverage of Māori whānau within the WCTO programme (i.e. research with Māori whānau who do not use the service).
- Research to explore the underlying reasons for low coverage of Pacific families within the WCTO programme (i.e. research with Pacific whānau who do not use the service).
- Evaluating the delivery and impact of Tamariki Ora providers' WCTO model (encompassing whānau Ora) to determine whether they achieve positive short and medium-term outcomes for high-needs families (e.g. success case methodology).
- Research to explore attitudes, motivations and behaviours to identify ways to strengthen WCTO service delivery relevancy and partnership approach with families/whānau.

2. Introduction

2.1 The Well Child / Tamariki Ora programme

The prenatal and early childhood period is a crucial time for laying the foundations for life-long health and wellbeing. New Zealand has not performed well in child health in international comparative studies (OECD 2009) and has significant health inequalities, particularly for Māori and Pacific children (Craig et al 2007). However, New Zealand has a strong platform of early childhood services on which to build, and a workforce committed to improving the health and wellbeing of New Zealand children and reducing inequalities.

The three cornerstones of early childhood health care services in New Zealand are primary maternity services, the Well Child Tamariki Ora (WCTO) programme, and primary health care services. All three are interrelated and expected to promote a holistic approach, recognising the physical, social, and emotional needs of the mother, child and family/whānau. The role of the WCTO programme is to support and promote the healthy development of children and their families from birth to five years and is based on the principle of universal provision of services for all, with additional services according to need (Ministry of Health 2002a). WCTO services are provided free of charge and encompass clinical assessment, health promotion, family/whānau support, and interventions or referral as appropriate.

The WCTO programme interfaces with a number of other Ministry of Health ('the Ministry') work programmes that aim to improve outcomes for children and their families, such as the national immunisation programme, Newborn Metabolic Screening Programme (NMSP), and Universal Newborn Hearing Screening and Early Intervention Programme (UNHSEIP). It also interfaces with agencies and services external to the health sector, such as the Whānau Ora initiative and a range of family support, early childhood education and early intervention services (Ministries of Education and Social Development).

Over the last ten years, the Ministry has undertaken a range of measures to improve the WCTO programme. First was the introduction of the WCTO Framework in 2002 (Ministry of Health 2002a and 2002b), designed to improve consistency in service delivery. 2007/08 saw the beginning of a major review of the WCTO programme (Ministry of Health 2010a and 2010b) and alongside this, the introduction of the comprehensive Before School Check (B4SC) at age four.

The 2007/08 WCTO review resulted in the phasing in of a range of evidence-based changes across the WCTO programme, including changes related to the timing and content of the contacts (Ministry of Health 2010a and 2010b). The current core schedule involves four contacts during the postnatal period provided by lead maternity carers, a six week check by General Practice, and a further eight contacts from 4 – 6 weeks through to five years (Ministry of Health 2010a and 2010c). The B4SC (Ministry of Health 2008) is the final core contact, with DHBs employing different delivery mechanisms. Most of the other seven contacts are provided by the Royal New Zealand Plunket Society (to approximately 85 to 90% of children) with DHBs responsible for the remainder (with over 50 providers, many of which are Māori or Pacific providers).

The initial focus of the 2007/08 review related to the content of the programme. Content areas included the response to psychosocial factors (such as violence and child abuse), oral health, growth monitoring, development and behaviour screening, vision and hearing, smoking cessation, and maternal and infant mental health. Other developments included piloting of a new approach to needs assessment and care-planning and investigating how best to meet parent information needs using different communication modalities (such as internet, face-to-face, telephone advice services and other more novel methods such as texting).

2.2 Overview of the 2012 quality review for the WCTO programme

The Ministry built on the 2007/08 review with a 'second phase' review of the WCTO programme. In 2012, the second review focused on implementation, quality, and the way in which services are delivered.

The Ministry commissioned Litmus to concurrently review the content and implementation of components of the WCTO programme, to inform ongoing WCTO policy, delivery and quality improvement. The specific components of the programme being reviewed were:

- the content and implementation of 4 – 6 week checks of mothers and babies
- the content and implementation of the B4SC (Litmus 2012a)
- the three new assessment tools introduced in 2010 (Parental Evaluation of Developmental Status [PEDS] questionnaire, updated New Zealand World Health Organisation (WHO) growth charts, and the 'Lift the Lip' oral health screen) (Litmus 2012b)

From the findings of these quality reviews and in consultation with key Well Child stakeholders in New Zealand, an ongoing draft quality improvement framework and draft indicators for the WCTO programme has been developed (Litmus 2012d).

The Ministry has also undertaken a quality review focusing on the 'validation of the Strengths and Difficulties Questionnaire (SDQ) in the New Zealand context'. This third project is being conducted independently by School of Rehabilitation and Occupation Studies, Auckland University of Technology¹.

This report details the findings of the quality review of the Well Child Tamariki Ora 4 – 6 week checks.

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2.3 Quality review of the Well Baby 4 – 6 week checks

2.3.1 Background

Over the past 20 years, changes in the structure of maternity and WCTO services have resulted in a lack of clarity about the role of the Well Child six week check and the health professional(s) responsible for completing it. Babies and mothers may receive what appear to be very similar checks from their Lead Maternity Carer (LMC) at discharge of care, the WCTO provider (the first of the core contacts provided between 4 - 6 weeks and five years) and/or their General Practice (GP) at the immunisation visit. All checks are included in the WCTO National Schedule.

There are concerns that the role of the Well Child checks conducted at around 4 - 6 weeks ('the six week check') may have evolved to meet actual or perceived contractual or professional obligations rather than meeting the needs of the baby, mother or family and whānau. While the WCTO schedule guides the content of the six week check, there is a lack of information collected nationally about the coverage, content and outcomes across the different providers.

2.3.2 Purpose

The purpose of this quality review was to review the content and implementation of the Well Baby checks conducted at around six weeks, to inform the ongoing policy, delivery and quality improvement of these checks and related services delivered to mothers and babies in the early postnatal period.

2.3.3 Review questions

The Ministry posed the following review questions:

- What is happening currently at the Well Baby checks delivered by LMCs, GPs and WCTO providers at around six weeks, i.e. the LMC discharge visit, the WCTO initial visit and the six week GP/immunisation visit?
 - Including governance and clinical leadership, clinical content delivered and supervision, timing of visits, coverage (by ethnicity and deprivation), completion/consistency, cultural appropriateness, training and workforce development, protocols, processes/linkages, data collection and use, transfer of clinical information between providers (referral processes), existing quality improvement/performance monitoring activities and consumer feedback.
- What does the medical, nursing and midwifery literature and international experience identify as best practice in delivering Well Baby checks around six weeks of age, regarding the content, timing, delivery setting, practitioner type and competencies, etc?
 - How well does the expected and actual content of the six week checks, as specified in the Ministry's WCTO Schedule and Handbook documents, relate to the international literature and clinical experience?
- What are the contractual requirements for LMCs, WCTO providers and GPs to undertake a check at around six weeks?
 - Are there any gaps or overlaps in these requirements and what changes could be made to address these?

- Are there any professional obligations for LMCs, WCTO providers and GPs to undertake a check of the baby at around six weeks?
 - Can these obligations be met with minimised duplication?
- What are the experiences and expectations of parents from the different checks delivered around six weeks?
 - How can the current system be changed to better meet their needs?
- What are the clinical competencies required to undertake the different aspects of the required content of the six week check?
 - Do the different professions delivering checks of mothers and babies around six weeks receive specific training on undertaking a six week check?
 - Who is best placed to undertake a six week check regarding their relationship with the family and ensuring continuity of care?
 - Is it possible or desirable to train/equip this professional group to undertake the full six week check?
- Is the current information available to parents and page for recording the six week check in the parent-held WCTO handbook adequate?

Appendix 2 contains the detailed review questions. Appendix 3 lists the quality review team members.

2.4 Overview of quality review approach

A mixed method data collection process was used to inform the quality review of the 4 – 6 week checks, including:

- **Literature review:** The purpose was to identify best practice in delivering Well Baby checks around six weeks of age, regarding the content, timing, delivery setting, practitioner type and competencies. Best practice was explored at three levels: the WCTO programme level, contact point (e.g. content, delivery and timing), and the domain level within the six week check. Dr Amanda D'Souza provided expert advice and guidance on the literature review.
- **Discussions with international expert:** Eight interviews were conducted. These interviews provided information about best practice models and quality improvement approaches for delivering WCTO programmes based on international experience.
- **Discussions with New Zealand experts and key stakeholders:** 21 interviews were conducted. These interviews provided information about best practice, quality improvements, and provided a deeper understanding of the WCTO programme from a diverse range of perspectives. Interviews included discussions with representatives from The Royal New Zealand Plunket Society (Plunket), The Royal New Zealand College of General Practitioners (RNZCGP), The New Zealand College of Midwives (NZCOM), Tamariki Ora providers, District Health Board (DHBs) representatives, Vision and Hearing representatives, and the Ministry of Health.

- **DHB stocktake and survey:** Their purpose was to gather operational and infrastructural information on 4 – 6 week checks, B4SC and the New Assessment Tools, specifically: overview of WCTO (excluding Plunket) and B4SC contracts, delivery models, protocols and guidelines, processes and linkages, workforce capability and development, service delivery, information management, and key quality improvement areas. All 20 DHBs submitted stocktake and survey responses.
- **WCTO provider survey:** Targeting Māori and Pacific Tamariki Ora providers, the survey purpose was to gain an understanding of the WCTO services offered, the number of staff and their WCTO competency, clinical governance structures, availability of training, WCTO protocols and guidelines, and WCTO information management and technology, and their suggestions on quality improvements to the WCTO Programme. 19 Māori and 4 Pacific Tamariki Ora providers completed the survey out of a potential 56; representing a 41% return rate. The stocktake was e-mail based with one e-mail reminder and took place over a two month period.
- **Analysis of WCTO data.** Using the WCTO dataset, which covered contacts conducted from July-December 2011, analysis was undertaken of provider delivery across domains and the treatment received at core contact one. Coverage was calculated against the number of births during this period.
- **GP survey:** The purpose of the GP survey was to gain a more considered understanding of what checks were being delivered in General Practice at six weeks. The survey link was embedded into the RNZCGP's ePulse newsletter. 54 GPs completed the survey. The sample achieved is not representative of the GP population. The survey offers indicative and not definitive findings.
- **Case study of three DHBs.** The purpose of the case study was to gain a deeper understanding of on-the-ground delivery of the Well Baby checks undertaken around 4 – 6 weeks of age and the B4SC. Three DHBs were selected to represent the three service delivery models for B4SC: Canterbury DHB (primary care-led), Counties Manukau DHB (Plunket/ Tamariki Ora provider-led), and Taranaki DHB (public health-led). In each of the DHBs, interviews were undertaken with providers involved in delivery of 4 – 6 week checks and the B4SC: DHB staff, Public Health Nurses, Vision and Hearing Technicians (VHTs), Plunket, Māori and Pacific Tamariki Ora providers, Primary Health Organisations (PHOs), General Practice teams (GPT) including GPs and practice nurses, Lead Maternity Carers (LMCs), and B4SC Coordinators.
- **Focus groups with parents.** Eight focus groups with parents were conducted with Māori (3 groups), Pacific (2) and Pākehā (3) in Christchurch (3 groups), Counties Manukau (3) and Taranaki (2) DHBs. Parents recruited had children who had recently completed the B4SC. At least half of the parents in each group had a child under one, and had used a Māori or Pacific Tamariki Ora provider. The groups explored parents' expectations and views of the services received around 4 - 6 weeks and at the B4SC.
- **Expert Advisory Group:** A sector-wide multi-disciplinary Expert Advisory Group was set up to inform the development of a quality improvement framework for the WCTO programme. The Expert Advisory Group was kept updated on the data collection for the three quality reviews. The preliminary findings from the three quality reviews were presented to the Expert Advisory Group for validation and discussion.

Methodological details of each of the quality review activities are contained in Appendix 4. All quality review tools are in Appendix 5. Supplementary information about the detailed findings from the GP survey, DHB and WCTO stocktakes and surveys can be found in Litmus 2012e, f, and g.

2.5 Quality review limitations

The quality review team is confident that the report accurately represents the views and perceptions of participants who contributed to the quality reviews and is supported by the wider literature and data. The consistency of themes across participants and their support through the wider surveys, data and documentation strengthens and validates the findings presented.

In considering the findings of this quality review of the 4 – 6 week checks, a number of limitations are acknowledged:

- The literature review undertaken was not a systematic literature review, although care was taken to ensure that systematic reviews (where they existed) were included. Although extensive searching was undertaken, Litmus cannot guarantee that all literature relevant to the reviews were identified and included in this report.
- Four in ten Tamariki Ora providers completed the stocktake and survey therefore findings are indicative and not definitive.
- The online survey of GPs may not be representative of the GP population in New Zealand. Of particular note is the higher level of GP response from Canterbury, and that all GPs who participated were undertaking six week checks. Qualitative feedback from parents and anecdotally from other stakeholders highlights that not all GPs in New Zealand undertake a six week check when a baby presents at General Practice for the six week immunisation.
- Analysis of WCTO data is based on data returns from around 50% of contracted Tamariki Ora providers and data submitted by Plunket. The low return rate reflects that this is the first time the Ministry has sought this data and some providers are struggling with the data management process. Other data limitations noted in the analysis of the WCTO data include missing and inconsistent data and differences in definition and availability of demographic variables in the birth data used as the coverage denominator. Findings therefore need to be treated as preliminary.
- Quantitative surveys of WCTO nurses and LMCs were not undertaken therefore the information about service delivery is informed by national level interviews and qualitative interviews in the three cases. It is acknowledged therefore that the diversity of service delivery and practice may not have been fully captured.
- Focus groups targeted parents with more than two children to include those who had recently experienced the B4SC and 4 – 6 week checks. Consequently, first-time parents were not included in the groups – an important audience for WCTO programme. Care is needed in the interpretation of feedback from the Canterbury DHB, given the effects of the Christchurch earthquakes on services.
- Case study participants who contributed to the case studies were identified by the DHBs. It is possible therefore that some wider issues may not have been identified due to sample selection bias.

2.6 Glossary of terms

- B4SC – Before School Check
- DHBs – District Health Boards
- GPs – General Practitioners
- GPT – General Practice Teams
- LMC – Lead Maternity Carer
- NZCOM – The New Zealand College of Midwives
- PEDS – the Parental Evaluation of Developmental Status
- PHO – Primary Health Organisation
- Plunket – the Royal New Zealand Plunket Society
- RNZCGP – The Royal New Zealand College of General Practitioners
- SDQ – Strengths and Difficulties Questionnaire
- Tamariki Ora providers – unless stated refers to both Māori and Pacific providers delivering WCTO services
- VHTs – Vision and Hearing Technicians
- WCTO programme – Well Child Tamariki Ora programme refers to the programme as a whole including core contacts one to seven, plus additional contacts and the B4SC
- Providers – refers to all providers delivering Well Baby checks (i.e. WCTO providers, LMCs, GPTs)
- WCTO providers – refers to providers delivering WCTO core contacts one to seven of the WCTO programme
- WHO – World Health Organisation.

2.7 Report structure

The report is divided into the following sections:

- Best Practice Well Child 4 – 6 Week Checks
- Parental Expectations and Experiences
- WCTO Providers' Contracts and Obligations
- Service Delivery at 4 - 6 Weeks
- WCTO Health Book
- Future Directions
- Suggested Research Areas.

At the end of each section is a summary of key findings.

3. Best Practice Well Child 4 – 6 Week Checks

3.1 Introduction

This section draws on the national and international literature and experience of national and international experts to summarise *best practice* in delivering Well Baby checks around six weeks of age. The section details the rationale for the checks, their timing and content, and delivery. It offers a comparison of international best practice for these checks against the content of the six week checks, as specified in the Ministry's WCTO Schedule and Handbook document (Ministry of Health 2002b).

More specifically, this section addresses the following review questions:

- What does the medical, nursing and midwifery literature and international experience identify as best practice in delivering Well Baby checks around six weeks of age, regarding the content, timing, delivery setting, practitioner type and competencies, etc?
 - How well does the expected and actual content of the six week checks, as specified in the Ministry's WCTO Schedule and Handbook documents, relate to the international literature and clinical experience?

In reviewing the literature, care has been taken to determine what is known and not known. As Hall and Elliman (2007, p23) advice 'absence of evidence of effect is not the same as evidence of absence of effect'. In this context, in assessing documented literature on best practice in delivering Well Baby checks around six weeks of age consideration was given to identifying:

- evidence demonstrating effect
- evidence demonstrating a lack of effect
- gaps in the current evidence base, where there is no evidence for or against, and further research is required.

Litmus has undertaken a thorough review of literature. However, Litmus cannot guarantee that all literature relevant to the review were identified and included in this report.

3.2 Rationale for WCTO programme

Well Child programmes are underpinned by overwhelming evidence pointing to the impact of early life experiences and environments on future development and achievement. The first few years of life are a time of substantial and rapid brain development (Centre for Community Child Health 2009). The younger the child, the more vulnerable the brain is to environmental influences, positive and negative. Adverse experiences in the early years can be particularly damaging, shaping the development of young children's brains in ways that have long-lasting effects. Positive and appropriate caretaking environments can significantly modify the adverse consequences of early challenges.

There is substantial research pointing to the value of identifying emerging problems early, and initiating intervention. Early intervention confers enormous benefits to children, families and society, by addressing existing problems and, in many cases, preventing them altogether (Glascoe and Marks 2011). Intervening early in the course of a condition or problem is likely to be more effective and less expensive than remediation later in life (Centre for Community Health 2009).

The Marmot Review (2010) identifies ‘giving every child the best start in life’ as its highest priority recommendation. This independent review, whose goal is to propose the most effective evidence-based strategies for reducing health inequalities in England, identifies this recommendation as crucial to reducing health inequalities across the life course. The authors note that later intervention, although important, is less effective where good early foundations are lacking.

“The foundations for virtually every aspect of human development – physical, intellectual and emotional – are laid in early childhood. What happens during these early years (starting in the womb) has lifelong effects on many aspects of health and well-being - from obesity, heart disease and mental health, to educational achievement and economic status.” (Marmot Review 2010 p22)

3.3 Rationale for progressive universalism WCTO programme

There are wide ranging debates about whether preventative services such as child health programmes should be offered universally or targeted. Universal child health programmes seek to ensure that all children in a population can benefit from a series of health checks that include screening, assessment and health education activities. As Barlow et al (2008) and Blair and Hall (2006) cite, a universal child health programme:

- addresses the population paradox where a relatively large number of lower risk individuals carry the main burden of disease for the population as a whole
- may be better placed to address problems before they reach clinical levels, and therefore are more genuinely preventive
- is less stigmatising and likely to be more acceptable than one perceived as targeting parents with problems.

The key challenge of a universal programme is how to ensure that children and families who most need support and services receive them, and linked to this, how to reduce overall inequity between population groups, when all groups are receiving the same services.

“The recurring dilemma is the need to provide on the one hand, access to universal services for every parent and child, but on the other to increase investment and provision for families whose children are at risk of future educational and behavioural problems because of their circumstances.” (Blair and Hall 2006 p733)

Starfield (2011) refers to this dynamic as ‘vertical inequity’. Inequity is the presence of systematic and potentially remediable differences among population groups defined socially, economically or geographically. It is not the same as inequality, which is a much broader term and can encompass non-remediable differences. Starfield identifies that inequity can be horizontal or vertical. Horizontal inequity indicates that people with the same needs do not have access to the same resources. Vertical inequity exists when people with greater needs are not provided with greater resources. Universal services run a particular risk of not addressing vertical inequities.

Progressive universalism is the concept of universally-accessible support and development services with enhanced access for those requiring special or targeted support. This approach is supported by Hall and Elliman (2007), who argue that a child health promotion programme should be made available to the whole population, but that there should be additional resources and alternative means of providing care to ensure that socially excluded groups benefit from and participate in programmes. Hall and Elliman suggest that services should be planned to improve equity of provision and reduce inequalities in health. This includes working with families to determine what services and support they need, and developing and using a ‘family services plan’ in the first year. The United Kingdom Healthy Child Programme (UK HCP) is based on this approach.

Progressive universalism is seen by some to be an unsatisfactory compromise between universal and targeted services. In the UK’s HCP, ‘progressive universalism’ equates to a selective screening programme offered to high-risk children, while a basic set of screening tools is used universally, especially in the first year of life (Bellman and Vijeratnam 2012). In their review of the UK HCP, which has recently moved from a universal to a more targeted approach, Bellman and Vijeratnam question whether progressive universalism has resulted in the loss of an essential safety net. They cite research showing that, in a high-risk area of targeted intervention by Health Visitors², less than half the families with high needs were identified by the target criteria, and that most families who live in deprived areas need regular help to protect the most vulnerable children (Wright et al 2009).

“...the targeting ‘safety net’ gives a false sense of security and many children, who in fact need help, fall through it.” (Bellman and Vijeratnam 2012 p75)

The Marmot Review (2010) also advocates for progressive universalism as a key approach to reducing health inequalities; using the term ‘proportionate universalism’. Marmot advocates that actions must be proportionate to the degree of disadvantage, and hence applied in some degree to all people, rather than applied solely to the most disadvantaged. The authors argue that focusing solely on the most disadvantaged will not reduce health inequalities sufficiently.

“To reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage. We call this proportionate universalism.” (Marmot Review 2010 p15)

² Well Child nurses

In New Zealand, the WCTO programme is designed on the principle of ‘universal provision of services for all, with additional services according to need’. The WCTO programme acknowledges the following priority groups: Māori, Pacific people, children from families with multiple social and economic disadvantage and children with high health and disability support needs³. A needs assessment is undertaken at the initial meetings between the family and the WCTO provider to identify needs and the level of service delivery required⁴. At subsequent meetings this assessment is reviewed and ongoing care planned in response⁵.

Gray (2011) argues that while access to progressive universal WCTO programme can remove stigma and seek to include families with additional needs, cultural assumptions underpinning a universal programme may be a challenge, since basic concepts like ‘parenting’ may differ between cultural groups. Gray notes that the most vulnerable families/ whānau are diverse and may need more than one form of service provision and support. In this context, consideration is needed as to whether more of the same ‘type’ of service will effectively address the existing inequities of health outcomes for Māori and Pacific children and their whānau.

Within Well Child programmes, there has been a shift in emphasis in recent times, from a focus on detection to prevention of developmental problems. Blair and Hall (2006) describe how developmental screening and examination procedures were introduced in an era when there was little public and professional awareness of childhood disability and children at risk of disability were not effectively identified or monitored. Nowadays children with disabling conditions such as cerebral palsy, severe visual impairment, and autism, are more likely to be recognised at an earlier stage; routine developmental examinations make little contribution to their identification. In contrast, speech and language issues, learning difficulties, and emotional and behavioural disorders, are more prevalent than the above disabling conditions, and have often been identified late.

There has also been an epidemiological shift in most developed countries from acute infectious diseases towards chronic illness, reinforcing the emphasis on prevention and health promotion. The American Academy of Pediatrics (1982) calls this shift the ‘new morbidity’, whereby chronic illness and disability and behavioural issues are the major conditions now facing children and families.

In New Zealand, however, not all children and population groups have made the shift away from acute infectious diseases. Baker et al (2012) found that infectious diseases made the largest contribution to all New Zealand hospital admissions in the period 1989 to 2008, their contribution had increased in the latter years, and there were clear ethnic and social inequalities in infectious disease risk. Māori and Pacific peoples and people in the most deprived areas were more than twice as likely as European/Other and people in the least deprived areas to be admitted to hospital for infectious disease. Further, these inequalities have increased substantially in the past 20 years, particularly for Māori and Pacific peoples in the most deprived quintile. **New Zealand’s WCTO programme must therefore ensure a focus on prevention and health promotion, as well as the acute health issues to seek to contribute to the reduction of these inequities.**

³ The New Zealand Health Survey (Ministry of Health 2009) confirmed there are disparities both in health outcomes and in the exposure to risk and health behaviours between Māori and non-Māori children and between Pacific and non-Pacific children. As a population group Pacific children continue to have poorer health outcomes than other New Zealand children. (Minister of Health and Minister of Pacific Island Affairs 2010, Tobias and Yeh 2009, Baker et al 2012).

⁴ Refer Annex 1 for Plunket’s adapted continuum of needs assessment and core planning tool

⁵ In 2011, a new needs assessment and care planning process and tool for maternity and WCTO service was piloted and evaluated (Werry Centre 2011).

3.4 Rationale for 4 - 6 week checks

The postpartum period is a critical time for a woman, her newborn and her family, on a physiological, emotional and social level. The quality of parent-infant relationship is positively correlated to the development and wellbeing outcomes of both the parent and infant. From the literature, there are three primary reasons for undertaking 4 – 6 weeks checks of the baby:

- To increase parental confidence in first two months and strengthen the parent-infant bond. There are effective interventions that focus on the relationship between parent and infant.
- To offer health promotion to seek to address wider psychosocial factors impacting on the mother, baby and family/ whānau's short and long-term health and wellbeing.
- To identify a smaller but significant yield of abnormalities compared to the newborn assessment (e.g. congenital heart disease, instability of hips, and abnormalities of the eye), and to ensure early intervention and treatment.

Barlow et al's (2008) review of the emerging evidence base demonstrates the quality of early parenting is strongly associated with a range of later health and wellbeing outcomes for children including behaviour and delinquency, educational success and school dropout, a range of health-related behaviours including promiscuity, drug and alcohol abuse, smoking, unhealthy eating, and both physical and mental health in adulthood. Research from a range of disciplines also shows that the quality of the parent-infant relationship is highly influential in long-term development and wellbeing outcomes for parent and child (Barlow et al 2008, McBride and McMaster 2006, Hall and Elliman 2009).

A physical examination of the baby around eight weeks is recommended in the UK by Hall and Elliman (2007) as it results in a smaller but significant yield of abnormalities in babies. Hall and Elliman (2007) defines the six to eight week examination as 'screening – examination of whole population of apparently healthy children, using simple tests to distinguish those who probably have a condition from those who probably do not so that the outcome can be improved by treating the condition before it produces symptoms or signs'. Hall and Elliman (2007 p144) suggest that the examination of the baby could be combined with the postnatal examination at which the mother's physical health, contraception, social support, depression is discussed as appropriate. However, they strongly warn against '*a conveyor belt of mother and baby going to many professionals one after the other*'.

Hall and Elliman (2007) also identify the following protective and risks factors for child development, which are present in the UK HCP around eight weeks:

- Good evidence for the importance of social support, social networks and social capital as determinants of health of individuals.
- Postnatal depression is a common problem and there is a need to support depressed parents.
- Family support may help to reduce the risk of child abuse.
- Family violence is an important contributor to the distress of children.

For child health promotion, the following were listed as opportunities for primary prevention:

- Promoting immunisation.
- Informing all parents about reducing the risks of sudden infant death (SIDs) which should include help with smoking cessation and reducing passive smoking.
- Encouraging and supporting breastfeeding.
- Policies for reducing injuries and accidents (e.g. use of age-appropriate car seats).

From the UK literature, there is a strong focus in their Well Child programme of moving away from a narrow focus on health screening and developmental reviews to the provision of a more broad based programme of support for children and their families that helps address the wider determinants of health and to reduce inequalities.

3.5 Timing of the six week check

The timing of the examination 4 – 6 weeks reflects the focus on the physical examination, and link to the immunisation schedule. By six weeks of age babies are showing a range of behaviours including smiling and visual following, heart murmurs may be more readily detectable, and testes are likely to be descended. Hall and Elliman (2007) argue for an early physical examination as outcomes for developmental dysplasia (dislocation) of the hip (DDH) and cataracts may be improved if they are detected and treated before six weeks. Hall and Elliman (2007) acknowledge however, that bringing the checks forward may result in a decline in immunisation rates at around six weeks which has potentially serious public health consequences.

3.6 Best practice content of 4 – 6 week checks

3.6.1 *No proven off-the-shelf package*

The literature review did not reveal a definitive, evidence-based, best practice Well Child package for babies aged six weeks proven to contribute to their positive long-term health and wellbeing. Much of the literature focuses on the screening components of the physical examination of the baby, and offers some insight into the evidence underpinning these discrete assessments. While the examination of the baby at six weeks is important, this focus on its own risks overlooking the importance of development assessments and promotions focused on the parental – infant bond. Little clear direction is offered in relation to a systems perspective acknowledging that around six weeks the parent and infant are transferred from maternity to Well Child services and primary care. The latter appears to reflect the differing models of maternity and primary care across jurisdictions.

Although physical examinations before eight weeks are widely believed to be worthwhile, the evidence base is weak and the precise content and nature of procedures used need further study (Hall and Elliman 2007).

3.6.2 Comparison of UK, Victoria (Australia), US, and New Zealand's six week check

To identify best practice content around 4 – 6 weeks, the differing checks undertaken in the Well Child programmes in UK, Victoria (Australia) and the US are presented below. Each jurisdiction emphasises their programme, its structure and domains are evidence-informed.

UK Healthy Child Programme (HCP, Department of Health 2009) is a progressive universal programme. The HCP focuses on early identification of need and risk through health and development reviews to assess family strengths and enable planning for the next stage of childhood. HCP includes screening, health promotion and promotion of social and emotional development and parenting support to build family strengths and resources. Topics covered depend on the experience and confidence of parents and their choices. UK HCP's core function is to recognise disability and development delay, and a responsibility to provide information, support, referral and notification to other providers.

Victoria's (Australia) Maternal and Child Health Service (MCH service) offer a universal service for all families with children from birth to school through a series of consultations at key ages and stages, and other activities including parent groups (Department of Education and Early Childhood Development 2011). Additional support is also available through Enhanced MCH Service, which responds to disadvantaged children and families. The MCH service provides a comprehensive and focused approach for the promotion, prevention and early detection of the physical, emotional or social factors affecting young children and their families, and intervention where appropriate.

The US's Bright Futures⁶ is a set of principles, strategies, and tools that are theory-based and systems orientated that can be used to improve the health and wellbeing of all children through culturally appropriate interventions that address the current and emerging health promotion needs at the family, clinical practice, community, health systems and policy levels (Hagan et al 2008, pix). Bright Futures is underpinned by a philosophy of preventative care, health promotion activities and psychosocial factors of health, and a focus on youth and family strengths.

Annex 2 provides a more detailed overview of the philosophy of the three Well Child models.

Across the UK, US and Victoria (Australia) programmes, there are common principles in delivering their Well Child services:

- **A partnership approach** with parents recognising their strengths, concerns and aspirations for their child. An effective partnership is seen as key to delivering the programmes effectively.
- **Competency of providers** in undertaking the reviews. Providers are expected to be knowledgeable about child development, the factors that influence health and wellbeing, and the normal range of child development, and competent to undertake physical examinations.
- **A multi-disciplinary approach** recognising that effective health promotion and disease prevention requires an integrated and coordinated approach from a multi-disciplinary team, working in partnership with families, and the community.
- **Being family-centred** and fostering family centred-communication.

⁶ http://brightfutures.aap.org/3rd_Edition_Guidelines_and_Pocket_Guide.html accessed 24 August 2012

- **Promoting health and preventing illness**, and undertaking health promotion.
- **Ensuring access and availability** of service to all children.
- **Seeking to reduce inequities** through targeted, tailored and more intensive services to meet families identified needs.
- **Continuously improving and adding value** to the service by drawing on the developing evidence base.

These principles are reflected in the New Zealand WCTO programme. However, the principles (and underpinning standards) have not been explicitly agreed to by the WCTO sector as a whole.

Table 2 summarises the content of the 6 – 8 week checks in the UK, Victoria (Australia), US and New Zealand (as defined in the WCTO Handbook and intended to be undertaken by GPs)⁷. Key points to note from table 2 are:

- The health reviews are delivered as part of a continuum care (refer Annex 2).
- The health reviews are delivered by differing health providers who are trained and competent to undertake them: in the UK and Victoria by their equivalent of a WCTO nurse, in the US by a paediatrician and in New Zealand by a GP (although as discussed in section 5.3, the WCTO nurse also undertakes checks when the baby is aged around 4 – 6 weeks).
- Content is very similar across the jurisdictions and reflects the wider evidence-base.
 - All place significant focus on the parent-infant bond, although differing methods are used to observe, assess and discuss this with parents, e.g. the use of the PEDs question one in Victoria (Australia).
 - A physical examination of the baby is undertaken, and the focus of the examination is consistent across jurisdictions. The UK place particular emphasis on eyes, heart, DDH and undescended testes, and recommend weight and length are only undertaken if there are concerns. In Victoria (Australia), the MCH nurses observe if there are any issues with vision and heart. It is assumed the more clinical examination of the eyes (i.e. the red reflex) and heart are undertaken by the GP⁸.
 - Emphasis on parent support.
 - Emphasis on promoting or giving immunisations recognising the solid evidence of the significant impact of immunisation programmes on childhood diseases (Turner 2012).
 - Consideration of maternal health and wellbeing with a focus on postnatal depression.

⁷ Section 6 details the contractual requirements for LMCs, Well Child/ Tamariki Ora providers and GPs to undertake Well Baby checks around 4 – 6 weeks. Section 7 summarises current practice.

⁸ In Victoria Australia, parents are also recommended to see their doctor/midwife when the baby is six weeks old for a check up which includes the physical health of the mother and baby, the development of baby, infant feeding, mother's emotional wellbeing, and their relationship and social wellbeing.

- Parenting advice and health promotion are given across a range of topics including breastfeeding, safety, smoking cessation, family violence and child abuse, and Sudden Unexpected Death of an Infancy (SUDI). In New Zealand, there is less emphasis in the Well Child National Schedule Handbook (Ministry of Health, 2002b) on parenting advice and health promotion with no mention of safety, smoking cessation, and temperament anticipatory guidance. However, these activities are undertaken at the WCTO core contact one visit by the WCTO nurse (refer section 5.3).

Table 2: Overview of content of six week checks in different jurisdictions

Domains	UK Healthy Child Programme*	Victoria AU**#	US Bright Futures***	WCTO Programme****
Babies age	6-8 weeks	8 weeks	Two months (8 weeks)	6 weeks
Delivered	GP and Health Visitor	MCH Nurse	Paediatrician	GPT
Physical examination of baby	General physical examination, emphasis: Eyes Heart Developmental dysplasia of the hips Testes (boys)	Physical examination including development assessment: Skin Head and neck Ears Eyes (not red reflex) Face, nose, mouth Thorax and lungs Cardio-vascular (observation) Abdomen Reproductive system (testes) Musculo-skeletal (hips) Nervous system	Physical examination: Assess/observe rashes or bruising Fontanelles; Eyes/eyelids, ocular mobility, pupil opacification, red reflexes Heart murmurs Femoral pulses. Perform Ortolani/Barlow manoeuvres. Assess torticollis, neurologic tone, strength and symmetry of movements.	Systematic and thorough clinical assessment: Colour – including prolonged jaundice Cardiac assessment Respiratory assessment Fontanelles Hip joints Eyes – red reflex Ears Neuro developmental assessment Abdominal assessment Genital assessment
Growth	Baby's weight and length <i>where there are concerns</i>	Weight, height and head circumference	Weight, length and head circumference	Weight, nutrition, feeding history, length, head circumference
Immunisation	Give: Polio, Diphtheria, Tetanus, Whooping cough, Haemophilus influenzae type b, Meningitis C	Discuss two month and refer to relevant agency	Immunisation	Give: Diphtheria, Tetanus, Whooping cough, Polio, Hepatitis B, Haemophilus influenzae type b, 1 injection, Pneumococcal1 injection
Parent-infant bond; baby development	Review of general progress and messages: Parenting Baby's health Eating and activity Weaning Accident information Play and appropriate activities	PEDS question 1 Safety plan (if necessary)	Observation of Parent-Child Interaction: Responsive; content/depressed/ angry/ fatigued/ overwhelmed; comfortable and confident; Responding to infant cues; Partner support Surveillance of development: Attempts to look at parent, smile; differentiated types of crying, coos; indicates boredom; holds up head and begins to push up in prone position, consistent head control in supported sitting position, shows symmetrical movements of head, arms, and legs, shows diminishing newborn reflexes	Assess parent-child interaction – early bonding, initial (positive) parenting response and parenting skills Assess support needs

Domains	UK Healthy Child Programme*	Victoria AU**#	US Bright Futures***	WCTO Programme****
Parenting and health promotion; anticipatory guidance	Parenting and health promotion: Breastfeeding Temperament-based anticipatory guidance Promoting development Keeping safe Progressive Babies with health and development problems/ abnormalities Infant feeding and children at risk of obesity Smoking SIDS Parenting support Parental relationships Insensitive parenting interactions	Nutrition (type, frequency, response to and output) Safety plan (if necessary) Quit intervention offered SUDI and sleeping checklist Family violence assessment	Nutritional adequacy: routine, choice, strategies, guidance Safety: car safety seats, water temperature, choking, tobacco smoke, drowning, falls/ rolling over Parent-child relationship, daily routines, sleep, developmental changes, physical activity, communication and calming	Promote positive parenting Provide community linkages Provide relevant information and anticipatory guidance: - recognising a sick child and when to seek medical help - recognising postpartum abnormalities for mother including postnatal depression
Maternal health and wellbeing (especially mental health needs)	Identification of postnatal depression or other mental health needs	Done at 4 weeks – maternal emotional health and wellbeing	Parental (maternal) well-being: Health (maternal postpartum check-up and resumption of activities, depression), parent roles and responsibilities, family support, sibling relationships	Record family history and obstetric history including: - hepatitis B, tuberculosis, other infective illness in particular in utero illness - congenital renal, cardiac, hearing or hip pathology - assessment of psychosocial and environmental risk factors including support systems, history of postnatal depression, family violence, Child Youth & Family involvement
Others	Third dose of Hepatitis B vaccine if given after birth	--	--	Response to Hepatitis B, tuberculosis and vitamin K usage

Sources:

*Department for Children, Schools, and Families and Department of Health (2009)

**Department of Education and Early Childhood Development (2009)

MCH nurses are expected to respond to parental concerns (e.g. parenting, safety or health issues) and act on professional observation and judgement to decide if additional activities are warranted.

*** Hagan (2008a)

**** Ministry of Health (2002b)

3.6.3 Evidence underpinning the domains of the six week check

While it was outside of the scope of this review to undertake a comprehensive review of evidence for each component of the six week check, a brief summary of key evidence is provided for each component. **Overall, the review of the literature highlights that while the evidence-base underpinning the domains of the six week review is growing, gaps in knowledge continue.** In particular, there appears to be a lack of evidence identifying effective interventions across a range of domains (e.g. family violence, child abuse, and postnatal depression). Further research is needed in New Zealand to determine what is effective within a New Zealand context and in particular for high-need Māori and Pacific families/ whānau and other families.

With the growing evidence-base and the development of new technologies, a system is required to review and determine inclusions and exclusions of new components or screening technologies in the WCTO programme, e.g. a Technical Advisory Group.

Physical examination

Vision. Hall et al (2009) recommend the eyes of all infants of 6 – 8 weeks should be observed for their morphology and to check for opacities (e.g. cataracts) by observing the red reflex using an ophthalmoscope. Methods for screening infants for refractive error, squint, and amblyopia have not met the UK criteria for screening.

Rourke (2010) also agrees there is good evidence for visual screening during Well Baby examinations including the red reflex assessment. The position of the corneal light reflex (at any age) and the cover-uncover test (in infants at least six months of age) should be checked, along with parental inquiry to detect strabismus.

Congenital heart disease. Early detection is desirable to avoid children presenting with acute heart failure or with irreversible haemodynamic changes secondary to undiagnosed congenital cardiac malformations. These might predispose to endocarditis if antibiotic prophylaxis is not prescribed during invasive procedures. Most cases present shortly after birth, but some conditions like small ventricular septal defect, atrial septal defect or coarctation of the aorta may not present until later and might be more easily detected at 6 – 8 weeks of age. Routine cardiovascular examination as part of a screening programme for all infants is therefore indicated, including history, observation and palpation of femoral pulses. (McBride and McMaster 2006, Hall et al 2009, Rourke 2010).

Centers for Disease Control and Prevention (CDC, accessed 2012) recommend screening with pulse oximetry is done when a baby is 24 to 48 hours of age. However, CDC note that pulse oximetry screening does not replace a complete history and physical examination, which sometimes can detect a critical congenital heart defect before the development of low levels of oxygen in the blood. Pulse oximetry screening therefore should be used along with the physical examination.

Whether pulse oximetry should be included in the WCTO programme requires further assessment using New Zealand's screening criteria.

Testicular descent is a common problem in infant boys - approximately 6% are affected at birth. In the majority of these children, testicular descent is complete by three months of age. Children born prematurely (<37 weeks' gestation) might experience spontaneous testicular descent until the age of six months. Thereafter, spontaneous resolution of the problem is very unlikely. It is therefore necessary to screen all boys at birth and at 6 – 8 weeks of age. Children with abnormal findings are referred to a surgeon with appropriate skills before the child reaches one year of age to undergo surgery during their second year to avoid damage to the undescended testis and fertility problems (McBride and McMaster 2006). Neilson and Walker's (2011) research also confirm that the screening of undescended testes around six weeks was effective, although detection on screening did not always result in referral. Neilson and Walker also advocate for screening for testicular descent in older boys because screened boys underwent surgery at a younger age.

Developmental dysplasia of the hip (DDH). This term was previously referred to 'congenital dislocation of the hip'. DDH can lead to premature degenerative joint disease, impaired walking, and pain.

The pathophysiology and natural history of DDH are poorly understood. There is evidence that screening leads to earlier identification. However, 60% to 80% of the hips of newborns identified as abnormal or as suspicious for DDH by physical examination and 90% of those identified by ultrasound in the newborn period resolve spontaneously and require no intervention (US Preventative Services Task Force [USPSTF], 2006). There is poor evidence (poor quality studies) of the effectiveness of both surgical and non-surgical interventions; avascular necrosis of the hip is reported in 0% to 60% of children who are treated for DDH. Thus, the USPSTF (2006) was unable to assess the balance of benefits and harms of screening for DDH but was concerned about the potential harm associated with treatment of infants identified by routine screening.

The USPSTF (2006) concludes that evidence is insufficient to recommend routine screening for DDH in infants as a means to prevent adverse outcomes. Based on this evidence Rourke (2011) concludes there is insufficient evidence to recommend routine screening for DDH, but examination of the hips should be included until at least one year, or until the child can walk.

Growth

Growth monitoring offers the following potential benefits: identification of chronic disorders, and reassurance to parents. Growth during infancy is measurable in weight, length and head circumference. It is recommended that growth monitoring should be a routine part of health care for infants, children and adolescents (Marchand 2010).

Accurate technique is required to obtain reliable results, identifying those children who require further monitoring and intervention. There is a need to provide adequate training in measurement technique, use of growth charts and criteria for referral to those involved in growth monitoring of children (McBride and McMaster 2006, Marchand 2010). Refer Litmus (2012b) for a more detailed discussion of growth monitoring supporting the use of WHO growth charts. Rourke et al (2010) recommend that growth measure for premature infants less than 37 weeks' gestation should be corrected for gestational age for up to 24 to 36 months.

Barlow et al's (2008) review of interventions note the evidence in relation to breastfeeding and later obesity is inconclusive. Very limited evidence exists about the effectiveness of obesity prevention and reduction interventions for children aged 0-3 years. Research is

needed to identify effective interventions to prevent and treat obesity in children aged 0-3+ years.

Hall et al (2009) recommend head circumference measurements as part of the newborn examination and at six weeks. As with growth, an accurate technique is required and recording on a chart essential. Hall et al (2009) do not recommend measurement of head circumference after six weeks, unless there are concerns.

Measurement of head circumference may help in assessment of infants who are small in gestation age, identification of disorders associated with abnormal size of the head, offer a baseline for future measurements in the event of suspected deviant developmental progress or abnormal growth of the head, and if there are big, small, or abnormal rates of change.

Parent – infant bond

Promotional interviewing is one of a number of structured ways of working with parents during pregnancy and the postnatal period to help them to explore their situation and develop problem solving skills. It is also used to identify families in need of further support. Barlow et al (2008) notes there is very limited evidence available that suggests promotional interviewing may improve the ability of professionals to identify families that need additional support and that families valued the support provided. Further research is needed to test the effectiveness of promotional interviewing as both a means of enabling practitioners to identify families in need of further support and to help families to develop problem-solving skills.

Parental concerns. Parental observation has been shown to be as effective as assessment by health professionals in detecting problems in many areas of child health and development (McBride and McMaster 2006). A national study of paediatricians in the US demonstrated the importance of eliciting parent concerns as the first priority for all Well Child care visits (Tanner et al 2008). However, paediatricians face the dilemma of prioritisation, given the need to balance parental concerns with expanding preventive health directives. Tanner et al (2008) notes that the 'number of health initiatives far outstrips the time available', and the strategies to cope with this challenge are varied.

Development assessment. The first edition of *Health for All Children* emphasised the value of parental observation in identifying areas of concern regarding the developmental progress of children (Hall and Elliman 1989). This is acknowledged in the broader concept of developmental surveillance, described as a flexible and continuous process, which considers the developmental history, monitors progress and attends to parental observations within the context of children's overall wellbeing. When examining infants at 6 – 8 weeks of age, some literature suggests there are no definitive tests to be carried out, other than an assessment of tone and observation of spontaneous movements (McBride and McMaster 2006). In Victoria (Australia), question one of PEDS is used (refer Litmus 2012b for more detailed discussion of this development assessment tool).

Parenting and health promotion

Anticipatory guidance consists of the provision of preventive advice by physicians and other healthcare workers in healthcare settings. Barlow et al (2008) noted one review which evaluated the effectiveness of 47 interventions of this type. The results indicate that anticipatory guidance and written instructions can be effective in promoting better infant sleep patterns, reducing stress, and increasing parents' confidence during the first two months of life, although further studies showed that behavioural modification techniques were not always effective for children with severe sleep problems. They can also increase the use of time-out as an alternative to physical punishment. Temperament-based anticipatory guidance (involving physicians in discussions about the child's temperament as a way of imparting an understanding about a child's individuality to the parent and promoting better interaction between them), appears to be highly acceptable to parents but there is limited evidence concerning its role in improving outcomes. Further research is needed about the effectiveness of anticipatory guidance, and on its potential role in preventing mental health problems in children.

Care is needed with the amount of information presented to parents at one visit. Olson et al (2008) cite research findings indicating that the more topics presented to parents the poorer their post-visit recall.

Breastfeeding - Breastfeeding is well recognised for its short-term benefits for infants. More recent evidence indicates long-term benefits of breastfeeding for infants and toddlers (Fewtrell 2004; WHO 2007). These long-term protective effects appear to be related to the duration and type of breastfeeding (Riordan 2005). The Ministry of Health (2008b) *Food and Nutrition Guidelines for Healthy Infants and Toddlers* recommends exclusive breastfeeding until the infant is around six months of age. Exclusive breastfeeding means that only breast milk, from the breast or expressed, and prescribed medicines have been given from birth.

Barlow et al (2008) conclude the evidence supports the use of on-going consistent sensitive expert feeding advice about infant positioning, and the provision of information about the benefits of breastfeeding, and colostrum. Support should be culturally appropriate. Barlow also notes that written materials as a stand-alone intervention are not supported by the evidence.

Smoking cessation and smokefree environments. Stopping smoking confers immediate health benefits on those who already have smoking related diseases and future health benefits on all smokers. Helping people who smoke to stop is a leading national health goal. The Ministry of Health's (2007c) *New Zealand Smoking Cessation Guidelines* notes that when pregnant women stop smoking, there are benefits to both mother and child. Cessation efforts are to be encouraged in all women of child-bearing age who smoke and at any time throughout a pregnancy, from as early in the pregnancy as possible and into the post-partum period. To reduce the risk of SUDI, all infants need a smokefree environment (Baker 2011, Mitchell and Blair 2012). There is modest evidence for the effectiveness of intensive support in encouraging cessation.

Barlow et al (2008) recommends the emphasis should be on both mothers and fathers (and carers) quitting, and the evidence supports the provision of smoking cessation programmes in all maternity care settings. A partner's smoking status is a key determinant of a woman's smoking during pregnancy and presents a health risk to infants post-birth. Partners should be offered smoking cessation programmes.

Barlow concludes there is some evidence to support interventions that have a behavioural focus; are geared at changing patient's beliefs; address stress management; and that offer a combination of behavioural training, rewards and social support. There is evidence to support the integration of motivational interviewing into smoking reduction/cessation plans.

SUDI⁹. The last 20 years have seen the dramatic reduction in the toll from SUDI in New Zealand from 200 to 60 deaths per annum (Baker 2011). However, the ongoing burden of this problem falls disproportionately in the Māori community and amongst families living in deprived circumstances. There are a number of modifiable risk factors for SUDI which have been identified, e.g. prone sleeping position and unsafe sleeping environment. A range of evidence-based advice for parents has been developed, together with national and regional strategies (Child and Youth Mortality Review Committee, 2008).

Baker (2011) advocates that families must have clear explanations and be supported in having a plan for sleeping arrangements tailored to their situation and infant needs which aims to minimise risks in the sleeping environment. To reduce risk, it is important that all infants have a smokefree place where they can sleep on their back, on a firm surface, with their faces clear in an arrangement where they cannot be trapped and nothing can accidentally move to cover their face or flex their neck.

Mitchell and Blair (2012) note there has been resistance about promoting advice not to sleep with baby in the same bed. Some groups have actively encouraged bed sharing to encourage and maintain breastfeeding. Reflecting these debates, Rourke et al (2009) have clarified safe sleeping terminology. Room-sharing is protective against SUDI. In contrast bed-sharing has been shown to have a higher associated incidence of SUDI.

While advice on and observation for the risk factors is important, as Baker (2011) comments, low health literacy skills in some Māori and lower income households are likely to have a negative impact on the uptake of health messages and need to be recognised as communication techniques are developed. Baker (2011, p11) explains *'in some Māori families, where SUDI occur, the mothers and family as a whole may be living in "survival mode", contending with multiple stressors and marginalised from wider health and social support networks. In this setting, simple provision of information is a poor mechanism for change; efforts are needed to support engagement with innovative and culturally appropriate behaviour modification approaches as well as addressing the determinants of deprivation'*.

Safety and prevention of injury. Injuries are among the leading causes of morbidity and mortality in New Zealand children with children under five years of age carrying a particularly heavy burden (Craig et al 2010). For preschool age children, falls, unintentional poisoning, burns and scalds and injuries arising from 'inanimate forces' (e.g. being struck by objects or bumping into things) are all common causes of hospital admission, particularly for children aged one to three years. For mortality, suffocation and drowning are of particular concern (among non-transport injuries). Māori and Pacific children, boys and those living in more deprived, or rural areas are more vulnerable to non-transport injuries (Craig et al 2010).

⁹ Controversies associated with the classification of sudden infant death syndrome (SIDS) (eg. deaths in the presence of known risk factors such as cigarette smoke, prematurity, bed sharing or minor infections, where the contribution of the risk factor remains uncertain) have led more recently to the adoption of the term sudden unexpected death in infancy (SUDI), which encompasses both SIDS and these more grey scenarios (Fleming et al 2006).

Hall et al (2009) recommends that parents should be thinking about the next stage of development, and precautions are needed against: falls, toppling down stairs, scalds/burns, inhalation, sunburn, and overheating. Rourke (2009) focuses on transportation, water safety, choking, falls, and safe sleeping.

Ministry of Health (2010a) cite a Cochrane review that found home-safety education effective at increasing the proportion of families who have safe hot-water temperatures, functional smoke alarms, medications stored out of reach but no evidence of reduced rate of injuries.

The Bright Futures guidelines (Hagan et al 2008) note the clinical setting may not be suitable for carrying out the entire range of information, modelling, resources, and reinforcement that are required to change safety practices. For some families, the effectiveness of clinical interventions can be boosted if they are delivered in concert with community efforts that involve representatives from the community to overcome language and cultural differences.

Family violence. The Ministry of Health is currently reviewing and updating the Family Violence Intervention Guidelines Child and Partner Abuse (2002c). The 2002 guidelines are based on an extensive review of local and international protocols of care and consultation with health care providers, health professional bodies and family violence advocates. The Guidelines presents a six-step model for identifying and responding to family violence within health care settings. The Ministry supports asking women about family violence when they present for routine health care. It is expected that the evidence of the review of Family Violence Guidelines will inform how family violence is addressed in the six week check.

Barlow et al's (2008) review of effective intervention antenatally and in the early years highlighted that findings suggest assessment of family violence using one to three questions is as reliable as more complex measures. However, there is no adequate evidence about the potential harm associated with the assessment process.

A systematic review of interventions in primary health care settings, designed to prevent and treat violence against women, identified four types of intervention for abused women: shelters, post-shelter advocacy counselling, personal and vocational counselling and prenatal counselling (Barlow et al 2008). With the exception of a single RCT that showed that women who had spent at least one night in a shelter reported a decreased rate of re-abuse and improved quality of life during the subsequent two years, there is insufficient rigorous evidence concerning the effectiveness of any other intervention in reducing women's exposure to violence.

Child abuse. One of the most frequent causes of serious morbidity and mortality from trauma in infants is head injury resulting from child abuse (Deyo et al 2009, Dias et al, 2005). Shaken Baby Syndrome (SBS) is vigorous manual shaking of an infant with or without impact resulting in head injury. Rourke et al (2009) notes that excessive crying can be caused by behavioural or physical factors or be within the upper limit of the normal spectrum. Evaluation of these etiologic factors and of the burden for parents is essential and raises awareness of the potential for SBS. Proper swaddling of the infant for the first six months of life can promote longer sleep periods but could be associated with adverse events (hyperthermia, SIDS, or development of hip dysplasia) if misapplied. A swaddled infant must always be placed in a supine position, with free movement of hips and legs and the head uncovered.

Dias et al (2005) conclude from their research that a coordinated, hospital-based, parent education program, targeting parents of all newborn infants, can reduce significantly the incidence of abusive head injuries among infants and children under 36 months of age. Deyo et al (2008) also concluded that postpartum SBS prevention education should continue and providers need to be diligent to incorporate relevant prevention messages.

In 2012, Child Youth and Family launched the Never Shake a Baby Programme. The programme has several elements, including face-to-face conversations, reading material, and a DVD featuring Kiwi families sharing their stories about how SBS has affected their lives. It also includes expert advice about how and why it occurs. Along with learning about the dangers of shaking a baby, parents are taught strategies for coping with a crying baby.

Maternal health promotion and well being

Postnatal depression. The New Zealand Guidelines Group (2008) review of evidence highlights that pregnancy and childbirth are critical times of psychological adjustment for women and are often accompanied by sleep disturbance, tiredness, loss of libido and anxious thoughts about the infant. In this context some changes in mental state and functioning can be regarded as a normal part of the process. However, these significant and stressful life events may increase the risk of a new mental disorder or precipitate relapse of a pre-existing disorder, particularly in women with other known risk factors.

Bernard-Bonnin's (2004) review of evidence showed postpartum depression occurs in approximately 15% of women¹⁰, and often goes unrecognised. When it is recognised, there is often a long lapse of time between referral and psychiatric evaluation and treatment because of the lack of resources. The infant of a depressed mother is at risk for developing insecure attachment, negative affect and dysregulated attention and arousal.

The New Zealand Guidelines Group (2008) recommends the use of the verbal two to three question screening tool for depression as part of routine assessment at the six week assessment. Barlow et al (2008) highlights the use of simple questions to identify women with ante/postnatal depression has low predictive validity compared to screening tools like the Edinburgh Postnatal Depression Scale (EPDS). However, the use of a verbal two to three question tool appears to be more acceptable to women.

Barlow's review found no effective interventions to prevent postnatal depression in low risk populations. The New Zealand Guidelines Group found the evidence relating to specific interventions for depression in women in the antenatal and postnatal period to be very limited, and recommended practice be guided largely by patient preference and by the practitioner's clinical experience.

¹⁰ <http://www.thelowdown.co.nz/assets/FactSheets/Fact-Sheet-13-Depression-during-and-after-pregnancy.pdf> accessed 25 August 2012.

3.7 Duration

Across jurisdictions and provider types, the duration of the six week check ranges from 30 to 60 minutes depending on the content.

Halfon et al's (2011) research in the US showed there is a positive relationship between the visit length and parent reports of family-centred care and satisfaction. Paediatricians who spend more time in visits are likely to be addressing additional content. Parents may perceive they are getting more family-centred care when they spend more time with the provider. As visit length increases so do the number of topics that can be covered. Halfon et al (2011 p662) suggest that traditional topics that have been part of anticipatory guidance for decades are more likely to be addressed first, whereas topics added more recently are less likely to get mentioned.

3.8 Practitioner type and competency

The literature did not identify which practitioner is best placed to undertake the six week check. Review across jurisdictions highlights that a range of providers is completing the checks including GPs, paediatricians, and MCH nurses (although they are not undertaking a clinical assessment of babies' hearts or eyes). In the latter, it appears that GPs are undertaking a six week check predominantly focused on the physical assessment of the baby.

In determining the practitioner who should deliver the six week check, focus must return to what needs to be done and how it should be done, which will then offer a more evidenced-informed approach to 'who should do it' (Cowley 2009). As indicated, the six week check seeks to support and promote the long-term healthy development of children and their families, as such it has a number of important and inter-related components:

- assessment of parent-infant bond and development of baby
- parenting and health promotion/ anticipatory guidance
- maternal mental health and wellbeing (postnatal depression)
- physical examination of the baby including cardiac and hip assessment and red reflex check, and growth.

The six week check needs to be placed within a universal Well Child programme with the explicit focus of identifying the specific needs for the family that may require short or long-term interventions. As Cowley (2009) highlights, to effectively undertake a needs assessment of risks, strengths and protective factors requires a strength-based approach and a positive partnership-based relationship with the family. As noted in section 3.6.3, the evidence on the interventions arising from the six week check is still developing – being more evidenced-informed than based.

In identifying 'who' the following questions need to be answered:

- Who has the skills and competencies to undertake the assessments including clinically-based heart and eye examinations, and Well Child assessments?
- When seeking to reduce inequities which practitioners have the skills and abilities to deliver the interventions?

- Who is best placed to deliver these interventions based on their client base and contact with the target of interventions?

These questions reinforce the need for a multi-disciplinary approach within a Well Child programme. The focus is not on 'one' type of practitioner delivering all services but on a range of providers offering services that can reach, identify and best meet families and babies' needs focusing on life course pathways and services. GPs have specific competencies to undertake the physical examination of the baby, based on their vocational training, and families' need for lifelong access to primary health care services. In contrast, the Well Child nurse is likely to have greater competence in the Well Child specialisms and interventions which are critical, given the importance of parent-infant bond in long-term health and wellbeing. Hall and Elliman (2007) suggest that midwives in the UK, if trained to undertake the examination of the newborn, may be well placed to ensure a timely eight week check. The later reflects immunisation is undertaken at eight weeks in the UK, thus the examination of the baby can be delayed to 11 weeks. A UK international expert also reflected that three studies¹¹ indicate that midwives are as competent as GPs to undertake the baby checks, and tend to be preferred by mothers as they spend more time talking about feeding and sleeping.

As evident from the UK, the workforce delivering services during pregnancy and the first years of life need to be a multi-skilled team involving a range of practitioners across General Practice, maternity services and Well Child services. The team are required to have up to date knowledge and skills and competencies to work in partnership with children, mothers, and families to deliver the core elements of the programme and to work across service boundaries. The key to success is the shared understanding by parents and providers of the roles and responsibilities and potential contribution of the different practitioners and organisations (Department for Children, Schools and Families 2009). In the UK, the HCP workforce is:

- GP and primary care team who provide child health surveillance, health protection, and clinical care.
- The Health Visitor who is responsible for coordinating the HCP to a defined population. The leadership model is one of distributed responsibility whereby everyone has an equally important role to play in delivering component parts of the HCP.

In this context, the delivery of the six week check is determined by how the check sits in the wider programme, the agreed role and the skills and competencies required to undertake the assessment, the ability to refer or take appropriate action, and to ensure ongoing support and interventions identified from the checks. As an international expert emphasised, it is important not to think of practitioners doing one-off checks. Checks should be completed in the context of the ongoing relationship with families and children. The focus therefore is on systems of care seeking to detect issues and then having referral options and follow-up. It is what happens after the event that is important. As Blair (2001) notes in the context of a multi-disciplinary approach, there is a need for clear lines of responsibility for quality and delivery for the programme as whole.

¹¹ Unable to source

3.9 Outputs and outcomes sought

In considering best practice for the six week check in New Zealand focus needs to be placed on the outputs and outcomes being sought from this health review, in the wider context of the WCTO programme. Outputs being sought are the enrolment of all babies in the WCTO programme, the National Immunisation Register (NIR) and with a primary health care provider, identification of health or developmental concerns, a care plan and appropriate referral/ intervention. Outcomes being sought relate to breastfeeding, parent – infant attachment, maternal mental health, SUDI, injury prevention, parental connectedness, immunisations, smoking cessation and smoke free environments, and strengthened families.

The Victorian Department of Education and Early Childhood Development (2009) developed a model of outcomes and indicators. The Office for Children and Early Childhood Development (Australia) reviewed the evidence about the factors that make a real difference to children and young people and identified 35 aspects of child health and wellbeing, learning and development and safety that are essential to children's future.

Table 3 identifies the outcomes, and the measurable indicators associated with each of the topics covered by the revised Maternal Child Health (MCH) Service Key Ages and Stages activity framework. The Department of Education and Early Childhood Development (2009) note that the MCH Service may play a key role, or a supportive role, in improving the identified outcomes for children and their families. From a New Zealand perspective, any outcomes frame developed needs to be placed within a programme logic for the WCTO programme as a whole, and include the monitoring of health inequities across the outcomes.

Table 3: Child outcomes and indicators for the MCH (Victoria, Australia)

Topic	Outcome	Indicator
SIDS Safe sleeping	Optimal antenatal and infant development Parent promotion of child health and development	Sudden Infant Death Syndrome (SIDS) rate for infants Proportion of infants put on their back to sleep from birth
Smoking	Optimal antenatal and infant development Healthy adult lifestyle	Proportion of children exposed to tobacco while in utero Proportion of women who used illicit drugs during pregnancy Proportion of children and young people exposed to tobacco smoke in the home
Immunisation	Free from preventable disease	Proportion of children who are fully vaccinated
Breastfeeding/solids	Adequate nutrition	Proportion of infants breastfed Proportion of children and young people who eat the minimum recommended serves of fruit and vegetable every day
Postnatal depression/ sleep intervention	Good parental mental health	Proportion of mothers with postnatal depression Proportion of children and young people who have parents with mental health difficulties
Injury prevention	Safe from injury and harm	Age specific death rates from injury and poisoning Age specific hospitalisation rates from injury and poisoning
Family violence	Free from child exposure to conflict or family violence	Proportion of mothers exposed to partner violence Proportion of family violence incidents witnessed by children and young people
Growth	Healthy weight	Proportion of children and young people who are overweight and obese
Oral health	Healthy weight and gums	Proportion of children and young people who brush their teeth twice a day
Literacy	Parent promotion of child health and development	Proportion of children who are read to by a family member everyday
Vision	Early identification of and attention to child health needs	Proportion of parents concerned about their child's vision
Physical assessment	Early identification of and attention to child health needs	Proportion of infants receiving a MCH Services home consultation Proportion of infants ages 0-1 month enrolled at MCH Services from birth notifications Hospital admissions for gastroenteritis in children under one year of age

Source: Department of Education and Early Childhood Development (2009)

Summary: Best Practice Well Baby 4 – 6 Week Checks

- The New Zealand WCTO programme is underpinned by evidence demonstrating the impact of early life experiences and environments on future development and achievement of children, and the value of early intervention to achieve positive health and wellbeing outcomes.
- Given the ongoing impact of acute infectious diseases for Māori and Pacific children in New Zealand, the WCTO programme must ensure a focus on both prevention and health promotion, and the acute health issues.
- Consideration is needed on the cultural assumptions underpinning the New Zealand WCTO programme, and the implications for addressing existing health and wellbeing inequities for Māori and Pacific whānau.
- A number of consistent principles underpin Well Child programmes: a partnership approach with parents, competency of providers, a multi-disciplinary approach, family-centred, promoting health and preventing illness, ensuring access and availability of service to all children, seeking to reduce inequities, and continuously improving and adding value. These principles are implied but not explicit in the New Zealand WCTO programme.
- The postpartum period is a critical time for a woman, her newborn and her family. The rationale for the six week review is underpinned by:
 - The evidence that the quality of parent-infant relationship is positively correlated to the development and wellbeing outcomes of both the parent and infant.
 - Health promotion to seek to address wider psychosocial factors impacting on the mother, baby and family/ whānau's short and long-term health and wellbeing.
 - A physical examination of the baby around six weeks will result in a smaller but significant yield of abnormalities in babies that will require appropriate intervention.
- The literature review did not reveal a definitive, evidence-based best practice Well Child package when babies are six weeks proven to contribute to their positive long-term health and wellbeing. However, there is consistency across jurisdictions in the content of the health review at six weeks: parent-infant bond and development of baby; parenting and health promotion/ anticipatory guidance; maternal mental health and family wellbeing; and physical examination of the baby.
- Review of the literature indicates the content of the six week check is evidence-informed. More research is needed to further strengthen the evidence base, particularly in the New Zealand context and to ensure effectiveness of domains for high-needs Māori, Pacific and other families.
- A multi-disciplinary family partnership approach is needed for the delivery of the New Zealand WCTO programme. The delivery of the six week check is determined by how the check sits in the wider programme, the agreed role, skills and competencies required to undertake the assessment, the ability to refer and to take appropriate action, and to ensure ongoing support and interventions identified from the checks across the life course pathway.
- In New Zealand, agreement is required on the outputs and outcomes being sought from the six week review linked to a quality improvement framework for the WCTO programme:
 - Suggested outputs: enrolment of all babies in the WCTO programme and with a primary health care provider; identification of families/ whānau health or developmental concerns, an agreed care plan and their appropriate referral/ intervention.
 - Suggested outcomes: increase in breastfeeding, strengthen parent – infant attachment, maternal mental health, reduction in SUDI, reduction in injury prevention, parental connectedness, increased immunisations, increase in smoking cessation and smokefree environments, reduction of health inequities.

4. Parental Expectations and Experiences

4.1 Introduction

“Parents want their children to be healthy, happy and eventually self-supporting, but the perceptions of parents, children and professionals about what health and happiness mean do not always coincide”. (Hall et al 2009 p1)

This section explores the reality of being a parent in New Zealand and offers their perceptions of the WCTO programme. Parents’ expectations and experiences of the different checks delivered around six weeks are presented with a view to identifying how the current system could be improved to better meet parents’ needs. The findings presented draw from the focus groups with Māori, Pacific and European parents living in Canterbury, Counties Manukau and Taranaki DHB regions and from wider research and literature.

More specifically, this section addresses the following review question:

- What are the experiences and expectations of parents from the different checks delivered around six weeks?
 - How can the current system be changed to better meet their needs?

Note: The findings presented below are reflective of parents with multiple children who are engaged in the WCTO programme.

4.2 Parental realities and views of WCTO Programme

4.2.1 Being a parent in New Zealand

Parents, like New Zealand society, are a diverse and dynamic group. Parental expectations and needs from the WCTO programme are influenced by a number of variables including, but not limited to, parent age, number of children, education, income level, location, cultural and religious beliefs, parental mental health, family/whānau relationships and environment. **Parents’ needs are therefore not static but evolve** as the baby and family/ whānau grow, parents’ knowledge and confidence wax and wane as new challenges and situations arise through their lives and the lives of their family/ whānau and community, and wider environment changes.

For first-time mothers having a baby is a life-changing event. For some the arrival of the baby is wholeheartedly embraced, and for others the pressures of caring for a new baby can become a burden (Litmus 2011, Eronen et al 2007). During these early weeks, there can be much joy and love, and parents tend to have a strong drive to do the ‘right things for baby’. However, for parents there is also the tiredness that accompanies a new baby and much uncertainty and stress. While, some first-time parents are knowledgeable, confident and well supported within their family/ whānau, others lack knowledge, family support and/ or awareness of services available. First-time parents note that regardless of how well prepared they feel before the arrival of their new baby, nothing really prepares them for the actual experience of caring for the baby.

“Information received after birth. I didn’t know much about breastfeeding when I had [name], my midwife told me everything. I didn’t know anything before I gave birth.” (Parent, Christchurch)

Parents with multiple children tend to have more confidence in their parenting skills. However, with new children come new challenges. For these parents a new baby is also a period of significant change for the family/ whānau that takes adjustment and brings with it both joy, effort and stress. For some parents, this change is especially marked if the baby is ‘different’ from their other children (e.g. less settled or has special needs).

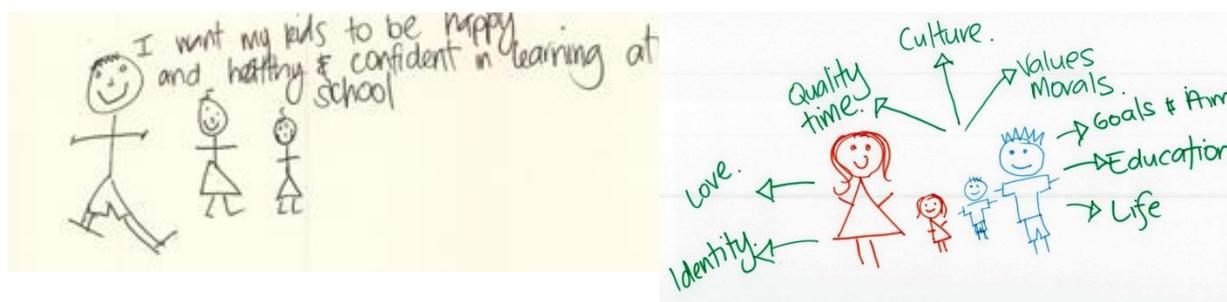
“My first two were the opposite. My first boy was sweet – no problems, but my second one was like I was having my first child again.” (Parent, Taranaki)

“My second one was real bad for asthma, he was a hard child, I hated him, hated my second one. My first one just slept.” (Parent, Taranaki)

“Even though you feel guilty in wanting and needing support when you’ve had four kids, you still want it. There’s the element of our minds are focussed on other children, that’s setting aside time for me to focus on my baby.” (Parent, Christchurch)

All parents interviewed have positive hopes and dreams for their new baby of being happy, healthy, to learn, earn a decent living at something they enjoy, to remain close and contribute to their family/ whānau/ community and have children of their own. These dreams and aspirations are consistent across all parents interviewed.

“I want them happy, and to succeed in what they want, to be well and safe and have strong whānau connections. I want them to be well in a monetary way, as well as their wellbeing.” (Parents, Taranaki)



Parenting is hard and comes with many challenges and much advice. Many parents feel judged against an idealised parent construct, and are offered advice that does not reflect their reality. Parents feel particularly vulnerable and emotional with the arrival of their baby, as a result even innocuous comments can be misconstrued.

“You see the Bill Cosby show with him and his family, he is so good with his kids and you see experts saying this is how you need to raise your children, but they don’t know your family. An example is how my friend leaves her kids in the car, but I let mine run around. It is two different things and different ways of parenting. But we know what is right for our children and what works for them. There are too many different opinions and it is difficult.” (Parent, Taranaki)

Parents interviewed are seeking reassurance they are doing the ‘right things’ for their baby and other children. To ensure this, parents are seeking to receive the most current and best practice information about caring for their baby and children.

[Challenges that we face as parents?] “Wondering if you are doing everything possible.” (Parent, Christchurch)

4.2.2 Parents’ perception of the WCTO programme role

While there is alignment between parents’ long term family/ whānau aspirations and the goals of the WCTO programme, few parents make this explicit connection.

Through the informed consent process, parents should be making the connection between their long-term hopes for their children and the goals of the WCTO programme. Making this connection would heighten the sense of relevance and value of the WCTO programme.

The WCTO programme is seen as beneficial in ensuring their baby is ‘healthy and normal’. However, as the child grows the service appears to become less relevant, particularly for Pākehā and some Māori parents with multiple children. As a result, some Pākehā parents with multiple children who are well and thriving question the value of the WCTO programme for their families¹²; although they acknowledge the potential benefit for families ‘who are struggling or have problems’. The exact reasons for the declining relevance of the WCTO programme as the child grows are unknown. However, it may be due to the decrease in contact when the baby turns one, wider support networks increasing (e.g. early education services) or uncertainty about the reasons why a healthy child needs the service. A few parents questioned the number and frequency of core contacts, noting a lack of contacts between one and four years when there is significant growth and different parenting challenges. This is compounded by wider environmental changes for parents including housing, transport and return to work.

In contrast, Pacific parents with multiple children receiving WCTO services continue to gain a sense of reassurance from the WCTO programme across all contacts.

“I think there are a lot of services in the first six months. But then until four years, there’s nothing there.” (Parent, Christchurch)

“They [WCTO provider] are a good source of support for those who need them. I know a lot of mums who have written the [WCTO Provider] off.” (Parent, Christchurch)

Parents want reassurance that their children are healthy and normal. Health checks within the WCTO programme offer this reassurance by identifying issues and ensuring appropriate services and support is received.

¹² This reflects the findings of Radecki et al (2012) where parents were unsure about the need for Well Child visits when their children were in good health.

Parenting is hard therefore the contact with WCTO providers is appreciated. If a strong bond is formed with the WCTO provider/s then parents tend to take on guidance and support offered to inform their decision-making. If this bond does not exist, information about the family/ whānau may be withheld, and advice given may be rejected.

“No matter how many kids you have you still worry something is wrong”. (Parent, Taranaki)

“Peace of mind. One less thing you have to worry about. Knowing that what you are doing is right.” (Parent, Christchurch)

“Sometimes it’s not the physical help you need during this time, you need checks. My daughter had a speech problem but I didn’t think it was a problem, but it wasn’t picked up until later.” (Parent, Christchurch)

Parents interviewed acknowledge that there are more services available to help them. However, the changes to the WCTO programme and wider services are creating confusion. **Parents are not sure what services they are entitled to and when they will receive services.** In some cases, WCTO services received do not appear to be tailored to family/ whānau needs but are more about working through a pre-determined checklist.

“There’s so many changes made in the past seven years. It’s difficult to keep track.” (Parent, Christchurch)

“I think there are a lot of people offering services out there and more. When I moved here my neighbour was using all these people, but I had never heard of it all. So it would be good to help mothers know what services are there to help them.” (Parent, Taranaki)

“It would be good to have a timeframe that you understood. You never know what’s happening until someone calls.” (Parent, Christchurch)

For some first-time parents, there can be a thirst for advice and support. In contrast, other parents may not want to engage with services due to not appreciating how the services may benefit them and their family/ whānau or a fear of being negatively judged. For some young Māori parents there is a distrust and dislike of crown agencies. Consequently, Tamariki Ora providers play an invaluable role connecting with these families/ whānau. Feedback from ‘older’ Māori mothers suggests that WCTO services are not being promoted or delivered in ways that successfully engage younger Māori parents.

“Mind-set that needs to be broken with a lot of young mums. Raising the profile of looking after the families. Young ones get whakama afraid they are going to be judged – majority of them are excellent mums and dads. ‘We don’t need them we can do it ourselves. They are just going to tell us what to do’.” (Parent, Counties Manukau)

“Privacy – they wouldn’t let anyone in. Didn’t like anyone coming into her home. Five year old daughter in school hadn’t been immunised. Although there are more health providers – it’s a mentality of more we don’t need them we can do it ourselves (young mums).” (Parent, Counties Manukau)

The implications of lower levels of literacy and health literacy for young Māori and Pacific parents and other parents in relation to accessing and maximising positive benefits from the WCTO programme need to be considered¹³. Parents may have had little previous experience with babies, and little engagement with WCTO services. Consequently, there is little experiential learning about what to expect from the service or the tests or checks being undertaken. Consequently, some Māori parents highlighted that providers are not communicating clearly about their service and the differing tests being undertaken which creates very high levels of anxiety, especially if their baby is perceived to be hurt (e.g. the heel prick, hip checks). For some parents, this lack of communication can result in very adverse long-term consequences for their families/ whānau.

“My baby was four months and they had to do a lumbar puncture in her. I smacked out the paediatrician, because I didn’t like them doing that to her. Because I knocked them out I wasn’t allowed to see my baby for a few months, I had to apologise and say how I was feeling at the time - seeing my baby in that position.” (Parent, Taranaki)

“I wanted to hit the nurse just when they did the heel prick... My first baby was the first one that I ever had to hold. So even though they are professionals I didn’t know what they were doing, they had to explain it. But with my second daughter I knew that was how it was meant to be done, so I shut my mouth.” (Parent, Taranaki)

4.3 Parental expectations when baby is 4 – 6 weeks

Most Māori, Pacific and Pākehā parents interviewed expected their young babies to have health checks by a range of health professionals to identify whether they are normal and healthy. Parents also expect to receive a range of services offering support and advice to deal with the stressors that can come with a newborn baby, particularly in relation to feeding and sleeping.

Parents interviewed expect that services will be received from their LMC and GP (as these relationships tend to be established), and from Plunket (due to their strong historical presence in New Zealand). As discussed in section 4.4.2, Māori and Pacific parents are not aware they have a choice of WCTO provider. If aware of the choice, they either did not know all providers or were restricted by the proximity of the provider.

Parents expect there will be a mix of service providers as each provider offers something different to the family in ensuring the health and wellbeing of the baby and the family/ whānau at this time. Parents interviewed perceive LMCs are focused on the mother, WCTO providers are focused on the child and connecting them to community-based services and support networks, and GPs are for when the family/ whānau is sick or vaccines are due. Having a range of services offers a sense of reassurance that nothing will be overlooked.

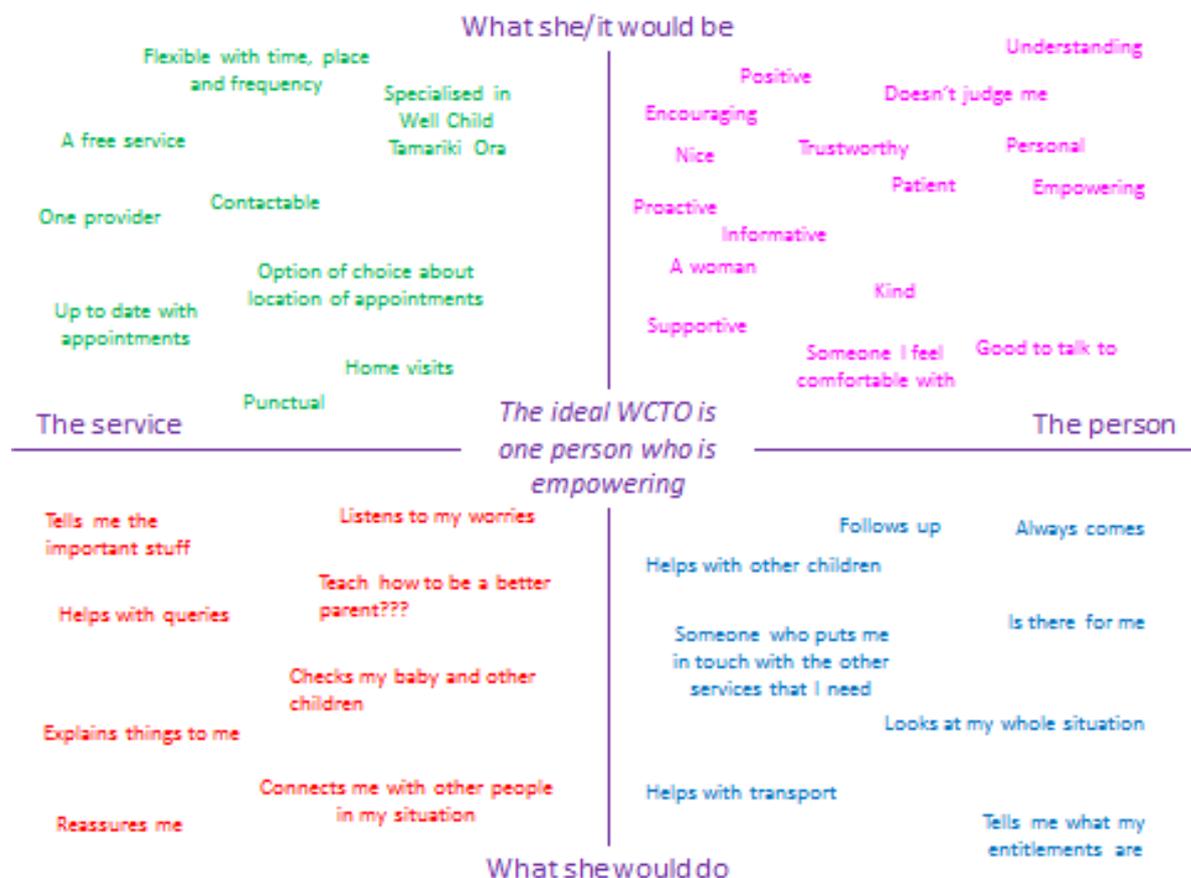
¹³ 30% Pasifika and 25% of Māori students aged 15 years do not show proficiency in reading above Level 1. A lower proportion of Māori and Pasifika students achieved at the highest levels of reading proficiency, and they are over-represented at the lower levels when compared with Pākehā-European and Asian students (Telford and Caygill 2007). Māori aged 19-24 years of age have the poorest health literacy compared to the rest of the population (Ministry of Health 2010g).

Ideally, parents expect that services their family/ whānau receive from all health providers when their baby is 4 - 6 weeks old will:

- **Be relationship-based and offer continuity of care** through seeing the same health professional at each visit. The ability to relate with the provider underpins parents' satisfaction with the service received. Having a trusted relationship means that parents are more comfortable to open up, discuss issues freely, and remain connected with the service.
 - Research has shown that a trusting relationship and good communication between parents and their child's provider is a key component of optimal well-child care (Halfon et al 2011, Radecki 2012).
- **Focus on the baby within the context of the family/ whānau.**
- **Include time to listen and talk** about the family's concerns/ needs.
 - Radecki et al (2012) found parents want the opportunity to discuss their priorities when their child is well. Content in a Well Child visit is therefore of most interest when it reflects parents' personal concerns.
- **Empower parents to be active participants through offering choice and involvement in decision-making**, and respecting parents' knowledge of their baby, children and family. Advice given is flexible and not 'rule-bound'.
 - Radecki et al (2012) noted the importance of respect for parental expertise in effective provider–parent–child relationships.
 - Eronen et al (2010) concludes that empowering parents to make their own decisions about infant care is imperative for Well Child nurses to support parents effectively.
- **Is culturally competent, authentic, and confidential.** For Māori and Pacific parents, a culturally appropriate approach was defined by the services they received from Tamariki Ora provider (either a Māori or Pacific Tamariki Ora provider). These services were described as holistic, whānau centred, focused on developing strong positive relationships and addressing family/ whānau/tamariki needs and other health and social needs. Parents felt comfortable, communications were clear, and this empowered parental decision-making.
- **Be knowledgeable and clinically expert** particularly in demonstrating that baby is growing and developing normally, and about feeding and sleeping.
 - International research supports that parents turn to Well Child nurses for professional information particularly if they have concerns about infant feeding or settling (Eronen et al 2010).
- **Connect the family to the wider community networks** and other support services.
- Will be **accessible** when needed by the family and home-based.
- **Offer reassurance.**
 - Radecki et al's (2012) research with parents also highlighted the importance of reassurance during Well Child visits. Parents are seeking feedback that their child was growing and developing normally, particularly for parents of toddlers and infants. Reassurance is also sought that they are doing a good job at parenting, especially for first-time parents.
 - Eronen et al (2010) notes that parents expect to receive emotional support.

Figure 1 summarises the ideal WCTO provider, and is consistent with the ideal LMC (Litmus 2011).

Figure 1: The ideal WCTO provider



Parents interviewed assume that health providers offering services at this time are talking and sharing information to ensure their baby and family receive all their entitlements, care and support needs. This finding reflects other qualitative research that highlighted people assume that health providers are sharing their health information to ensure they receive the best care (Litmus 2012h).

Not all parents are seeking this depth of relationship. Some parents noted a preference for providers to check the baby is 'okay' and to leave. The latter may be due to a variety of reasons from the parents not relating to the WCTO provider, just wanting the baby checks and no other interaction, or trying to hide issues.

"Mine just came and did her job and then left, she didn't do much. She just saw the baby, did her thing and then left, we were happy with that." (Parent, Taranaki)

4.4 Parental experiences of services received

4.4.1 Range of services used

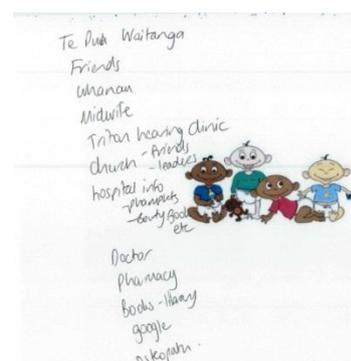
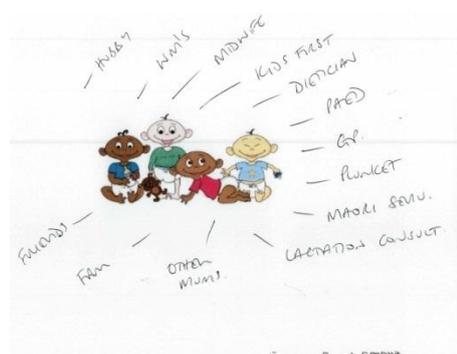
When their baby is around 4 - 6 weeks of age, parents draw on a range of formal and informal services to offer support and advice, and health and wellbeing services for their family and baby. The range of services reflects the family's needs at this time, their existing networks, awareness and ability to access services, and access to technology.

Family and friends with babies and young children are an important support network, enabling parents to draw on their 'expert' experience of having children. Parents find having the immediate access to Healthline and Plunket Line reassuring. However, some parents noted the advice given tended to be very 'rule bound' or simply told them to visit their GP.

"IRD, WINZ (financially), Plunket family centre, that was really good. I was having trouble with feeding and sleeping, you go for a day and they observe what you're doing, and they help you." (Parent, Christchurch)

"Google. That's the truth!" (Parent, Christchurch)

While family/ whānau, friends are important support networks, being part of an extended family is not a guarantee of appropriate support (Litmus 2011). LMC, GPs, and WCTO providers provide the foundation of formal services offering supporting, advice, reassurance and referrals at this time; thus ensuring families are connected to a range of services and support networks to foster the family/ whānau's health and wellbeing.



"I can't really fault the system at the moment because there is so much more available now than there was before." (Parent, Counties Manukau)

"Plunket Healthline is great, it's good you can talk any hour, to ask questions and find out if you should take them to the hospital, am I over-worrying?" (Parent, Christchurch)

For parents with multiple children who were interviewed, the service provider changes that occur when the baby is 4 – 6 weeks can cause anxiety. These parents are aware that around four weeks (or earlier) services from their LMC will decrease and then stop. For those parents with a positive relationship with their LMC, this can create a sense of loss and a keenness to be connected to other support and advice services going forward. Being connected to the WCTO provider before their LMC withdraws is therefore reassuring for parents in being aware of who they can turn to for ongoing support and help. Also reconnecting with GPs (or in some case connecting with primary care) ensures parents know where to go if their baby becomes sick.

“At six weeks, you think that a little fear comes in, the support and constant back-up is gone. I quite liked going to the doctor and getting checked again.” (Parent, Taranaki)

Given their differing roles, parents did not have an issue with seeing three providers, particularly as the LMC and WCTO provider were undertaking home visits. Parents like the reassurance that health checks are being repeated by differing health professionals as it ensures that nothing is being missed. When the baby is around 4 – 6 weeks, parents expect that their baby will be physically examined, they will receive advice and support about feeding and sleeping, and questions will be asked about family violence and postnatal depression¹⁴.

“When you’re on your fourth kid you’re used to it. It’s a good thing, you want your kid to be healthy and well looked after. I question everything they do – is it safe? What’s it for? etc.” (Parent, Christchurch)

“No, I like different opinions and it’s good to know they’re growing well and are healthy.” (Parent, Christchurch)

Health professionals who do not undertake these checks are seen by parents with multiple children as failing to meet their obligations to their family/ whānau, not doing their job properly and as unprofessional. The one parent who questioned the need to see three providers was being asked by the provider to visit their clinic, which was not convenient for a mother of a young baby and other children.

“[GP] He didn’t check the baby, weight etc. before vaccination. I felt a bit strange with my other child they were checked, made a big fuss of the baby, etc. It turns out that the [WCTO provider] and midwife are supposed to do that... I know the checks he was supposed to do, so I felt a bit weird. I didn’t think he was interested or taking his profession seriously. We changed doctors because of that.” (Parent, Christchurch)

An additional benefit for parents in having a mix of providers was there tended to be one provider with whom parents feel they have a ‘connection’ and can therefore discuss personal or difficult issues. Parent/ provider relationships varied from those who had a strong relationship with their LMC, WCTO provider and/or GP to those who did not. While parents perceive this as a benefit, from a systems and quality perspective, all providers should be offering a high quality service that ensure parents (regardless of background) can be empowered to receive the appropriate help and support (i.e. the ‘no-wrong door’ concept).

The connections made or reinforced when a baby is 4 – 6 weeks old can ensure the family/ whānau is linked into services that will support them long-term as their children and family/ whānau grow. The following diagrams present an overview of the formal services parents used for their children aged four to five years. Parent pathways demonstrate the importance of a life course perspective for the child. Drawing on the work of Kerber et al (2007), the life course path needs to be considered in the context of mother, infant and wider family/ whānau (refer Figure 2). In this context, the importance of families/ whānau being connected at a minimum to trusted and supportive primary health care and WCTO providers are critical.

¹⁴ International research supports that parents turn to Well Child nurses for professional information particularly if they have concerns about infant feeding or settling (Eronen et al 2010)

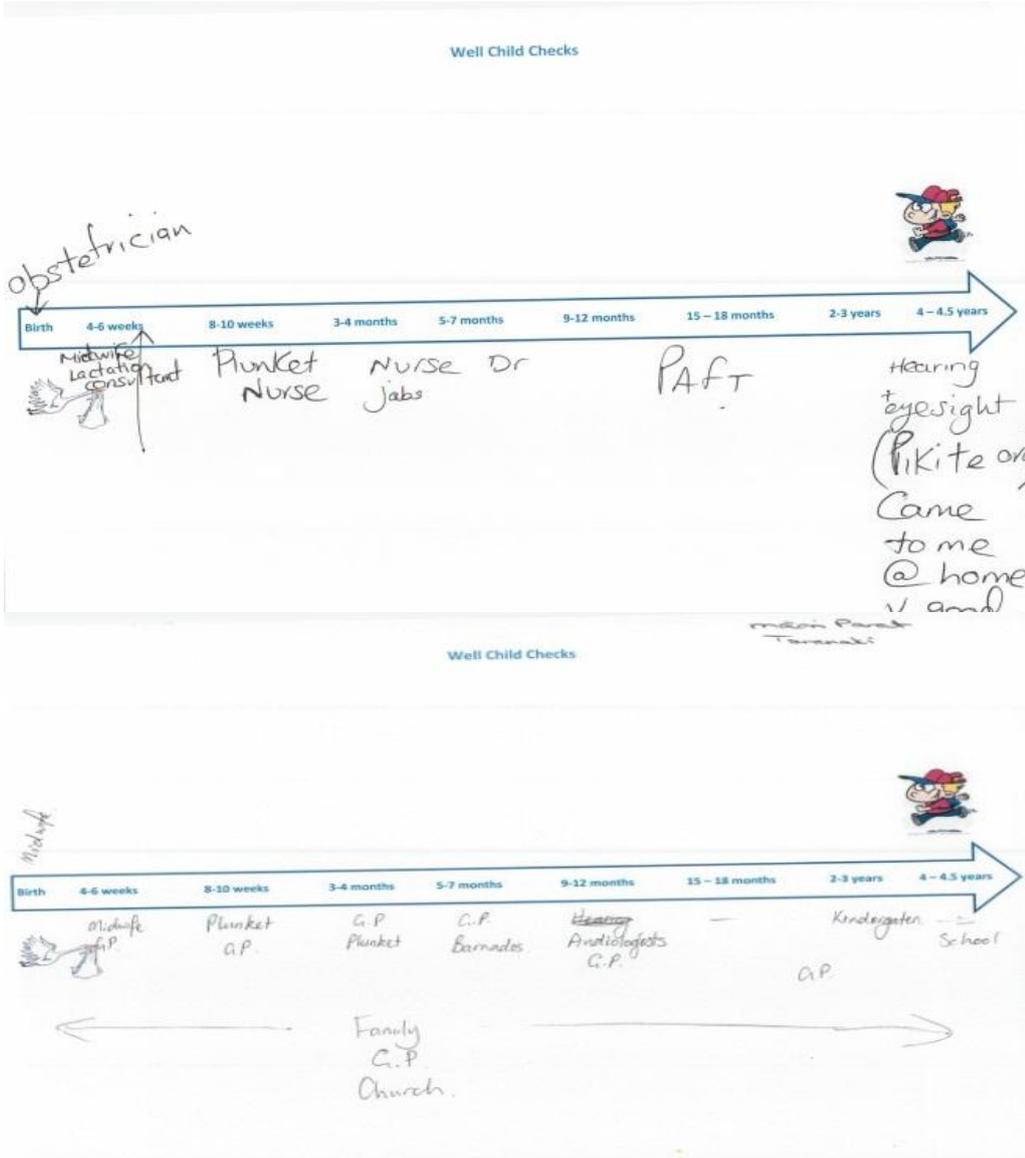
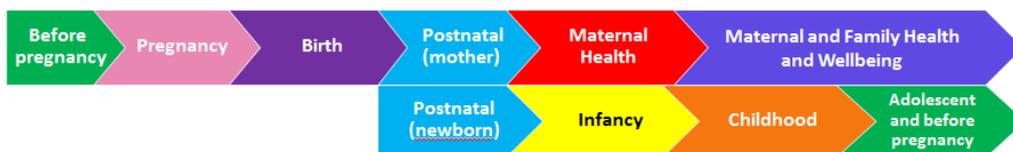


Figure 2: Life course pathways for mother, infant and families



Reference: Adapted from Kerber et al (2007)

Parents had a few specific criticisms that arose from having three providers offering support and advice, and health checks when their baby is aged 4 – 6 weeks:

- **Spacing of visits to avoid big gaps** between health professional visits. The potential for overlaps between the discharge visit of their LMC (around four weeks) and the core contact one WCTO visit (around four to five weeks). A few parents noted that the LMC and WCTO provider coming on the same day or close together meant they had longer gaps when no health professional visited.
- **Conflicting and/or inflexible advice** creating parental confusion and frustration, especially if they are seeking advice on breastfeeding and bottle feeding.

4.4.2 Parents experience of the differing services

Across the three provider groups, parents have a diverse range of service experience ranging from very positive to very negative. Consistent across providers, there are a number of common factors which, if arise, create parent dissatisfaction and reflect quality issues, specifically:

- Lack of continuity of health professional – parents appear to gain the most out of the interaction with providers when they have a continuous positive relationship. (Halfon et al 2011; Radecki 2012).
- Providers not arriving for agreed appointments, arriving very late or visiting with no agreed appointment, or being kept waiting if appointment is clinic-based.
- Not being able to access services when needed, or at a convenient time and place. Having to visit WCTO providers at a clinic was a turn off, particularly if kept waiting there for a significant length of time.
- Assuming parents with multiple children do not need support or require only a reduced service.
- Undertaking a 'tick-box' exercise based on completion of provider documentation, and not listening to or considering parents' needs.
- Communication issues including lack of information about tests or not listening to or responding to parents' concerns.

Parent experiences of LMC services around 4 - 6 weeks

Most mothers are very satisfied with the physical checks of their baby undertaken by LMCs. In 2011, the Maternity Consumer Survey (Ministry of Health, 2011) found that over three quarters of women (78%) are satisfied with the overall maternity care they receive. Satisfaction was consistently high amongst young mothers, and Māori and Pacific women. More than eight in ten mothers (86%) are satisfied with the care received at home following birth, with no differences in rating young mothers, and Māori and Pacific women. Nine in ten women (93%) were satisfied with the LMCs physical checks of their baby. Factor analysis shows that **LMCs' physical checks of baby are one of the main drivers of satisfaction with the overall care received by mothers during the home visits after birth**¹⁵.

¹⁵ 3235 women completed the survey representing a 41% response rate (Ministry of Health 2012b)

Findings from the focus groups with parents of multiple children also demonstrated the high level of satisfaction with their LMCs. Parents who are very satisfied with their LMCs noted their availability, support and reassurance, focus on needs defined by the mother, and in particular a strong intimate bond.

"My midwife was great. I'd call with a problem and she'd be there, checking her pulse. She'd stay for a couple of hours sitting with me. I was a nervous mum and she was great. A lot of support." (Parent, Christchurch)

"My midwives are my best friends. I had the same for all four and what was offered then is different to now, but I could call her anytime. I liked that. She gave me her private cellphone. Just checking things with her, she gave me lots of reassurance. It was good to have someone who knew me that well. You lose all dignity when you have a baby, you know." (Parent, Taranaki)

A few parents were dissatisfied with the service received from their LMC after their baby was born. These parents perceived the LMCs were **disinterested, not reliable in turning up for appointments, rushed and discharged them early**. This dissatisfaction may be due to the lack of LMCs following the Christchurch earthquake, or a perception that as an experienced mother, less help was required.

"I used the same midwife for the last two. Fantastic, came around once per week. This time though, I had to ring her and was disappointed. I had to follow her up. I had my first visit, and they didn't come back for two weeks. To be honest, I was disgusted. I had a personal relationship with her too, but I couldn't believe it. I think they thought it was because it was my third. I would have liked them to be a bit more involved, I wanted more regular visits, and I wanted her to be more flexible. I've just had the baby and I need her to be flexible. I have needs that need to be met. I was getting the message that they were too busy for me. They referred us to [WCTO Provider]. The midwife took a long time to refer me on to them too. With my other children the experience was much better." (Parent, Taranaki)

"I've hardly seen her. She just shows up and I don't know when she's coming. She came at 9pm at night. I was wanting to go to bed myself then. So it wasn't ideal... So yeah, I felt like she wasn't supportive, everyone else was a lot more helpful. She was the only one I could find because of the earthquakes and the baby-boom." (Parent, Christchurch)

Parents interviewed noted that their LMC tended to stop visiting around four weeks, although others received intensive visits to six weeks¹⁶. For parents the transition from their LMC to their WCTO provider meant an end of this intimate and very personalised service. Parents perceive their LMC is facilitating the transition to a WCTO provider, and no significant issues were noted bar sadness at ending this special relationship.

"She knew me well, intimately well, because she birthed my babies. From there, she hands me over to the [WCTO provider], or whichever group, and they know me but don't 'know' me. There's not that level of intimacy. But I like those steps. I like having someone you can call, and ask 'do I need to go to the doctor'. At first I'd called her every day." (Parent, Taranaki)

"I'm good with care from by midwife and handover to [WCTO provider], they made the appointment." (Parent, Christchurch)

¹⁶ Three quarters of women received at least five home visits from their LMC after birth – the minimum number required (Ministry of Health 2012b).

“My midwife was easy to get along with, it was sad the day she had to hand me over to [WCTO provider].” (Parent, Taranaki)

WCTO Providers

Choosing a WCTO provider

Parents have a choice of WCTO providers - Plunket or Tamariki Ora providers situated locally in Māori and Pacific health providers. Māori and Pacific parents in the focus groups used a mix of both providers.

Parents' selection of WCTO providers tends to be dependent on what information they are given about the different providers. **Some Māori and Pacific parents were not informed they had a choice of WCTO providers.** Others were aware of the choice and selected Plunket as it is a known and trusted organisation compared to a relatively unknown Māori and Pacific provider, or simply the Plunket clinics are closer in proximity to where they live. Some Pacific parents did not select suggested Tamariki Ora providers as they were perceived to offer inadequate services, and there were concerns about confidentiality. Others do not make an informed selection as their LMC or hospital based staff assume a preference for the more well known Plunket. Parents in Counties Manukau DHB (CMDHB) noted competition between Plunket and Tamariki Ora providers.

“When you leave hospital with discharge papers they give you a list and ask you to tick which Well Child provider you want – they come to your hospital bed. I chose Plunket, cause there's four offices. I don't even know where [Tamariki Ora provider] is – I'd have to come from Manurewa to Mangere – it's all about location, location, location.” (Parent, Counties Manukau)

“Plunket same experience – they never turned up. I tried ringing and left messages and no one got back to me. So I switched to [Tamariki Ora provider]. As soon as I switched the nurse came round and did my checks. Then I found three Plunket cards in my door saying that they had been trying to contact me just after I switched to [Tamariki Ora provider].” (Parent, Counties Manukau)

Pākehā parents tend to use Plunket; although a few Pākehā parents had opted for a Tamariki Ora provider. Pākehā parents opting for a Tamariki Ora provider recognised they offered a home-based visiting beyond the initial core contacts, and also they had received a very positive recommendation from friends and family/ whānau.

“I wasn't pleased with Plunket last time, so I wanted to give [Tamariki Ora provider] a try, I have heard good things about them every time”. (Parent, Taranaki)

Parent experiences of WCTO services around 4 - 6 weeks¹⁷

Parents perceptions of WCTO services are mixed ranging from very positive to very negative. The importance of WCTO services for first-time mothers in building knowledge and offering reassurance was reiterated by parents with multiple children in the focus groups. These parents particularly noted the **importance of the support networks and social connections** fostered by WCTO providers in their communities.

“I think it is needed, especially for your first, as everything is new and you have a lot of questions. You want to know you’re doing everything right. And if there are any concerns you have someone to contact.” (Parent, Christchurch)

“I found Plunket practical which was refreshing after antenatal classes. They’re aware of the community and what’s going on, programmes etc. They had Plunket groups to go to. Good at offering opportunities.” (Parent, Christchurch)

For both Māori, and Pākehā parents emphasis on completing documentation and abiding by the ‘rules’ resulted in **regimentation and disempowering engagement**. Pacific parents tended to be less critical of the service received, although a preference for Pacific providers with Pacific language skills was noted.

“Younger nurses for the younger mums more receptive and responsive than to the older nurses. Older ones very judgemental tut, tut, tut pointing the finger. Judging her and telling her off and she couldn’t do anything right. My daughter is likely to take kids down if it was a younger nurse.” (Parent, Counties Manukau)

“The WCTO nurse was old fashioned and it had to be done THIS way. I think I went through about three WCTO nurses until I found one I wanted. The first one got picky with the furniture I had in the house. She made me put up a guard on my sliding door. So I got really annoyed and called [WCTO provider] to change. Because I was a young mum she bombarded me with information.” (Parent, Christchurch)

“I think they’re doing a good job, all of those organisations. Maybe they just need to improve within themselves, like [Tamariki Ora provider]. It’s good for Pacific Island people, because a lot don’t speak English.” (Parent, Christchurch)

For some Māori parents, there was a **lack of trust and suspicion** of the motives underpinning the WCTO service.

“Feeling of being judged, condescending and patronising old style providers. Younger mums don’t like being told what to do. Made to feel like bad mum.” (Parent, Counties Manukau)

“Māori families no I wouldn’t be so dictatorial. Māori families would rather be autonomous. They would rather have the information themselves and be trusted to do something with the information. Tend to explain in more depth the implications of not immunising and discuss prevention of SUDI in more depth because of the risk of smoking and low breastfeeding rates. Māori families you have to convey information differently. You need to be able to empower them. This is the impact of Māori having been bossed around too long. They want to be able to take control.” (LMC)

¹⁷ Parents in the focus group found it difficult to differentiate at the level of core contacts and tended to reflect generically across the service.

Amongst Pākehā with multiple children the relevancy of the service for them was questioned. The WCTO service received was perceived by some consumers interviewed as **old-fashioned, inflexible in the advice offered and to some extent out of touch with parents' needs**. The perceived inflexibility was resulting in parents telling their WCTO nurse what they perceived she wanted to hear (i.e. they are still breastfeeding when the baby is receiving formula). Eronen et al's (2010) research demonstrates the importance of being respected as parent, have parenting skills validated and being supported to make their infant choices. Empowering parents to make their own decisions about infant care is imperative for WCTO nurses to support parents effectively. The WCTO nurse needs to build parents' capacity to make their own decisions through giving relevant information about care options and supporting parents in their decisions. This model of service was not evident to Pākehā parents in this research.

"I was lucky with my first baby. I'd heard from my sister that [WCTO provider] wasn't very useful. So I thought, I'd let the [WCTO] nurse come, listen to what she said, and if I don't agree with anything, just ignore it." (Parent, Christchurch)

"It seems like they have strict guidelines, they have to tell you certain things. I felt like they were limited with what they could say. For example, she said she couldn't tell me about formula they can't recommend different brands because it's all about breastfeeding. I lied to my [WCTO] nurse a couple of times, and said I was breastfeeding. I was worried if I told her otherwise, she'd go outside and call the services. She acted like a Nazi. It's just easier that way." (Parent, Christchurch)

Other Pākehā parents felt the **WCTO provider was not recognising or meeting their needs** due to the perception they were experienced mothers or making assumptions about the level of help needed. Even the parents who found the service useful questioned whether the WCTO service was really for them.

"They assumed that if you are white middle class you can cope – I could have been given respite. I was really disgusted – I had to wait till he was two until I found I could get a disability benefit.... I really felt quite ripped off – knowing that it was all there but I wasn't linked in. I've learnt now not to be afraid and ask for help." (Parent, Counties Manukau)

"Not being told about services that were available to me because they assumed that I could cope." (Parent, Counties Manukau)

"I've always found them quite good. I feel they're more aimed at lower socio-economic groups that is the feeling I'm getting. Is the baby safe? Is the room warm etc? Things I don't think are appropriate to me. I like that they weigh them. And they help with first-foods. And it's reassurance, knowing everything is ok". (Parent, Christchurch)

Tamariki Ora providers were seen as **offering a holistic and whānau centred service** based on developing strong positive relationships and addressing family/ whānau/ Tamariki Ora needs and other health and social needs. Many Tamariki Ora providers also offer GP services so the two services are strongly linked.

“They’re the health provider for Christchurch. They immunise your children in your home. They came and helped me with a weight issue, coming out of NICU¹⁸. Talk about groups they’re running, activities in your area. They came at six weeks. Parents’ groups, different sessions they were running – parenting, tantrums. All of the services together supported me and made sure the choices I made were informed. It really put my mind at rest with how [name] was growing.” (Parent, Christchurch)

“It was the whole family too. Not just the baby. They asked me how the rest of the family was doing. And non- judgemental. I opted to immunise later. She gave information and supported my decision. I found that was different from most other places.” (Parent, Christchurch)

Tamariki Ora providers offered **home-based visits beyond the initial core contact** which overcame barriers to access, and ensured access to a wide range of services.

“You felt cut off from the world. I was a bit more paranoid then. Maybe because I was stressed [Tamariki Ora provider] - they came all the way out to [location], I was impressed. It’s a personal service... Really personal and just took a genuine interest in our wellbeing.” (Parent, Christchurch)

“I don’t want to go to Plunket because I don’t want to go there [to their clinic], whereas [Tamariki Ora provider] comes to me. It’s hard when you have all these kids, and it’s difficult to have to go there [to the clinic].” (Parent, Counties Manukau)

“It made a difference having them come because I was a single mum and my daughter had colic and I didn’t know that and they were there and they helped me.” (Parent, Taranaki)

In terms of service delivery a number of quality issues were raised by parents including:

- **Appointments not being kept by providers**

“[WCTO nurse] - this time around she’s been a bit slack. I’ve maybe seen her three times and my daughter is 5 ½ months. Although I do go to the doctor if I’ve got any concerns.” (Parent, Christchurch)

“[WCTO provider] have mucked up appointments with me. I had to reschedule and she never showed up and [name] hasn’t seen her since.” (Parent, Taranaki)

- **Being kept waiting**

“My daughter doesn’t drive and moved around a lot – they looked for her at the [town name] address. She was living on [street name] when she moved up here. Her kids went to a pre-school that had a Plunket office – she’d sit there for an hour waiting and she’d give up.” (Parent, Counties Manukau)

¹⁸ Neonatal Intensive Care Unit

- **Focused only on baby, not family-focused.**

"[WCTO provider] is just about the baby. If you've got other toddlers to check, they'll come back another time rather than seeing them all together." (Parent, Taranaki)

Parent experiences of GP services around 4 - 6 weeks

Parents had **mixed perceptions of their GPs**. Some had long-term relationship with their GP that stretched back to their childhood. These parents were confident contacting the GP or the wider team at the practice if they had any issues. In contrast, others did not like their GP, saw many differing GPs so had no relationship, or had little contact with their General Practice.

Strong family-based relationship

"I've got a fantastic GP that I've seen since I was born. So I can always ring him or the nurses and they're really good." (Parent, Christchurch)

"Our GP knows all our family- we all go to the same GP. We have a close relationship with our GP." (Parent, Christchurch)

No ongoing relationship

"The GP is just your doctor.... you never get the same person. You never have a close bond with them." (Parent, Christchurch)

Parents' feedback indicate a **mix of practice amongst their GPs around the completion of the six week check of their babies**. Some GPs appear to be undertaking an extensive six week check. Other GPs are tailoring the check based on the activities completed by WCTO provider. A few GPs were not undertaking the six week check; much to the disappointment and frustration of parents.

Full check

"My GP likes to do a six week check as well as [WCTO provider]. But otherwise I don't see her again until I need to. But if one of my children is sick then they will ask how the rest of the family is doing too." (Parent, Taranaki)

"The doctor was good, she did a full check, bum etc. She measured. I don't like the nurses for immunisation, they're rough. They need both legs and some do it at the same time, it depends on the nurse. The five month one, the nurse was annoying because the baby was screaming after one injection, and I just wanted to get it over and done with and hurry up." (Parent, Christchurch)

"My GP likes to see the babies at ten days, so he saw me then. He did the 4 – 6 week checks and vaccinations. I'd always ring him if I had any problems- if I was worried the baby was unsettled, had a cold. I had mastitis so he was good at helping with that, suggestions". (Parent, Christchurch)

Tailored check

"I don't think mine did a check before the vaccination. I think because I had the book with me. She saw the [WCTO provider] had already done it, so she didn't do it. She did do the head and the hips. I was ok with that, because I knew she'd been checked, and I knew if the doctor had to do something she'd do it, and I was happy she wasn't wasting my or her time." (Parent, Christchurch)

No check

“That’s all my GP did - vaccinations. My midwife or [WCTO provider] was more important.” (Parent, Christchurch)

Having the GP check the baby is important for most parents. It is an opportunity for the GP to be updated after the birth and delivery, and to meet the new baby. **Parents want to feel connected to the practice so they can access necessary medical care should the baby become sick.** Parents are seeking reassurance from a doctor that their baby is well, and that nothing has been missed by the other providers.

GP updated after birth and delivery

“You are re-establishing the relationship with the doctor. Introducing the baby... I’ve no intention of raising a baby alone. I want support, someone who I can see each time. And the resources they have access to at the doctors. They know where you can go to get things, specific things – allergy testing. Referrals to other medical things.” (Parent, Christchurch)

“You don’t go to the doctor unless there’s something wrong, so it’s a positive way to establish a relationship with the doctor. After my six weeks with my midwife, who I really liked, I was upset she was leaving me. Going to the doctor for me was like, yay, I’m not being deserted, I’ve got someone to help me. That was with all of my babies.” (Parent, Taranaki)

Medical reassurance

“It’s reassuring to know you’re normal.” (Māori parents, Taranaki)

[If your doctor didn’t check, how would you feel] “If he was sick and still got the jab, I wouldn’t be happy. I don’t necessarily trust the nurse. I like the reassurance (from my GP).” (Parent, Christchurch)

Ensuring nothing is missed

“The GP picked up a little hernia on my baby’s belly button at the six week check, but [WCTO provider] didn’t pick up on that a few days later, so it is good to have two checking in case something gets missed by one.” (Parent, Taranaki)

Accessing other health services

“Yes, for tummy problems. He was great, he did a poo test and checked for viruses, a thorough look. He followed up with the paediatrician at the hospital. I was very impressed. He was fantastic.” (Parent, Taranaki)

Accessing GPs can be challenging, particularly for Māori and Pacific families, as noted by Jansen et al (2011). A few Pacific parents noted that they struggled to get appointments to see their GP when they need them, or saw different ones doctors at each visit.

“They’re my doctors. Every time I ring to make an appointment they’re fully booked. It doesn’t matter what time of day, they’re always fully booked. So then I’ve always got to take them to a private hospital, and then you’ve got to pay after-hours. But they [GP] are good in that they’re really cheap, only \$15 for me and the kids are free. I’m just thinking of changing the kids, because you need an appointment anytime.” (Parent, Christchurch)

“Same for me, you never get the same person. You never have a close bond with them.” (Parent, Christchurch)

4.5 System enhancements to better meet parents' needs

At a system level, parents engaged with the WCTO programme appear to be in the main satisfied with the current mix of services they receive when their baby is 4 - 6 weeks old. Their primary need is receiving confirmation that their baby is healthy and normal, or if not, that issues will be identified and appropriate referral and/or help and support will occur. Parents value the differing perspectives, and attention from the differing providers. For parents, this offers reassurance that nothing will be missed, and ensures they are linked into services that may assist their families/ whānau long-term. For parents, it also ensures they are receiving advice and support on feeding and sleeping issues that may be arising. Parental dissatisfaction with this mix occurs when parents do not receive services (i.e. baby is not checked), appointments are not kept by the providers, or they are not offered home-based care from the WCTO provider.

Parents were satisfied with the transition between the LMC and the WCTO providers. This pathway from their perspective is a smooth one that ensures they are connected with another service before their LMC departs. In the main, parents want to be connected with a GP so they know who to go to if baby becomes sick.

Enhancements to better meet parents' needs are therefore at service delivery level across the three providers, and the tailoring of services to better meet the diversity of parents' needs. As evident, while many parents have a positive relationship and service experience, others do not. Key quality issues for parents when baby is 4 - 6 weeks are therefore ensuring:

- awareness of WCTO provider choice, their ongoing entitlements and understanding of the rationale for differing tests and baby's response to them
- continuity of health professional to develop an ongoing relationship
- provider keeps their agreed appointments
- ease of access to services when the baby is young; home-visits are strongly preferred
- services are tailored to family/ whānau needs and not based on assumptions of need, or a pre-determined checklist, or prescribed rules.

Underpinning parents' satisfaction with the service delivery is the ability to develop a trusting relationship and good communication with their service provider. Jansen and Smith (2007) note the effects of concordant relationships on GP/ patient relationships. Studies have shown that when the provider and the patient come from different cultural or racial groups, the patient will receive less discussion, less listening, a lesser standard of care and reduced attention to building and maintaining the relationship (Little et al 2001; Edwards et al 2005; Johnson 2004). Within the WCTO programme, the effect appears two-way with parents being less likely to 'open up' in a non-concordant relationship with their GP, WCTO provider or LMC.

For Māori and Pacific whānau the choice of Tamariki Ora providers needs to be better promoted and consideration is needed of how to overcome proximity issues (i.e. parents' preference is to use a Tamariki Ora provider but they are not located close to their home). As Weiten (2010 p650) highlights 'studies show ethnic minorities are more likely to go to [health facilities] that are staffed by a higher proportion of people who share their ethnic background'. Given the compatibility of cultural values, norms and traditions, the relationship tends to yield more positive outcomes. There is strong case therefore for promoting Māori and Pacific Tamariki Ora providers. However, Māori and Pacific whānau also want the service to deliver best practice advice and support.

4.6 Future research with parents

This section has focused on the expectations and perceptions of parents who are engaged in the WCTO programme. The findings are indicative. Given the diversity of parents, further research is needed to explore:

- differing family constructs in New Zealand, particularly for Māori and Pacific whānau, and their interface with the WCTO programme
- first-time parents' perceptions of the WCTO programme, and how the WCTO programme is meeting their needs and long-term aspirations for their children
- barriers and facilitators to the WCTO Programme amongst non-users, particularly for Māori, Pacific and vulnerable families.

Summary: Parental Expectations and Experiences

- Parents, like New Zealand society, are a diverse and dynamic group. Parenting is hard and comes with many challenges and much advice. Many parents are feeling judged against an idealised parent construct, and offered advice that does not reflect their reality. Parents feel particularly vulnerable and emotional with the arrival of their baby, and as a result, even innocuous comments can be misconstrued.
- While there is alignment between parents' long-term family/ whānau aspirations and the goals of the WCTO programme, few parents make this explicit connection. The WCTO programme is seen as beneficial in ensuring their baby is 'healthy and normal', thus parental views of the programme lag the current shifts from child health surveillance to child health development. Consequently, as the child grows (and is well) the programme appears to become less relevant.
- Parents are uncertain about exactly what services they are entitled to and when. Parents, in particular Māori and Pacific parents, are not aware they have a choice of WCTO providers.
- Parents aware of the services, expect there will be a mix of service providers. Given the differing roles of LMCs, GPs and WCTO providers, parents did not object to seeing three providers, particularly as the LMC and WCTO providers are undertaking home visits. Service provider changes occurring around 4 – 6 weeks cause parental anxiety, especially where there is a strong relationship with the LMC.
- The mix of providers meets parents primary needs that their baby is healthy and normal and if not, ensures they will receive help as needed. It offers reassurance at a particularly vulnerable time, and ensures connection to future services that can support their families/ whānau long-term.
- Health professionals who do not check the baby are seen by parents as failing to meet their obligations to their family/ whānau, and as unprofessional.
- Parents assume that health providers offering services at this time are sharing information to ensure their baby and family receive all their entitlements, care and support needed.
- Parents hold differing perspectives of the three providers:
 - Most mothers tend to be very satisfied with their relationship and the physical checks of their baby undertaken by LMCs. Parents noted LMCs tend to stop visiting around four weeks.
 - Parents' perceptions of WCTO providers are mixed. WCTO services are important for first-time mothers in building their knowledge, offering reassurance and connecting to support groups. Amongst Pākehā interviewed, the relevancy of the WCTO service is questioned for well children. Some perceive the service received as inflexible, transactionally focused and thus not in tune with their needs. Tamariki Ora providers are seen as offering whānau-centred relationship-based services focused on addressing family/ whānau/ tamariki needs, and other health and social needs.
 - Parents hold mixed perceptions of GPs. Some have long-term relationships; others did not have a relationship with a GPT. Parents want to feel connected to a General Practice so they can access medical care should their baby become sick. Accessing GPs can be challenging, particularly for Māori and Pacific families.
- Enhancements to better meet parents' needs are at service delivery level across the three providers, and the tailoring of services to better meet the diversity of parents' needs. Underpinning parents' satisfaction with the service delivery is the ability to develop a trusting relationship and good communication with their service provider. Key service delivery issues identified were: lack of continuity of health professional, not keeping agreed appointments, not being accessible, not listening to or considering parents' needs, and communication issues, and making assumptions about need.
- Further research is needed to fully understand the diversity of parents' perceptions and experience of the WCTO programme, particularly for first-time parents and those not engaged with a WCTO provider.

5. WCTO Providers' Contracts and Obligations

5.1 Introduction

Having demonstrated that parents engaged in the WCTO programme are in the main supportive of the services offered when their babies are 4 – 6 weeks, the following two sections presents firstly the expected service delivery at this time followed by what is currently being delivered. Figure 3 provides a simplistic overview of the service alignment (excluding secondary care and other services) across family/ whānau life pathways when the baby is around 4 – 6 weeks.

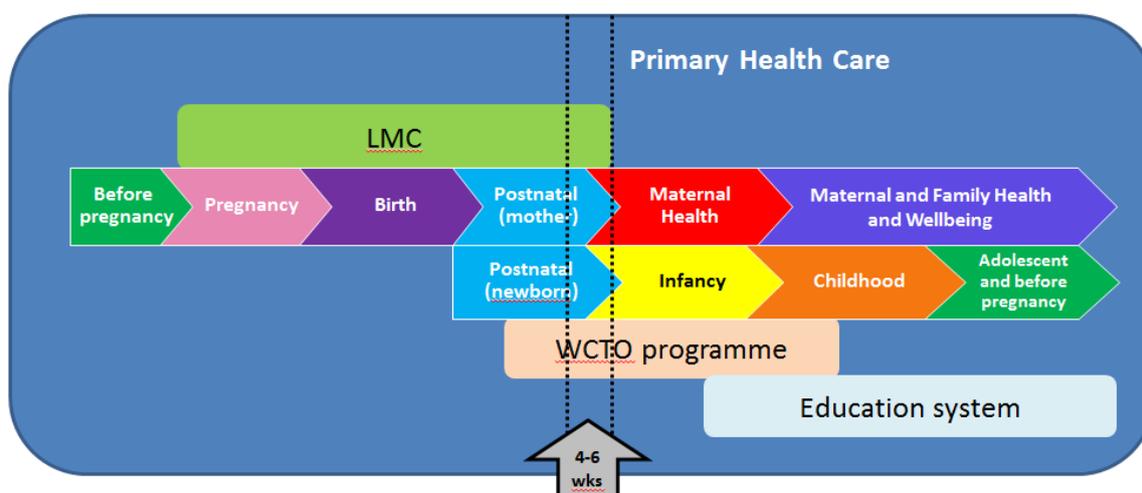


Figure 3: Overview of the service alignment across family/ whānau life pathways

This section describes the underlying contractual and professional obligations that underpin the services offered by LMCs, WCTO providers and GPs at this stage. The training and clinical competencies of each provider to deliver their checks are presented, as well as their quality frameworks and information management. Stakeholders and providers' perceptions of this service mix are presented together with an analysis of whether there are gaps or overlaps in the requirements.

More specifically this section addresses the following review questions:

- What are the contractual requirements for LMCs, WCTO providers and GPs to undertake a check at around six weeks?
 - Are there any gaps or overlaps in these requirements and what changes could be made to address these?
- Are there any professional obligations for LMCs, WCTO providers and GPs to undertake a check of the baby at around six weeks?
 - Can these obligations be met with minimised duplication?
- What are the clinical competencies required to undertake the different aspects of the required content of the six week check?
 - Do the different professions delivering checks of mothers and babies around six weeks receive specific training on undertaking a six week check?

5.2 LMC's contractual requirements, training and professional obligations

5.2.1 Background to maternity care delivery

The national maternity care delivery model is that every pregnant woman is entitled to a LMC who can be a midwife, GP or obstetrician. To receive lead maternity care a woman who is eligible for primary maternity services must register with a LMC of her choice. The key feature of this care is the LMC is responsible for maternity care throughout the pregnancy and until six weeks after the birth, including the birth itself.

New Zealand has more than 2,800 midwives with a current practising certificate. 75% of women have a midwife as their LMC. 70% of women register with a LMC in the first three months of pregnancy (NZCOM, fact sheet 3, undated).

In response to the unique circumstances of the region¹⁹, CMDHB has a Shared Care model to provide an LMC-type service to women that is delivered through the coordination of different practitioners. Under Shared Care, women receive most of their antenatal care from a GP who enters into a Shared Care arrangement with CMDHB. In addition, they are offered three antenatal visits with a community midwife employed by CMDHB and are delivered at a CMDHB facility by a CMDHB-employed midwife. GPs providing Shared Care are not required to have specific training in antenatal care and are not required to have a postgraduate Diploma of Obstetrics and Gynaecology. Postnatal visits are also provided by CMDHB-employed community midwives before handing over to a Well Care provider²⁰.

¹⁹ CMDHB has been identified by the Perinatal and Maternal Mortality Review Committee as having a consistently higher rate of perinatal mortality than the national rate. More babies are born each year in CMDHB than in any other DHB area. Sixty percent of babies are born to mothers in the lowest deprivation quintile. There is also a significant and on-going shortage of midwives in CMDHB.

²⁰ Refer Litmus 2011 for a discussion on the *Barriers to Consumer Utilisation of Primary Maternity Services in CMDHB*.

5.2.2 Contractual requirements for postnatal care mother and baby (4 - 6 weeks)

LMCs under Section 88 of the New Zealand Public Health and Disability Act 2000 (Section 88) have a statutory requirement to undertake the discharge check of mother and baby²¹. In summary, LMCs are responsible for providing the following postnatal services to both the mother and baby²²:

- Reviewing and updating the care plan and document progress, care given and outcomes.
- Delivering between five and ten home postnatal visits (and more if clinically needed) to assess and care for the mother and baby at home until six weeks after the birth.
- Undertaking examinations of the woman and baby including—
 - a detailed clinical examination of the baby as defined by the WCTO National Schedule (Ministry of Health 2002b) before transfer to a WCTO provider
 - a postnatal examination of the woman at a clinically appropriate time and before transfer to the woman’s primary care provider.
- Providing care and advice to the woman, including—
 - breastfeeding and the nutritional needs of the woman and baby
 - assessment for risk of postnatal depression and/or family violence, with appropriate advice and referral
 - appropriate information and education about screening
 - provide or refer the baby for the appropriate screening tests specified by the Ministry of Health, and receive and follow up the results of these tests as necessary
 - information on immunisation and the NIR
 - provision of or access to services, as outlined in the WCTO National Schedule²³
 - advice regarding contraception
 - parenting advice and education.

The Ministry’s *Well Child National Schedule - Birth to 4 - 6 weeks* (Ministry of Health 2010c) requires LMCs to undertake health and development assessments of mother, baby, and family, provide intervention and support including a detailed clinical examination of the baby at discharge from maternity service (refer Table 4), as well as smoking cessation and family violence screens. LMCs are also required to offer a range of advice and support on promotion of health and development including breastfeeding and nutrition, SUDI, immunisations, parenting advice on crying and infant development, SBS, recognition of minor illnesses, and support networks.

²¹ Maternity Service Notice Pursuant to section 88 of the NZ Public Health and Disability Act 2000 (effective from 1 July 2007).

²² All clauses are listed in Annex 3.

²³ Refer Annex 4 for LMC requirements in *Well Child National Schedule - Birth to 4 - 6 weeks*. (Ministry of Health 2010c).

LMCs are required under Section 88 to transfer the care of the baby to the WCTO provider before six weeks from birth. A written referral must be sent to the WCTO provider by the fourth week following birth. A transfer of the care of the woman and the baby from the LMC to the woman's primary health services provider must take place before six weeks from birth using a written referral. If a woman does not have a regular GP, the LMC must inform the woman about the primary health services available in the local area.

5.2.3 Professional obligations to undertake a check of baby

For LMCs and other midwives there are clearly stated professional obligations to undertake a check of the baby at around six weeks. The NZCOM, in consultation with its membership has developed the **Philosophy, Code of Ethics, Standards of Practice and Consensus Statements** that guide the professional activities of midwifery practitioners. The NZCOM also provides Resolution Committees for consumers who have a complaint about their midwife's practice²⁴. The College of Midwives has published in their Handbook for Practice the standards of practice for midwives to follow when working with women, wherever that work may be (NZCOM 2008b).

The Midwives Handbook for Practice (NZCOM 2008b) notes the midwifery philosophy is one of partnership with women, and continuity of midwifery care to enhance and protect the normal process of childbirth. Midwifery is defined as holistic by nature, dynamic in approach, and is given in a manner that is flexible, empowering, and supportive and seeks to promote women's health, and lifecycle.

Discharge requirements align with the Philosophy and Standard nine of practice which requires a negotiated completion of the midwifery partnership with the women. Standard nine links to decision points at six weeks or final postnatal visit which note the baby receives development assessment and full physical examination.

5.2.4 Clinical competency and training to undertake discharge check

LMCs have received appropriate training and are clinically competent to undertake the discharge check of mother and baby as specified in Section 88, including the physical examination of the baby. The undergraduate Midwifery degree requires 4,800 hours of theory and practice, which is equivalent to a four year academic degree. The degree requires a minimum of 50% theory and 50% clinical practice hours. The clinical practice occurs in both hospital and the community, urban and rural settings. The theoretical content and educational frameworks are nationally consistent and meet 100% of the international regulatory and education standards. **Midwifery students must undertake, as a minimum, 100 physical assessments of the baby.**

The core text book for the Bachelor of Midwifery degree (Pairman et al 2010) describes the assessment requirements of the baby at discharge. The content of the textbook aligns with the information captured in the midwives-women records and the Ministry' WCTO Schedule requirements (refer Table 4).

Table 4: Alignment between the content of the midwifery training and the requirement of the LMC discharge check for baby

²⁴ <http://www.midwife.org.nz/index.cfm/1,175,0,0,html/About-the-NZCOM> accessed 7 August 2012

Full Physical Examination of baby at 6 weeks	Midwifery training (Pairman et al 2010)	LMC discharge check WCTO Schedule (Ministry of Health 2010c, 2002b).
Head (fontanelle)	√	√
Weight	√	√
Length/ height	√	√
Eyes (red reflex, following, pseudostrabismus)	√	√
Mouth	√	√
Ears	√	√
Skin and fingernails, colour	√	√
Cardio-vascular (heart and lungs)	√	√
Femoral pulses	√	√
Abdomen	√	√
Healing of umbilicus	√	√
Palpate femoral pulses	√	√
Boy – bilateral descent of testes	√	√
Girl - hygiene	√	√
Stability of hips	√	√
Reflexes	√	√
Tone	√	√

Once students graduate with a Bachelor of Midwifery degree, they must also pass the National Midwifery Examination to enter the Midwifery Council Register of Midwives. This exam is set by the Midwifery Council and meets the requirements for registration as outlined by the Health Practitioners Competency Assurance Act (2003).

Information on clinical supervision for LMCs was not sourced.

5.2.5 Quality frameworks for New Zealand midwives

LMCs have quality review cycles that inform midwifery practice at an individual level and sector wide level. There are three main bodies that oversee the quality of New Zealand midwives - the Midwifery Council of New Zealand, the New Zealand College of Midwives (NZCOM) and the Ministry of Health. New Zealand midwifery frameworks meet all international regulatory, education and competency standards (NZCOM, fact sheet 2, undated).

- The Midwifery Council of New Zealand** regulates New Zealand midwives. The Council sets the competency and educational standards that all midwives must meet to gain a practicing certificate. All midwives must hold an Annual Practising Certificate which is renewed annually through a formal recertification process set by the Midwifery Council.

- NZCOM** undertakes a **Midwifery Standards Review (MSR)** of New Zealand midwives every two years. This forms part of the profession's quality assurance programme and is a compulsory component of the Midwifery Council of New Zealand Recertification Programme. New Zealand midwives are required to provide information, consumer feedback and clinical data to demonstrate the quality of the midwifery care they provide when they present for MSR. On discharge all consumers should receive a feedback form to complete and return to NZCOM. Any issues arising are followed up with mother and midwife; it is estimated about 1% of return forms require further action (personal communication NZCOM).

The Midwifery Maternity Providers Organisation (MMPO)²⁵ publish an annual Care Activities and Outcomes report based on the aggregated clinical information provided by member midwives from the clinical records (MMPO and NZCOM 2009). The purpose of the document is to inform discussion and guide midwives and the profession on decision making on issues about the provision of maternity care. For the postnatal period, the report provides information on babies feeding behaviour at two weeks post-partum and maternal postnatal smoking status.

5.2.6 Information management

A framework for information management of the discharge visit (and the continuum of midwifery care) currently exists. However, data collection continues to be primarily paper-based and not easily shared with other health professionals.

For LMCs to receive their funding, they are required to complete a claim form to the Ministry of Health. MMPO require the full completion of the client profile summary before seeking settlement of the payment for services following birth. The baby summary, postnatal summary and baby summary, and disbursements forms details the expected level of clinical examination of baby at discharge (refer Table 13).

Around 70% of MMPO members continue to submit hard copy versions of their MMPO Maternity Notes, which are data entered into MMPO Practice Management System (PMS). The remaining 30% use their own version of the MMPO PMS (Hendry 2008). LMCs and key stakeholders interviewed highlighted the duplication and burden of multiple form completion. LMCs are required to complete their clinical record of the women, a booking form for each woman (the form varies across hospitals), and double set of notes if the woman is in hospital, and the WCTO Health Book. Information management is complicated as there are no agreed minimum dataset for phases of information transfer, and differing opinions of 'ownership' of maternity records (Hendry 2008). LMCs, as independent practitioners, face a number of barriers to moving to an electronic health record including the need for a mobile electronic solution, and financial barriers as the costs are not being subsidised.

²⁵ MMPO provides management service for 750 LMCs throughout New Zealand who provide care to around 50% of women (Hendry 2008)

The Shared Maternity Record of Care is seeking to address some of these concerns via establishing shared care records for New Zealand women requiring maternity services. A set of clinical protocols is being agreed with supporting data and access standards for multi-disciplinary maternity care. The Shared Maternity Record of Care will be implemented through a number of pilots. Shared Care includes a care plan, and links to detailed clinical data, such as lab results. The Shared Maternity Record of Care will be made available to clinicians through a clinical portal, and to patients through a personal health portal²⁶.

5.2.7 LMCs' perceptions of their contractual and professional obligations of the discharge checks

LMCs interviewed are strongly committed to their contracted and professional obligations noting that it would be unprofessional not to undertake a thorough examination of mother and baby before transferring to WCTO provider and GP. Further, LMC are aware that mothers have a strong expectation their babies will be checked, which is reflected in the feedback from parents interviewed. Reflecting Marchant (2006), LMCs are seeking through these checks and other interactions that mothers have the confidence and ability to manage alone, and that mothers have access to a range of services and resources to provide ongoing support, as needed. **The discharge checks for mother and baby are important components of the negotiated process to complete the midwifery partnership with the women.**

Key stakeholders acknowledge that midwives are appropriately trained to undertake the full physical assessment of the baby. Midwives are able to identify and refer as appropriate issues identified through this examination. It is acknowledged however, that they may not understand all the physiology underlying the condition or issues identified, or have the knowledge to determine the appropriate treatment or intervention.

In summary, LMCs have a statutory requirement and explicit professional obligations to undertake discharge checks around 4 - 6 weeks of the postnatal period for both the mother and the baby. LMCs have had the training and are competent to undertake the physical assessment required of the baby.

5.3 Well Child/ Tamariki Ora providers contractual requirements, training and professional obligations

5.3.1 Delivery model for core contact one

Core contact one is the first contact on the WCTO Schedule and is intended to be undertaken between 4 - 6 weeks. However, the contact may be earlier if a baby has usually high needs, in which case the LMC may request that a WCTO provider becomes involved as early as two weeks to provide concurrent and co-ordinated care²⁷ (Ministry of Health 2011).

²⁶ <http://www.ithealthboard.health.nz/content/shared-maternity-record-care> accessed 7 August 2012

²⁷ Based on the 2008 quality review, an earlier transfer from LMC to WCTO provider was required by four weeks, with the expectation there could be a crossover of care (Ministry of Health 2007a).

Core contact one is the entry point for families/ whānau into the WCTO programme to receive a minimum of eight contacts, and additional contacts if there is an assessed need from WCTO providers. Additional contacts may be provided to children and their families/ whānau where there is an assessed need, and an opportunity to improve health outcomes.

WCTO providers must recognise the cultural values and beliefs that influence the effectiveness of services for Māori, reflecting the significant disparity in health outcomes for Māori children (Ministry of Health 2011). WCTO providers are required to consult and include Māori in service design and delivery.

WCTO providers need to offer services that are culturally competent, and respond to the diversity of Pacific peoples' needs and expectations, acknowledging that Pacific children also have poorer health status across a wide variety of measures.

In New Zealand, there are two broad categories of Well Child service providers:

1. **Plunket** which delivers around an estimated 85% of Well Child services to 91% of enrolled children, and are contracted nationally by the Ministry of Health via Services for Children and Young People – Well Child/ Tamariki Ora Services tier two service specification, June 2011
2. **Tamariki Ora providers usually located in regional or local Māori and Pacific health providers**, and are expected to deliver an estimated 15% of contacts to the remaining 9% of enrolled children²⁸. Tamariki Ora provider contracts offer a choice of service providers, and offer services that are culturally competent and meet the needs of Māori and Pacific families/ whānau. The National Health Board holds Tamariki Ora contracts on behalf of DHBs.

Across New Zealand, core contact one is being delivered by a mix of WCTO providers in all DHBs to offer choice and increase access to WCTO service for Māori and Pacific families/ whānau. In total, there are 63 WCTO providers including Plunket of which 53 are located in Māori or Pacific health providers (refer Table 5).

Each DHB has between one and seven Tamariki Ora providers. Waikato DHB has seven Tamariki Ora providers reflecting its population and geographical dispersion of their Māori population. The average number of Tamariki Ora providers is three per DHB (refer Tables 5 and 6).

Of the 62 Tamariki Ora providers contracted to deliver WCTO services:

- 41 Māori health services/ iwi providers
- 7 Māori and Pacific health service providers
- 5 Pacific health services (across 4 DHBs; two of the larger DHBs with a significant Pacific population have not contracted a Pacific or Māori/ Pacific provider; reasons for this are unknown).
- 3 PHOs and 6 others.

Table 5: Number and type of WCTO providers, by DHB

²⁸ Currently, it is unknown the level of duplication (ie. children enrolled with Well Child and Tamaraki Ora providers). As noted, parents comment that there is evidence of competition between providers and therefore the potential for dual enrolments.

DHB (n=20)	Total Number of Well Child/ Tamariki Ora Providers	Māori Health Service / iwi provider	Pacific Health Service	Māori / Pacific Health Service	PHO	Other
Auckland	5	-	-	3	1	1
Bay of Plenty	5	3	-	1	1	-
Capital and Coast	3	3	-	-	-	-
Canterbury	5	2	-	1	1	1
Counties Manukau	3	2	1	-	-	-
Hawkes Bay	2	2	-	-	-	-
Hutt Valley	2	1	1	-	-	-
Lakes	2	2	-	-	-	-
Mid Central	4	4	-	-	-	-
Nelson Marlborough	3	2	-	-	-	1
Northland	4	3	-	-	-	1
South Canterbury	1	1	-	-	-	-
Southern	4	2	1	-	-	1
Tairāwhiti	2	2	-	-	-	-
Taranaki	1	1	-	-	-	-
Waikato	7	5	2	-	-	-
Wairarapa	1	1	-	-	-	-
Waitemata	3	3	-	-	-	-
West Coast	2	1	-	-	-	1
Whanganui	3	1	-	2	-	-
TOTAL	62	41	5	7	3	6

Source: Litmus 2012f; DHB stocktake.
Base: All DHBs; n=20

The DHBs acknowledge the WCTO model of a national provider and local/ regional Tamariki Ora providers contributes to a service delivery that better meets the diversity of needs in their population of families/ whānau. However, some DHBs' felt unable to monitor the effectiveness of the WCTO services. DHBs are unable to assess effectiveness of delivery of WCTO services in their region as they do not receive core contact information from all WCTO providers. With the recent development (2012) of the WCTO database for core contacts 1-7, it is expected this lack of information will be addressed.

“The DHB uses a mixed model of service delivery, whereby WCTO services are delivered mainly by Plunket. There are two small mainstream contracts for services in more rural locations. Additionally, there is one Māori WCTO service in [region] and one Māori WCTO service in [region]. There is also a Pacific WCTO service in [region]. Many of these smaller providers have relatively low client volumes, for various reasons. This model of service delivery does afford client choice in WCTO provider; this is deemed to be especially important by Māori and Pacific clients.” (DHB)

“[DHB] has no way of analysing Plunket Well Child delivery as we don’t get reporting from MoH (to date) so we have no idea of total coverage rates and/or duplication or gaps between Plunket and TO providers for Core Contact 1 or any other contacts. That said, we have very good reporting from TO providers, which provides a clear view of contact rates, and other outcomes for those children enrolled with any one of our three TO providers. Although without Plunket picture, it is unclear what the true coverage is.” (DHB)

An overview of each of these service providers is summarised below before consideration of their shared contractual requirements for core contact one, professional obligations, training and quality frameworks.

5.3.2 Plunket²⁹

Plunket has a long history in delivering Well Child services, stretching back over 100 years. Plunket is a not-for-profit national organisation and receives funding through the Ministry’s tier 2 WCTO contract, other contracts, fundraising, sponsorship and other donations.

Plunket delivers services to the families/ whānau of over 90% of babies born in New Zealand each year. Plunket employs around 1,200 staff of which there are around 500 Plunket nurses, Registered nurses and 144 health workers based in 434 locations throughout New Zealand. Delivery staff includes Plunket Nurses, Community Karitane, Kaiāwhina, and Pacific Community Karitane. Management includes Clinical Leaders, Community Services Leaders Area Managers, Advisor and Educators.

Plunket offers a range of services, as well as undertaking core and additional WCTO contacts. Other services include car seat rentals, parenting education, PlunketLine, toy libraries, parent groups, play groups, family centres, education in schools, Postnatal Adjustment Programme (PNAP), Parents as First Teachers (PAFT) (in some locations) and early childhood education. Each year staff and volunteers make over 700,000 contacts with families of children aged from birth to five years, and 27,900 referrals to other health and social service providers.

Plunket defines their primary client as the child from pre-birth through to the age of five years. The parent is seen as the secondary client in the core contact visits; although for other services the parent is deemed the client. There are clear relationship linkages between the primary client and secondary client. The whole family (whānau) can also be seen as a client.

²⁹ Sources: http://www.healthit.org.nz/download/files/Plunket_PPCIS_RFI_v1.0_Final.pdf; <http://www.plunket.org.nz/news-and-research/our-publications/plunket-in-touch-e-news/plunket-in-touch-july-2011/well-child-and-plunketline-delivery-statistics/>; and the <http://www.plunket.org.nz/assets/News--research/RNZPlunketSocietyAnnualReport2011.pdf>

The majority of staff members are non-Māori and of approximately 1,200 paid staff there are about 127 Māori staff (11%). To increase opportunities for staff to be culturally aware and culturally safe when working with Māori whānau, frameworks, policies, guidelines, templates, resources and tools have been developed.

5.3.3 Tamariki Ora providers

Currently, there is no existing national structure or framework, which brings Tamariki Ora providers located in differing organisations and locations together. Feedback from Tamariki Ora providers indicates a desire to develop regional and national level connections to strength their WCTO capacity and capability through shared training, guidelines and protocols, and other resources.

Māori Tamariki Ora providers are advocates for whānau in seeking to reduce health inequities which affect their health and well-being. They are dedicated to improving, promoting, and supporting the delivery of health care and education from a kaupapa Māori perspective. Māori Tamariki Ora providers use their knowledge of Tikanga Māori and Hauora Māori concepts of health for the benefit of their whānau and their community.

“Strong professional networks/relationships from the coal face to strategic levels is very important. Working within a Māori Kaupapa/Whānau Ora approach improves access, equity, safety and engagement with the community. Training and clinical access and support is available to assist QI for staff. Fostering an environment that supports and welcomes staff and community feedback to the organisation/service.” (Tamariki Ora provider)

Tamariki Ora providers located in Pacific health providers are focused on their Pacific fana and communities. Like Māori health providers, their vision and mission is focused on improving the health status and wellbeing of Pacific families and communities by increasing access to and improving the quality of services received. Services offered are family-focused and embed Pacific values and spirituality in their processes.

While Tamariki Ora providers are strongly focused on their respective Māori and Pacific communities, their service tends to be inclusive of all families (Litmus 2012g).

“We provide a service to all ethnic groupings.” (Tamariki Ora provider)

Tamariki Ora providers appear to have a relatively small Tamariki Ora workforce, which may be located in a larger organisation (Tables 6 and 7). The Tamariki Ora provider survey highlighted that three quarters of Tamariki Ora providers who responded had between one and three Registered Nurses. Around two thirds have Community Health Workers/ Kaiāwhina working alongside Registered Nurses, while a third do not.

Table 6: Number of Tamariki Ora providers with between 1 and 7 registered nurses

Number of Tamariki Ora Providers (n=23)	Number of registered nurse/s in each Tamariki Ora provider
9 Tamariki Ora providers with	1 registered nurse
6 Tamariki Ora providers with	2 registered nurses
2 Tamariki Ora providers with	3 registered nurses
2 Tamariki Ora providers with	4 registered nurses
3 Tamariki Ora providers with	5 registered nurses
1 Tamariki Ora provider with	7 registered nurses

Source: Tamariki Ora provider survey (Litmus 2012 g)
Base: Those who answered the question; n=23

Table 7: Number of Tamariki Ora providers with between 0 and 7 Community Health Worker/ Kaiāwhina

Number of Tamariki Ora Providers (n=23)	Number of Community Health Worker/ Kaiāwhina
8 Tamariki Ora providers with	0 Community Health Worker/ Kaiāwhina
6 Tamariki Ora providers with	1 Community Health Worker/ Kaiāwhina
6 Tamariki Ora providers with	2 Community Health Workers/ Kaiāwhina
1 Tamariki Ora provider with	3 Community Health Workers/ Kaiāwhina
2 Tamariki Ora providers with	5 Community Health Workers/ Kaiāwhina

Source: Tamariki Ora Provider survey (Litmus 2012 g)
Base: Those who answered the question; n=23

Less than half of Tamariki Ora providers (10/23), who responded to the survey, deliver both WCTO core contacts one to seven and the B4SC. Tamariki Ora providers are focused on addressing health inequities in the delivery of WCTO services to Māori and Pacific families. They invest significant time and resources to connect with more disengaged families/ whānau, building up trust and relationships, and delivering a holistic range of services beyond WCTO programme.

All 23 Tamariki Ora providers provide a range of complimentary health promotion and other services (refer Table 8). Twelve have GPTs and six maternity services highlighting that **some Tamariki Ora providers can offer families/ whānau a wrap-around seamless service when their baby is 4 - 6 weeks.**

Table 8: Other services offered by Tamariki Ora providers

Other Services	Total (n=23)	Māori/iwi providers (n=18)	Pacific providers (n=4)	Other (n=1)
Health Promotion	21	18	4	1
Smoking Cessation	14	12	3	1
Whānau Ora	14	13	2	0
GP	12	10	3	0
Oral Health	8	6	3	0
Maternity Care/Midwifery Services	6	6	1	1
Family Start	3	3	1	0
Parents as First Teachers	3	3	1	0
Training	2	2	1	0
Other	12	10	3	1

Source: Tamariki Ora Providers survey, Litmus 2012g

Base: Those who completed the questionnaire; n=23

Multiple response

Feedback from the 20 DHBs offered the following insights into the 65 Tamariki Ora providers³⁰ delivering WCTO core contacts and additional contacts across New Zealand (Litmus 2012f):

- Contract duration - 53% have a 12 month contract, 42% three or more years and 5% two year.
- Funding types - 40% bulk amount, 31% outputs/ volumes, and 18% Full Time Equivalent (FTEs)
- Service delivery for core contacts - 100% deliver services in home, 65% also deliver services in other community settings, 48% mobile health care setting, and 43% primary health care centre³¹. The diversity reflects offering parents and whānau a range of delivery settings to overcome barriers to access.

³⁰ 65 Tamariki Ora Providers includes two regional contracts with Plunket.

³¹ Multiple response so adds to more than 100%

Contract information from DHBs highlights that more than half of Tamariki Ora providers do not have certainty over their long-term contract. This level of uncertainty makes it difficult for Tamariki Ora providers to strategically plan and develop their WCTO capacity and capability long-term (refer section 5.3.7 for further discussion).

Bulk funding contracts mean that Tamariki Ora providers cannot market their WCTO services for fear of oversubscription, and then not being able to service an increased demand within their contract parameters. In contrast, fee-for-service may not recognise the cost of engaging and maintaining engagement with hard-to-reach families. **Feedback from Tamariki Ora providers across the three cases highlighted a level of concern about future contracting in relation to the WCTO programme.**

5.3.4 Contractual requirements at core contact one

At core contact one, WCTO providers are contracted to deliver services across three parallel streams which are delivered as an integrated package (Ministry of Health 2011, 2010d). As detailed in the Ministry of Health (2010d), WCTO providers are required to undertake the following:

- **Clinical assessment** which are the universal health and development assessments that are undertaken at every core WCTO contact (i.e. to monitor health and development) -
 - family health and wellbeing
 - child growth and development
 - vision and hearing.
- **Interventions** which are the health interventions and referrals to services that will be offered and documented in response to the specific clinical assessments and care plan agreed with the family/ whānau -
 - postnatal depression (PND) screen and respond
 - ABC smoking cessation
 - family violence screen and respond
 - respond to assessments
 - additional contacts.
- **Health education** which is the range of activities delivered according to the core contact age bands. Health education is undertaken in response to professional judgment and the needs assessment and care plan -
 - breastfeeding and infant nutrition
 - maternal nutrition
 - immunisation
 - preventing SUDI
 - childhood illness
 - parenting for child age and stage
 - safety/ injury prevention.

The duration of a core contact is expected to average 45 minutes face-to-face time, with a range of 35 – 55 minutes.

The documentation supporting *WCTO services Tier Level Two Service Specification and the 2010 WCTO National Schedule (Ministry of Health 2010d and 2011)* are not completely aligned. Based on the findings of the 2008 quality review, a number of changes were made to the core contacts. The *WCTO National Schedule Handbook* (Ministry of Health 2002b) pre-dates these changes. The handbook is not therefore explicit on the content for the family health and wellbeing, and child clinical assessment or the content of the parenting for child age and stage. **The Handbook has the potential therefore to create confusion about the role of the providers when the baby is around six weeks.**

The Handbook states that LMCs undertake a number of assessment (e.g. growth, development, hip screening) between two and six weeks, GPs do a six week check, and that after six weeks either the WCTO provider or the GP undertake these assessments.

The WCTO Health Book³² lists the expected physical checks for the baby and the parenting for child age and stage under 'Things to talk about'. However, it is unclear who completes these sections of the WCTO Health Book, given that WCTO providers are now undertaking core contact one before the LMC discharges when the baby is six weeks. Section 7 discusses further parent and provider feedback on the WCTO Health Book. The Plunket Health Record³³ also details the expected checks to be undertaken. Indications from the Tamariki Ora providers suggest they are using a similar health record. The Plunket Health Record was last updated in 2011

Feedback from WCTO providers demonstrates that their delivery tends to be primarily guided by the content of the Plunket Health Record or the equivalent for Tamariki Ora providers. For Tamariki Ora providers' practice also tends to be driven strongly by parent need at the time of the core contact. Feedback from parents and other stakeholders suggest Plunket's practice tends to be more fixed on addressing the content of the Plunket Health Record.

"The Plunket Health Record is 'the bible', lists everything that needs to be covered. There is a policy book goes with it. The Plunket Nurse Resource Manual – it tells how to do screens /assessments. I would consult if something unusual comes up, e.g. what to do about birthmark... Plunket has policies / procedures for everything." (Plunket Nurse)

5.3.5 Professional obligations to undertake a check of baby

WCTO nurses, as Registered Nurses have a duty of care and need to practice within their Code of Ethics (New Zealand Nurses Organisation [NZNO] 2010), Code of Conduct (Nursing Council of New Zealand [NCNZ] 2012), Scope of Practice (NCNZ 2012³⁴) and Framework for Professional Standards (NCNZ 2007).

Plunket provider has 23 policy documents that also frame the professional obligations of their staff and volunteers. Key policy documents which inform the professional obligations of Plunket Nurses and Community Karitane and Plunket Kaiwhina are: Standards for Plunket Nurse Practice (2009), Health Worker Standards of Practice

³² Parent held health book

³³ Practitioner's record

³⁴ <http://www.nursingcouncil.org.nz/index.cfm/1.40.0.0.html/Registered-Nurse> accessed 10 August 2012.

(2013) and Plunket Health Record Documentation Handbook (2011), Community Karitane Standards of Practice (2006), and Plunket Kaiawhina Standards of Practice (2006).

All domains in the Standards for Plunket Nurse Practice (2009) are based on the Nursing Council of New Zealand Competencies for Registered Nurses (2007) have strong relevance to the professional obligations for Plunket Nurses undertaking core and additional WCTO contacts. The Standards for Practice notes that the Plunket nurse must demonstrate knowledge and judgement and be accountable for actions and decisions, and promoting an environment that maximises client safety, independence, quality of life and health.

Tamariki Ora nurses across the 62 contracted organisations do not have a unified set of policy documents, reflecting that they are not one large national organisation. Tamariki Ora providers' practice is guided by Ministry of Health guidelines. A few Tamariki Ora providers have developed their own Tamariki Ora guidelines. Others draw on Plunket policy documents, modifying to align with their organisational context and culture.

Tamariki Ora providers highlighted that it can be challenging for smaller organisations to develop and keep up-to-date policy documents and guidelines. These providers emphasised the importance of being able to easily access a range of up-to-date guidelines. Suggestions were made to share more widely the Plunket developed policies and guidelines across the WCTO sector, as their development is perceived to have been funded through their Ministry of Health contract. In contrast, Plunket states it has an open-book approach to sharing information, policies and training.

[Guidelines are] "Very relevant as we have limited time for updating, due to isolation and accessibility and provides procedures to maintain safe working practices." (Tamariki Ora provider)

Tamariki Ora providers' practice (like Plunket) also draws on national level domain specific guidelines to frame their practice within each core contact, e.g. New Zealand Smoking Cessation Guidelines (Ministry of Health 2007b) and Family Violence Intervention Guidelines (Ministry of Health 2002c). These guidelines are particularly important to smaller Tamariki Ora providers as they ensure safe and evidence-based practice.

Professional obligations, as detailed in Registered Nurses governing bodies and sector and organisational wide guidelines, are not explicit on whether or not WCTO Nurses are professionally obligated to undertake a physical assessment of the baby at core contact one. However, WCTO Nurses have *"a duty of care to prevent harm to a patient they are nursing. That means a duty to ensure they take care that the actions carried out in relation to the patient do no harm, and that they do not carelessly omit to do anything that could have prevented harm to the patient"* (NZN, 2008). In this context, it is well documented that the physical assessment undertaken correctly by WCTO providers is not doing the baby or the parent harm (Hall et al 2009). **However, omitting the physical assessment of the baby has the potential to do harm to the baby if the baby is not checked by another health professional competent in this assessment at around six weeks.** Further, there is also potentially emotional/ psychological harm to parents if they expect that the WCTO provider will check their baby and this service is refused. As Hall (2007) notes *'concerns and preoccupations of parents must be considered and services clearly valued by the consumer should receive careful consideration even if evidence of effectiveness is scanty'*. (Hall et al 2007 p23). However, Hall goes on to note that when resources are limited, it seems logical to give priority to services of demonstrable effectiveness.

5.3.6 Clinical competencies and training to deliver core contact one

Defining clinical competencies

The WCTO Framework Service Specifications (Ministry of Health undated³⁵) states that core WCTO services will be provided by workers who are competent to deliver each of the three components³⁶ of the WCTO National Schedule (Ministry of Health 2002b).

- **A Registered General and Obstetric Nurse, or a Registered Comprehensive Nurse who has met the competencies for Child Health/Well Child approved by the Nursing Council** (or is working under supervision with a person with these competencies until competencies are achieved) are deemed competent to deliver these components.
- **Community Health Worker, Karitane or Kaiāwhina** are deemed competent to deliver the health education and promotion and family/ whānau care and support components provided the topics have been included in their qualification.

These personnel are required to work within a team that includes a Registered General and Obstetric Nurse, or a Registered Comprehensive Nurse who has met the competencies for Child Health/Well Child approved by the Nursing Council, or a General Medical Practitioner who has met the competencies for Child Health/Well Child approved by the RNZCGP or a Paediatrician who is a member of the Royal Australasian College of Physicians.

All WCTO staff are required to provide culturally competent services to all children and their families/whānau, although what is meant by cultural competency is not defined. WCTO staff are also expected to have had training in the following areas:

- how to identify, support and refer victims of interpersonal violence with a particular focus on child and partner abuse
- disability awareness to ensure disabled children and disabled carers are given appropriate access and support
- specific issues in the patterns and identification of abuse and interpersonal violence for these groups.

Clinical competencies required to undertake core contact one

Primary Healthcare/ WCTO nursing is a speciality area of practice requiring higher levels of nursing judgement, discretion and decision-making in an area of practice with a specific focus and body of knowledge and practice (Nursing Council New Zealand 2002). A WCTO Nurse is a Registered Nurse who has completed a postgraduate certificate in primary health care speciality nursing WCTO Strand (PG Cert), or gained educational equivalency. **Feedback on the postgraduate certificate in primary health care speciality nursing WCTO Strand (PG Cert) highlights that the training offered aligns with the competencies required to deliver core contact one.** WCTO providers are not trained or required to use a stethoscope to listen to the baby's heart or lungs. However, as noted by a GP, signs of cardiovascular distress may be noted through the physical examination and observation of the baby's respirations and colour. The Postgraduate Certificate is a level 8 programme

³⁵ <http://www.health.govt.nz/our-work/life-stages/child-health/well-child-services/well-child-publications/well-child-service-specification> accessed 10 August 2012.

³⁶ 1) health education and promotion; 2) health protection and clinical assessment, 3) family or whānau care and support.

National Certificate in Tamariki Ora– Well Child Services (Level 4) with strands in Mainstream, Māori, and Pacific is targeted at WCTO workers including Community Health Worker; Community Well Child Health Worker; Kaiāwhina; Kaitiaki; and Community Karitane. People awarded this qualification are able to demonstrate skills for working with families or whānau; describe human development and manage health conditions; provide interventions to achieve whānau or family health goals; implement a health promotion strategy; support a whānau or family to access local community services; and act as an advocate for people; within a WCTO service provider setting. This qualification also recognises an understanding of the meaning and relevance of Te Tiriti o Waitangi in social service work because WCTO workers' practice is informed by Te Tiriti. **Based on this certificate, there is alignment between these skills and family health and wellbeing, health education and cultural competencies.** Both of these programmes are delivered in partnership with Whitireia Polytechnic.

In 2002, when the required competencies were written, it was acknowledged that not all WCTO nurses and Community Health Workers had the required clinical competencies. Consequently, a requirement to achieve the competencies was to be phased in over time.

This quality review did not obtain data detailing the proportion of the WCTO nurses who have completed the level of the postgraduate certificate in primary health care speciality nursing WCTO Strand (PG Cert) or the qualifications obtained by Community Karitane; and Kaiāwhina. However, national stakeholders perceive that Plunket is the leading Well Child expert in New Zealand reflecting their ongoing investment in systems, infrastructure and staff training and professional development to deliver quality Well Child services. In line with the New Zealand Nursing Council, Plunket has committed to 20 hours/year continuous education.

DHBs assessed 86% of their existing Tamariki Ora providers as having the competencies required to deliver the WCTO services (refer Table 9). The majority of Registered Nurses working in the 23 Tamariki Ora providers, who responded to the Litmus survey, have received training to deliver the WCTO programme (Litmus 2012g). Around two thirds of Tamariki Ora providers have Community Health Workers/ Kaiāwhina, and of these, half the workers had received WCTO specific training.

Of the 23 Tamariki Ora providers who completed a survey (Litmus 2012g):

- Only four providers had Registered Nurses who had not completed (or were completing) the National Tamariki Ora Certificate or the Post-graduate Certificate in Primary Care (WCTO) -
 - Three of these providers had three or more Registered Nurses who did have WCTO specific qualifications and could supervise those who do not.
 - One had one Registered Nurse in total who did not have WCTO specific qualifications.
- 15 out of the 23 providers had Community Health Workers/ Kaiāwhina working with Registered Nurses in delivering WCTO services. In -
 - seven providers, all Community Health Workers/ Kaiāwhina had received WCTO training
 - two providers, some Community Health Workers/ Kaiāwhina had received WCTO training
 - six providers, none of their Community Health Workers/ Kaiāwhina with WCTO training.

“All core contact clinical assessments, interventions and education are delivered by nurses who have completed or are in the process of completing the WCTO strand of Postgraduate Certificate in Primary Health Care Specialty Nursing. The nurses are supported by Kaiāwhina who have completed or are in the process of completing the National Certificate in Tamariki Ora– Well Child Services.” (DHB)

Table 9: Extent Well Child/ Tamariki Ora providers meet competencies in the WCTO Service Specification

Extent to meet competencies	Total Well Child/ Tamariki Ora providers (n=65)		Māori/ Pacific health service (n=7)	Māori health service/ iwi provider (n=41)	Pacific health service (n=5)	Well Child provider (n=3)	PHO (n=3)	Other (n=6)
All	39	60%	3	27	4	2	-	3
Most	17	26%	1	11	-	1	2	2
Some	1	2%	-	1	-	-	-	-
Don't know	8	12%	3	2	1	-	1	1

Source: Litmus 2012f; DHB stocktake.

Base: 65 Well Child/ Tamariki Ora providers

Tamariki Ora providers are accessing a range of training opportunities that broadly align with content of core contact one undertaken between 4 – 6 weeks (Litmus 2012g). Tamariki Ora providers are accessing training via Plunket, in partnership with Whitirea Polytechnic, although there is room to enhance this relationship and the relevance of the training. Tamariki Ora providers note that while Plunket training in partnership with Whitirea Polytechnic is useful, the training does not always recognise or align with their service delivery model to Māori and Pacific communities. DHBs also acknowledge that WCTO training is available through Plunket. However, they note these relationships need to be further developed to engage Tamariki Ora providers in this training.

“We often find Plunket are funded to provide training and resources to TO providers, although this is not always communicated well, meaning those tasked with delivering to ‘hard to reach’ populations are poorly equipped to do so.” (DHB)

“Plunket is a main stream model and not reflective of practice in iwi providers – clinically pertinent but not culturally relevant. The Plunket preceptor mentor is not necessarily best fit for iwi provider.” (Tamariki Ora provider)

5.3.7 Maintaining capacity and capability of Tamariki Ora providers

The findings from the stocktake suggest that Tamariki Ora providers who responded have a workforce with the appropriate competencies to deliver the three WCTO components at core contact one. However, maintaining their capacity and WCTO capabilities is challenging. National and international stakeholders strongly reinforce the importance of the Tamariki Ora providers in delivering the WCTO services to key priority populations of Māori and Pacific peoples. **As one international expert noted it does not matter how competent providers are if they cannot reach families.**

“It is intuitive that the more skilled you are the more likely you’ll be a better provider. But I’m also aware of the need for culturally specific tools and methods.... It’s important that the person is accepted by the population and have an understanding of the culture.... That’s important no matter how trained you are.” (International Well Child expert)

DHBs hold variable perceptions of the capacity and capability across Tamariki Ora providers (Litmus 2012g). Some DHBs highlighted the clinical competency and multi-disciplinary approach of some providers, while others noted the difficulties in smaller providers maintaining an adequate staffing level.

“The workforce has excellent capability and capacity; all providers of the core contact one are WCTO-trained nurses, supported by community health workers when required. For many of these staff, they are also trained vaccinators; outreach nurses and know their communities very well.” (DHB)

“Capacity and capability is always an issue within any workforce, especially in a smaller region such as [DHB], therefore when individuals leave WCTO services, recruiting and filling roles can sometimes be challenging. There are also issues around covering positions when others are on leave, etc. This is currently managed to ensure continuity of service but is an on-going challenge.” (DHB)

Both DHBs and Tamariki Ora providers highlighted that the capacity of Tamariki Ora providers (i.e. the small number of staff unconnected to a wider national structure) impacts on the ability to sustain and grow the capability of their Tamariki Ora workforce. Some larger Tamariki Ora providers are offering preceptor mentors to smaller providers.

Key challenges noted by **DHBs** include:

- Training
 - cost and travel is a barrier to access workforce development opportunities, particularly in geographically isolated rural areas
 - lack of funding for training courses.
- Service pressures due to increasing birth rates putting pressure on limited resources
 - challenges with backfilling staff for leave, training opportunities and important inter-sectoral regional meetings are evident.
- Small client volume resulting in a lack of opportunities to develop other staff’s WCTO skill base.
- Lack of clinical mentoring and peer review (discussed further in section 5.3.9).
- Recruitment and retention of workforce
 - limited pool of qualified WCTO staff to draw on making recruitment and backfilling challenging where staff leave or are on leave (especially in rural areas), or wish to attend training.
- Inability to promote service as may not be able to service appropriately due to lack of capacity.

“The [Tamariki Ora] provider has to train new if someone leaves, and have to support Well Child training. Once trained they are largely on their own and peer review and opportunities for professional guidance are limited. Unable to capacity build as funding and provision of national provider does not allow.” (DHB)

“NGO are bulk funded – therefore unable to market their services for additional families as they may be oversubscribed and not able to cope. NGO are small and the Pacific provider is probably not as experienced as they need to be to provide to children at risk/high need with confidence (size of contract and a small NGO). Māori provider has experienced staff and a GP. LMC referrals are not always timely and they do not always provide the parent with a choice, even they are Māori or Pacific. WCTO providers are now in competition with each other.” (DHB)

DHBs recognising these challenges have frameworks and monitoring in place to ensure Tamariki Ora providers meet the competencies specified in the WCTO service specifications, including:

- service agreements and contracts requiring professional development and performance appraisal as well as regular monitoring reports and core competencies and standards
- monitoring reports and regular meetings with Tamariki Ora providers to discuss service provision, successes and any issues arising
- three year Health Share audit process to scrutinise and escalate any workforce development issues to the DHB.

Tamariki Ora providers also acknowledge these challenges and identified the following as ways to enhance their capacity and capability to deliver quality WCTO services:

- **Sector development and infrastructure**, in particular a national Tamariki Ora operational or advisory group to provide a robust infrastructure for support, advice and clinical guidance.
- **Strengthening inter-agency linkages** with other providers including Tamariki Ora providers, Plunket, GPs, LMCs and other inter-linked organisations.
- **Funding structures to recognise the additional costs** to deliver services to Māori and Pacific families/ whānau, particularly those that are geographically dispersed, hard-to-reach, and those communities with more complex health and social issues and needs.
- **Increased funding and resourcing** so they can remunerate competitively in line with Plunket or DHB, employ more staff, and for those working in rural areas increase mobility and outreach of Tamariki Ora nurses.
- **More workforce development** through:
 - More trained Māori and Pacific Tamariki Ora nurses.
 - Funding for postgraduate certificate in primary health care specialty nursing WCTO Strand, ideally at local tertiary facilities.
 - Ongoing access to training. A number of Tamariki Ora providers are concerned that this training may not be available to them long-term. While Tamariki Ora providers note that training alone does not meet all their requirements, they are important courses for maintaining their professional development.
 - More frequent Tamariki Ora nurse conferences/hui facilitated by a Māori Health Educator.
 - Opportunity for annual updates/professional development to Tamariki Ora providers
 - Easily accessible resource library.
 - Paid release time for training and up-skilling of current staff.

- **Suggested training areas included:**

- Seamless handover from LMC to WCTO provider; concept of WCTO checks and the importance of their role in timely core contact one provision.
- Domain specific training: family violence prevention, child abuse and neglect.
- Training around data collection and systems.

“The ability to be able to work in a way that meets the needs of the whānau e.g. a huge number of clients on the [name] are Maata Waka who are isolated from their whānau and often their only cultural contact is with the WCTO Services: If their cultural needs are not met there is a risk they may disengage and go into hiding. This means that the tamariki become victims of circumstance. It is therefore critical that there is on-going support through a Kaiāwhina to engage in a way that is appropriate for Māori. New contract specifications and method of payment make it difficult to provide a culturally appropriate service.” (Tamariki Ora provider)

“[Name] Health Clinic provides services to hard-to-reach/vulnerable whānau. The challenge associated with their practice requires that they are mobile. Funding to support resources such as iPads would assist the team to provide up-to-the minute information for organisation and clients.” (Tamariki Ora providers)

5.3.8 Clinical supervision and support

The role of clinical supervision is to provide in-depth reflection on clinical practice. It aims to enable the achievement and sustainability of high quality practice through the means of focused support and development (Walker et al 2007). Clinical supervision can occur at an individual, group or peer supervision level.

DHB level

Feedback from DHBs indicates variable structures, processes and/or capabilities to undertake clinical supervision of the WCTO services at a regional population level.

Three quarters of DHBs have service networks in place for connecting WCTO services in the region, and two thirds have clinical support in place (Litmus 2012g). Less than half have supervision, governance groups, clinical advisory groups, or referral reviews (refer Table 10). **Unlike the B4SC, less than half of DHBs have a regional Clinical Advisory Group for WCTO core contacts 1-7.**

Table 10: At a DHB level the types of processes and service linkages across providers of WCTO Services, particularly providers of core contact one

Type of process/ service linkage	DHBs who have them (n=19)
Service Networks	15
Clinical Support	13
Supervision	9
Governance Groups	9
Clinical Advisory Group	8
Referral Reviews	8

Source: DHB survey on WCTO providers (Litmus 2012g)

Base: Those who answered the question; n=19

“All three providers meet regularly with and without [DHB] and often work together on outreach and follow up of hard-to-reach children and their whānau.” (DHB)

“Each WCTO service [names] has their own governance and clinical review protocols, as these services are part of bigger health networks (PHOs) including GP and nursing teams.” (DHB)

“We developed a quarterly network meeting to build collaboration. Trying to address the competition and lack of trust between the providers. We’d meet every one or two weeks: iwi providers, Pacific providers, PHN, Plunket.” (WCTO nurse)

Plunket

In each region, Plunket has infrastructure and process to offer ongoing clinical supervision and support.

- Clinical leaders are responsible for ensuring Plunket nurses and Health Workers (Community Karitane and Plunket Kaiawhina) receive ongoing training and supervision of their practice. Plunket nurses and Health Workers (Community Karitane and Plunket Kaiawhina) have access to the clinical leader at all times to discuss issues arising from their practice.
- Team meetings are regularly held to discuss ways to improve practice, review statistics on contacts and identify the number and strategy for addressing any late appointments or families/ whānau that are uncontactable.
- Peer supervision involving two to three Plunket nurses meeting for one to two hours occurs every 4 – 6 weeks to reflect on their practice. Similar peer reciprocal supervision is also undertaken with Health Worker (Community Karitane and Plunket Kaiawhina).
- Area preceptor works with clinical educator and clinical leaders to support new staff. New staff go through a comprehensive orientation for five to six weeks..
- Health Workers also complete an orientation programme with a Clinical Leader assessing whether the new staff member is able to practice in the role, under the direction of a Plunket Nurse (case manager)
- Plunket nurses have an annual individual appraisal which reviews data on all their referrals, and their wider practice underpinned by the Standards of Practice for Plunket Nurses (2009)

Tamariki Ora providers

Feedback from the 23 Tamariki Ora providers indicate that two thirds have clinical supervision and review processes in place, and they are regularly used (refer Table 11).

Table 11: Professional development and support structures available to Tamariki Ora providers

Type	Available to WCTO team No.	Regularly used by WCTO team No.
WCTO Service Networks	22	20
Supervision	19	15

Referral Reviews/Audits	18	14
Clinical Support	18	16
Clinical Advisory Group	15	12
Governance Groups	9	7

Source: Tamariki Ora providers' survey, Litmus 2012g

Base: Those who completed the question; n=23

DHBs acknowledge that not all Tamariki Ora providers have clinical supervision processes in place. As with workforce capacity and capability, the sustainability of these systems and processes can be undermined for smaller Tamariki Ora providers by wider pressures, e.g. not having time to attend meetings as over-committed delivering services, or losing a key staff member.

DHBs are using a range of strategies to address these challenges including encouraging smaller providers to work with the primary nursing leadership role to agree protocols relating to clinical mentoring and peer review. In some regions, Tamariki Ora providers and Plunket have agreements to share skills and experience, provide clinical supervision and to hold quarterly meetings to discuss WCTO services.

“Tamariki Ora providers can contact [name] Clinical Director Child and Youth if they require clinical support but doubt whether this option is used often. The Tamariki Ora provider systems support GP then specialist process.” (DHB)

“Due to two PHO merges over the last three years there have been many months of down time where professional development and support was down. During these times the Manager and Nurses have needed to form links with other [WCTO] providers. Nurses Profiles (PDRPs) show some gaps.” (DHBs)

5.3.9 Quality frameworks

Plunket

In 2003, Plunket implemented the Te Wana Quality Programme (Trout 2009)³⁷. Quality improvement in Plunket is implemented as a cycle of review and planned action in all its managed divisions. Each geographical area is responsible for their own quality improvement to their populations using the same set of standards.

For Plunket the noted benefits of using the Te Wana Quality Programme are:

- a bottom-up approach which encourages professional development of self-assessment of standards and reviewer skills
- establishes a three year cycle for planned and systematic improvement
- effectively connects Plunket to other organisations using the Programme.

Tamariki Ora providers

It is unknown what quality improvement frameworks are being used by the 62 Tamariki Ora providers. Feedback from DHBs shows that out of the 65 WCTO providers they contract, 18% had submitted a quality plan for 2011-12; of which 33% are required by the DHB to monitor and report against it.

³⁷ An overview of Te Wana Quality Programme can be accessed here <http://www.sfauckland.org.nz/site/supportingfamilies/files/Information/Te%20Wana%20Quality%20program.pdf> accessed 12 August 2012.

5.3.10 Information management

Plunket

For Plunket, the Plunket Health Record is the key document for recording information from core and additional contact with babies and their families/ whānau.

Currently, the Health Record is hard copy and requires completion by the Plunket nurse during the visit. Following completion of the visit, the Plunket nurse completes the Core and Additional Contact Visit data form which is then scanned into the national database³⁸. The data on this form focuses on the core need, breastfeeding, smoking and immunisation status, as well as care delivery, referral, reasons for referral and to where. Plunket sends the aggregated data to the Ministry.

Feedback from Plunket nurses highlights similar frustrations as LMCs with the completion of multiple forms. Plunket nurses are also expected to complete the Well Child Health Book which is held by parents (refer section 7).

“Documentation is very time consuming for a one hour visit takes around 25 minutes of writing.” (Plunket nurse)

Recognising these challenges, Plunket is currently investing in a significant upgrade of their information management system. Plunket Plus is expected to be launched this year. Plunket Plus will enable Plunket nurses to record and access information electronically in the field, reducing duplication of administration and record taking and allowing them to focus on the children and families they are working with. Plunket Plus will be populated with LMC data so more information will be available at core contact one.

Tamariki Ora providers

Tamariki Ora providers are required to keep a register of all children accepted into their service, and a record of all their client contact. From 2011, Tamariki Ora providers were required to report quarterly to their DHB contract manager on the data collected against the requirements in the tier 2 service specifications for WCTO Services (Ministry of Health, 2011). Data from across the WCTO core and additional contacts are being sent by the DHBs to the Ministry of Health to enable analysis of delivery of service at a population and regional level and by ethnicity for the family/ whānau.

In 2012, around 50% of Tamariki Ora providers provided this required data to the Ministry via their DHB contract holders. This reflects DHB feedback that across the 65 WCTO providers contracted by them (Litmus 2012g):

- 50% use the Ministry’s WCTO six monthly reporting template
- 86% meet the minimum requirements for information set out in the WCTO service specification.

Feedback from 22 Tamariki Ora providers indicates variation in their organisation’s information technology (computers, applications, networks and email). Around half have described their information technology as state-of-the-art and fully networked, while less than a quarter note limitations (Litmus 2012g).

³⁸ Clients can only exit the Well Child Tamariki Ora service if they transfer to another provider, leave the country, or in the event of death of the child.

Tamariki Ora provider's use of data and information to improve their service delivery of WCTO services is also mixed. Eight Tamariki Ora providers rated themselves excellent, eight good and five average (Litmus 2012g).

“Organisation providing state-of-the-art data collection and improvement to deliver excellent service (KARO³⁹).” (Tamariki Ora provider)

“The system has been in use for two years and we are now able to utilise the information collected to inform improvements including; reduction of overuse visits, referrals for child health issues, health promotion, organisation of B4SC clinics and client/whānau analysis.” (Tamariki Ora provider)

“We are dedicated to quality improvements – our accreditation status is evidence of this. However – monitoring data is very limited – does not ask for outcomes – is output focused. We utilise MedTech for patient management and data collection.” (Tamariki Ora provider)

Data and reporting by Tamariki Ora providers does not appear to be embedded in DHBs' monitoring or a quality improvement process for WCTO service in their region. Only three DHBs rated their use of provider reporting to inform improvements to WCTO services at core contact one as excellent or very good (Litmus 2012g). These DHBs use the information provided by Tamariki Ora providers to inform their relevant committees about the health status of the most vulnerable children in the DHB. The information is also used for planning purposes. Eleven DHBs rated their use of provider reporting as average to very poor, and five DHBs did not know how this information was used.

Reasons given by DHBs for their lack of use of the data from Tamariki Ora providers are:

- the early stage in the use of this new data reporting requirement means that some DHBs have not factored in this analysis or recognise it as their role to use the analysis to identify improvements to the WCTO programme
- inconsistent or incomplete information received from providers
- the need for real time information as the six-monthly frequency of reports does not assist with targeting those families not seen by a WCTO provider
- no current way to effectively monitor enrolment across providers
- no whole of population information

“...can't access Plunket data so difficult to take a whole-of-population approach. In the past, we have done some cross-matching of NHIs across all providers to reduce duplication and to get [the] true number of population accessing core entitlements. But this has been challenging given privacy with Plunket information. Some work done periodically to analyse the cost per contact, cost per client.” (DHB)

³⁹ MedTech Global Ltd and Karo have jointly developed the WCTO Advanced Form to facilitate the recording of information required as part of the framework. The system can also generate reports on the Well Child/Tamariki Ora programme, and include information needed to complete the HPAC reporting requirements.

5.3.11 WCTO providers perceptions of their core contact one contractual and professional obligations

For WCTO providers, core contact one is the start of the relationship with families/whānau who have a new baby. WCTO providers are particularly focused on ensuring parental support, attachment to baby and promoting wellness. WCTO providers are also seeking to take baseline measures for the baby to monitor over time, and to identify if there are any issues arising, which are emerging or have not received appropriate referral and intervention.

“The purpose [of core contact one] is primarily, to introduce self and service, establish relationship; secondarily, to obtain a history, make an initial assessment develop a care plan (especially for high needs people). (WCTO nurse)

Core contact one is an intense visit requiring the WCTO nurse to establish a relationship with parents, and undertake a number of assessments. For a WCTO nurse there is a constant balance between completing the components of the service specification, while meeting the needs of parents (e.g. difficulty with breastfeeding, sleeping, depression). WCTO nurses therefore need to be able to apply their professional judgement in deciding what is covered during visit. As one of the international experts noted, having a highly prescribed service specification can result in a loss of professional judgement to determine the best pathway to meet parents’ and baby’s needs. As noted by parents, there appears to be a shift occurring, in moving from a highly relationship-based service to a transactional service focused on completing the contracted requirements of their WCTO service schedule.

“WCTO nurses are told to see x number of children per day. This isn’t a driver for nurses. Emphasis should be on health improvements not the number of children checked...Too much focus on delivering the numbers.” (WCTO nurse)

In summary, WCTO providers are focused on ensuring contact and a visit before the six week discharge by LMCs so parents can receive ongoing support and reassurance. WCTO providers are strongly committed to and trained to undertake the three components of core contact one.

5.4 GPTs⁴⁰ contractual requirements, training and professional obligations

5.4.1 Background to GPTs

Services provided by PHOs are to improve and maintain the health of the entire enrolled PHO population, as well as delivering services in the community to restore people's health when they are unwell. PHOs are funded by DHBs to support the provision of essential primary health care services through General Practices to those people who are enrolled with them. The aim is to ensure General Practice services are better linked with other primary health services to ensure a seamless continuum of care. Enrolment in a PHO is voluntary. The Government provides subsidies to lower the cost of General Practice visits for eligible people enrolled in PHOs.

General Practice provides an entry point to the health system, delivers core medical and preventative care and helps patients coordinate and integrate their care. As such, General Practice has a holistic focus on patients and their families/ whānau's life-long health and wellbeing. General Practice has a number of priorities⁴¹ that compete for the limited primary care resource. They must also respond to emerging health initiatives and emergencies. General Practices operate private businesses and so are able to set their own fees for consultations and other services.

GPs, practice nurses and other allied health professionals work as a multi-disciplinary team within General Practice. Since 2001, with the launch of the Primary Health Care Strategy (Ministry of Health 2001), the role of practice nurses has continued to evolve with nurses taking on an increased proportion of the work (Finalyson 2010).

Primary care has an acknowledged role in reducing differences in child health outcomes between different groups in the population (National Health Committee 2000). Primary care directly influences children's health from provisions of services such as the immunisation schedule and WCTO checks, through to assessment and management of acute and chronic illness.

Access to care is recognised as an important element in promoting child health and reducing disparities in health (Forrest et al 1997; Andrulis 1998). To enhance access, children under six years old are eligible for free or low cost doctor visits and free prescription medicines regardless of their doctor belonging to a PHO or not. On average General Practices are currently funded for six to eight visits per child per year.

The initiative to reduce cost barriers did not result in free universal primary care for all children under six. In 2010, 78% of General Practices were providing free care to the under-sixes. The remainder were part-charging (Fancourt et al 2010). Further, as noted by an interviewed GP, some practices are charging parents for the six week check as the funding will not come through to the practice under the capitation system for several weeks after their enrolment. Feedback from WCTO providers also highlighted the requirement to be enrolled with a PHO to access free services can disadvantage mobile families/ whānau who do not benefit from the subsidy.

⁴⁰ General Practice Team

⁴¹ Increased immunisation, better help for smokers to quit, more heart and diabetes checks <http://www.health.govt.nz/new-zealand-health-system/health-targets/2012-13-health-targets> accessed 13 August 2012

To further remove cost barriers, in July 2012, the Government introduced free after-hours medical care across New Zealand for children under six years of age. Parents interviewed emphasised the importance of these initiatives in removing cost barriers to access General Practice services.

*“I feel like after they turn five you are cut off and you are on your own then”...
“Then a year later you have to pay for the doctor, and I stop taking them because it is too expensive.”* (Māori mother, Taranaki)

“I am going to regret it when mine turn six because of having to pay for doctor’s services. Mine have asthma and eczema. Some of it is not subsidised. One of mine is covered head to toe with eczema.” (Māori mother, Taranaki)

From October 2012, the Ministry is implementing a new approach to facilitate the enrolment of newborn babies with a General Practice and PHO as soon as possible after birth. Data shows virtually no newborn babies are enrolled with a GP/practice and PHO by the first immunisation event at six weeks and just under half are enrolled at 12 weeks of age (Ministry of Health 2012). Under the new enrolment policy, General Practice will enter the newborn into their patient database as soon as they are nominated as the baby’s GP by the parents at the birthing unit – rather than waiting to enrol them at their first doctor’s appointment, as currently happens. One of the benefits of the new system is that practices will be able to remind parents when their baby is due for their first immunisation at six weeks of age.

Within General Practice, the role of Integrated Family Health Service continues to emerge. The goal of Integrated Family Health Service is to bring the right combination of health and social services to meet the needs of individuals and families in a given community.

5.4.2 Contractual requirements at core contact one

Unlike LMCs and WCTO providers, the requirements for whether and the extent to which GPTs are required to check a baby at six weeks is unclear. There is a lack of clarity across the Ministry’s documentation about the role of the GPT. In the GP survey, one in ten noted there is confusion amongst GPs about who undertakes the six week check (Litmus 2012e).

The requirement for GPTs to undertake a six week check is noted in the Ministry’s WCTO Handbook (2002b). The WCTO Handbook specifies that the GPT undertake an assessment of the six week old baby linked to the six week immunisation event. The purpose of the assessment is to reassure parents their baby is developing normally, and if necessary, address any health or development concerns, promote breastfeeding and positive parenting skills and attachment, identify needs for support, and ensure the baby is enrolled with a WCTO provider and GPT.

The six week check components are (refer Table 13 for more details):

- systematic and thorough clinical assessment of the baby
- family history and obstetric history
- assess parent-child interaction – early bonding, initial (positive) parenting response and parenting skills
- assess support needs
- anticipatory guidance to parents/caregivers
- provide community linkages
- promote positive parenting.

It is less clear in the WCTO Schedule birth to 4 – 6 weeks (Ministry of Health 2010c) whether the GPs are required to undertake a clinical assessment of the baby, beyond addressing specific health issues raised by the parent. This document defines the six week check as focusing on the six week immunisations, addressing any health issues for mother and baby, and providing ongoing medical and primary health care services to baby and family. In contrast, the WCTO Framework document (2010, section 5.8.1.1⁴²) directly implies that GPs do undertake a six week check of babies before their immunisation.

The role of the practice nurse at the six week check within the GPT is not defined across the documents. Feedback from GPs indicates that practice nurses are undertaking some components of the six week check (refer section 6.2.5).

5.4.3 Professional obligations to undertake a check of baby

GPs interviewed had a strong sense of professional obligation to undertake a physical check of the baby before the six week immunisation. However, there are suggestions that some GPs may not perceive it is their professional obligation of undertake the check, if already done by other competent health professionals.

Cole's Medical Practice in New Zealand (Medical Council of New Zealand [MCNZ] 2008) sets out the main legislation, ethical standards and guidelines which govern medical practice in New Zealand. The Council expects all doctors registered with the Council to be competent. It is the responsibility of competent doctors to be familiar with Cole's Medical Practice and to follow the guidance it contains. The standards require, amongst others that medical professionals assess patients' needs and to determine the most effective investigations or treatment. As with nurses, medical professionals are to protect patients from risk of harm – patient safety is paramount.

⁴² <http://www.health.govt.nz/our-work/life-stages/child-health/well-child-services/well-child-publications/well-child-service-specification> accessed 13 August 2010.

The scope of General Practice as detailed in Aiming for Excellence (RNZCGP 2012), also sets out a range of obligations for GPs. Some obligations relevant to the discussion on whether or not GPs should undertake the six week check are expectations that General Practice:

- develops a patient-centred approach, orientated to the individual, as well as an approach that is responsive to the needs of their family/whānau and their community
- promotes health and well-being through appropriate and effective intervention
- has a specific responsibility for health in the community
- is personal, family and community oriented comprehensive primary care that continues over time, is anticipatory as well as responsive.

All 46 GPs in the GP survey noted they undertake a six week check of babies before their immunisation. The reasons given by GPs for undertaking the check reflect their interpretation of their professional obligations. As noted in Table 12 the reasons for undertaking the check given by GPs can be clustered into their domains of competence:

- Deliver appropriate medical care through undertaking the check.
- Establish and strengthen the relationship of trust with patients, and to get familiar with the baby when healthy, as well as meet parents' expectations. GPs are seeking that parents will feel comfortable to come in if worried about the baby, and not wait until baby is very sick.
- Protect patients from harm as GPs acknowledge it can be extremely difficult to pick up physical issues in babies (e.g. heart murmurs). The current lack of information sharing between LMCs and GPs means they may not be aware of whether a physical examination of the baby was undertaken or the findings. Further, some GPs are not confident that LMCs have the appropriate training and competencies to undertake the six week check. Some GPs noted that if a paediatrician has recently checked the baby then they will not undertake the six week check. The latter suggests that GPs' decision to do the check is driven by their perception of the competency of other health professional completing it.
- Ensuring clear communication through ensuring practice records are up-to-date. It is likely this driver for accurate records may decrease with the introduction of the enrolment of newborn babies with a General Practice and PHO as soon as possible after birth.

Table 12: Reasons GPs undertake six week check

Reasons prompted (n=46)	Main reason %	All reasons %
Deliver appropriate medical care		
Good practice to give a thorough six week check to all infants regardless of whether other Well Child services have also done so	54	41
Good practice to assess baby before six weeks immunisation	13	65
Establishing a relationship of trust		
To establish/ strengthen relationship with mother, baby and family	17	70
Parent expects/ requests GP to check of their baby	0	54
Protecting patients from harm		
Personal reassurance that nothing has been missed in baby checks by other health professionals	2	67
Lack of information received from LMC about postnatal care of baby	2	48
Midwives not appropriately trained to undertake physical examination of baby (e.g. listening for heart murmurs)	4	39
Do not receive discharge form from LMC before see baby at six weeks so not clear what has been completed	0	37
Ensuring clear communication		
To update practice records about baby	0	70

Source: GP survey 2012

Base: all those who answered the question; n=23

“The six week check is the time at which the baby is introduced to the General Practice and the beginning of the on-going relationship with that young person. It is very good to have an opportunity to assess the baby and its functioning in its family at a time where the prime focus is not on an urgent illness problem.” (GP)

“A full physical exam of a six week old baby is a skill that must be done well. Advice re: parenting/ nutrition, etc. can be given by someone other than the GP.” (GP)

“Most of my six week old babies present for immunisations only and the six week check examination has already been performed by the midwife. I always do it again as I do not believe that a newly qualified midwife has the expertise or experience to examine the cardiovascular system in particular, with no formal medical training..” (GP)

“We often haven’t seen mum since she was diagnosed as being pregnant, and sometimes we don’t even know that there has been a baby.” (GP)

Feedback from key stakeholders and parents indicate that other GPs are not undertaking a six week check. The reason for this is unknown.

5.4.4 Clinical competencies and training to deliver

Doctors are highly skilled and qualified professionals. In New Zealand to become doctor requires six years of study to gain a Bachelor of Medicine and Bachelor of Surgery (MB ChB), and another year of probation to gain general registration. While doctors and GPs in particular are highly skilled, **it is unknown the extent to which GPs undertaking a six week check have the competencies as detailed in the Tier 2 Service Specification.**

*“In the case of the six week medical examination, the required competencies are that of a **General Medical Practitioner who has met the competencies for Child Health/Well Child approved by the Royal New Zealand College of General Practitioners or a Paediatrician who is a member of the Royal Australasian College of Physicians** (or is working under supervision until competencies are achieved) will be deemed competent to deliver this component.” (Ministry of Health 2010f).*

Feedback from the RNZCGP highlights that the six week check and other child health checks are currently part of the GP curriculum and are examinable in PRIMEX (soon to be changed to GPEP exam). There are several educational components of this throughout the first year of training including in practice teaching with their teacher/supervisor to discuss cases as they present. The material is also covered in the paediatric seminar day, generally two in each region, which may include presentations by Registrars and educators about the steps involved as well as specialist presentations.

Review of the GPEP1 Paediatrics scaffold shows an emphasis on the development of knowledge of paediatric developmental milestones and to be able to undertake Well Child checks. A working knowledge of childhood behavioural disorders, the available referral and support services is also expected.

Currently, it is estimated that around one quarter of doctors working in General Practice are not vocationally registered, nor participating in vocational training⁴³ (NZCGP 2010). RNZCGP believes all doctors working in General Practice should have completed or be undertaking vocational training. **However, there is no requirement for doctors working in General Practice to undertake vocational training.** Other OECD countries like Australia, the United Kingdom and Canada require vocational training for doctors working in General Practice.

It is assumed that practice nurses undertaking components of the six week check will have similar competencies as WCTO nurses, or be supervised by someone with the appropriate qualification. Again, it is unknown the extent to which practice nurses meet this criteria. **Feedback from key stakeholders note that practice nurses are unlikely to have specialist training to deliver WCTO services.**

⁴³ The Medical Council of New Zealand (MCNZ) estimates that more than 900 medical practitioners currently working in General Practice are neither vocationally registered GPs nor participating in vocational training.

5.4.5 *Quality framework for General Practice*

At July 2012, 72% of all General Practices were registered with Cornerstone, and of those registered 89% were accredited⁴⁴. Cornerstone is an accreditation programme specifically designed by RNZCGP for s in New Zealand. Accreditation is a self-assessment and external peer review process used by health care organisations to accurately assess their level of performance to established standards and to implement ways to continuously improve the health care system.

Cornerstone combines a quality improvement and quality assurance process which allows a practice to measure themselves against a defined set of standards titled Aiming for Excellence - standard for New Zealand General Practice. Aiming for Excellence contains a range of indicators and criteria that describe minimum legal and safety standards and covers other significant areas of risk, as defined by the College.

Together Aiming for Excellence and Cornerstone meet the requirements of the New Zealand Public Health and Disability Act 2000 for the development, use and monitoring of a nationally consistent standard and quality improvement programme for General Practice services and patient safety.

5.4.6 *Information management*

MedTech Best Practice Decision Support Tool details the requirement to undertake a six week check of the baby covering items noted in the 2002 WCTO Handbook, more specifically: progress, assessments, physical examination, breastfeeding, health protection, immunisation choice, things to talk about (as listed on the WCTO Health Book 2005 version). MedTech enables the GPT to access baby and family notes as needed to record care received, actions and referrals made.

The implementation of the enrolment of newborn babies with a General Practice and PHO as soon as possible after birth will enhance general practices' ability to target services to and monitor outcomes for newborn babies in their practice and within the PHO population.

The WCTO Health Book is seen as an important mechanism for sharing information across providers, particularly as there is currently no shared information system. Section 7.2.2 summarises further provider feedback on the WCTO Health book.

5.4.7 *GP perceptions of their contractual and professional obligations of the six week check*

With the changes to maternity care in New Zealand and the WCTO schedule, there appears to be some confusion about whether or not GPs are expected to undertake the six week baby check.

⁴⁴ <http://www.mzcgp.org.nz/accredited-practices/> accessed 15 August 2012.

Many GPs remain committed to undertaking the six week baby check, even though some believe they are not compensated for this. GPs' rationale for undertaking the checks is driven by professional obligations to the long-term health and wellbeing of the baby and their families/ whānau and their enrolled PHO population, as well as the need to ensure patient safety. Their conviction for undertaking the check is further reinforced by a lack of information (or timely information) about what checks have been completed, their outcomes, and the competency of other health professionals to undertake a systematic and thorough clinician examination of a baby.

“The six week check with GP for mum and baby is a cornerstone event.” (GP)

“I feel these checks are crucial for mothers, education, screening of mother and infant. It is not possible to tell who is going to have difficulties and just offer those mothers a check. A new baby is a big change in a family. I think the more chance the new parents have of feeling there are healthcare providers who know them and will provide support for physical/mental health issues, the better.” (GP)

GPs are predominantly focused on the baby's clinical examination, perceiving this assessment as needing their medical specialism to ensure abnormalities or issues requiring referral or further treatment or intervention are identified. GPs tend to perceive they are the most qualified profession to undertake this examination. Some GPs acknowledge that other health professional are better placed to address health education and promotion components of the check. As discussed, in section 6.2.5, some are undertaking some maternal health checks, particularly in relation to postnatal depression.

“Traditionally, if the baby requires further assessment or intervention for health concerns, it is expected that the family GP will have information in regard to previous health about the baby. This information is usually collated at the six week check-up i.e. the six week check provides baseline information.” (GP)

In contrast, there are indications that some GPs are not doing six week checks. As one international expert commented, this is of concern. In the UK, following a push to get health visitors (Well Child nurses) to deliver more services, there was a deskilling and disengagement of GPs from their Well Child programme. Focus is now being placed on upskilling GPs, and ensuring that Well Child considerations are forefront in GP consults with families. In New Zealand, concerns were also raised about the implication for immunisation rates if GPs do not undertake a six week check.

Currently, there is little guidance on which aspects of the six week check can be undertaken by the practice nurses as part of the GPT.

In summary, the contractual requirements for GPs and practice nurses in undertaking the six week check are not clear. Not all GPs have received vocational training, and it is unknown the level to which GPs undertaking six week checks have received recent WCTO training. Further, GPs appear to have differing interpretations of their professional obligations to undertake the physical assessment of the baby. As a result, there appears to be variation in its completion.

5.5 Systems perspective of contracts and professional obligations

A comparison of the contractual requirements and professional obligations of LMCs, WCTO providers and GPs around the 4 – 6 weeks highlights similar checks and assessments are being undertaken (refer Table 13). However, these health reviews need to be considered within a continuum of care for families/ whānau and their babies, and with the perspective of the differing lens being applied by the provider (refer Table 14). From this perspective, key stakeholders and WCTO providers perceive that the services offered are complimentary.

From a life-course and developmental perspective, consideration is also needed on the timing of the contacts (discussed on section 6.3). **In this wider context, the staggered delivery of services across a range of providers ensure parents receive a range of services at times when they feel most vulnerable, reflect the rapid development of their baby, and when parents are most receptive to anticipatory guidance to enable positive life-long outcomes for their baby, and.** Importantly, this multi-agency approach should ensure families/ whānau are connected to WCTO and primary care services that will offer support and advice for the long-term.

There are no obvious gaps in the checks contractually required to be delivered by the differing providers (refer Table 13). The suite of services contracted by the Ministry ensures competent health professionals place emphasis on:

- fostering parent-infant bonding which has long-term health and wellbeing implications for babies
- identifying maternal depression which may manifest over a period of time
- identifying any physical or clinical abnormalities for the baby requiring referral or treatment
- ensuring parenting advice and support on baby safety
- encouraging early immunisation which is one of the most effective medical interventions to prevent disease
- ensuring parents are supported and connected to health and support both during the difficult and changing time when babies are young and also for ongoing support and health services
- receiving relevant anticipatory advice.

Using a health equity lens, there appears to be no evidence that the contracted requirements are inappropriate for Māori and Pacific families/ whānau and baby, or that their use will increase existing health inequalities. However, this is an area that requires more thorough investigation. Further, this analysis assumes that Māori and Pacific can equally access and engage with culturally competent services (discussed further in section 6.5). Critical at the 4 – 6 weeks stage is ensuring universal coverage and that arising from assessments, appropriate action is taken to identify and address the diversity of family needs and target services to meet their needs. Needs assessment is therefore a critical component of these assessments and checks.

Table 13: A comparison of requirements by provider in the WCTO National Schedule and Practitioner Handbook

Components	Assessment and content	LMC discharge check WCTO Schedule (2010)	Well Child/ Tamariki Ora Providers (Ministry 2010 & Plunket Health Record)	GP (WCTO Handbook 2002)
Health and development assessments	Maternal physical and emotional wellbeing / nutrition	√	√	√
	Maternal PND	√	√	√
	Family violence / abuse	√	√	√
	Family health and wellbeing – care plan, parent-child interaction and bonding	√	√	√
Interventions and support	Head	√	√	√
	Fontanelles		√	√
	Weight	√	√	√
	Length/ height	√	√	√
	Eyes (red reflex, following, pseudostrabismus)	√	√ (not red eye)	√
	Mouth		√	
	Ears (reaction to loud noise)		√	√
	Skin and fingernails, colour		√	√
	Cardio-vascular (heart and lungs)	√	(not with stethoscope)	√
	Chest/ respirations		√	√
	Abdomen	√	√	√
	Healing of umbilicus		√	
	Palpate femoral pulses	√		√
	Boy – bilateral descent of testes		√	√
	Girl - hygiene		√	√
	Stability of hips, hip screening	√	√	√
	Reflexes			√
	Vit K	√		
	BCG/ Hep B vaccine due/ organised/	√		√
Promotion of health and development	Breastfeeding promotion	√	√	√
	SUDI prevention	√	√	
	Immunisation	√	√	√
	Parenting advice (crying, infant development)	√		
	Prevention in babies being shaken	√		
	Recognition of minor illness	√	√	√
	Maternal and family/ whānau support networks	√		√
	Smoking cessation	√	√	
	Parenting age and stage	√	√	√
Safety/ injury prevention	√	√		

One or two LMCs and GPs suggested that it may be harmful for multiple providers to be testing for hip dysplasia. The review of literature indicated no evidence of this, although ‘potential harms from screening include examiner-induced hip pathology caused by vigorous provocative testing’ were noted (USPST 2012). The latter implies poor fidelity with the testing procedures.

Table 14: Summary of philosophies, scope and obligations at 4 - 6 weeks

Area	LMC	Plunket	Tamariki Ora providers	GPT
Philosophy	Negotiated partnership with mothers	Together, the best start for every child Working in partnership	Kaupapa Māori perspective Pacific values and diversity Health equity and improved health outcomes	Health and wellbeing Restore health Coordinate and integrate care Entry point
Overall focus of care	Pregnancy, birth and postnatal care to 6 weeks Protect the normal process of childbirth	5 years of life Wellness model	Life-long individual, family/ whānau and population health focus Strength-based model	Life-long individual, family/ whānau and enrolled population health focus Medical perspective: vaccination & childhood illnesses [health education and promotion]
Primary client 4-6 weeks	Mother [baby]	Baby [mother]	Whānau	Baby [mother]
Focus of care 4-6 weeks	Discharge checks ensure confident to manage on own and connected to other services	Maternal-attachment and bonding Assessing Well Child development	Maternal-attachment and bonding Assessing Well Child development Whānau needs	Clinical assessment baby Six week immunisation Postnatal depression
Contracted requirements	Statutory requirement	Contracted core contact one	Contracted core contact one	Unclear contractual requirements
Professional obligations	Explicit discharge requirement	Duty of care	Duty of care Māori and Pacific community/ whānau obligations	Interpreted differently Strong obligation – no obligation
Competency	Trained to deliver discharge checks	Trained to deliver core contact one	Trained to deliver core contact one Challenges to maintains	Broad medical competencies General practice Well Child expert

The level of training to undertake the checks varies across health professionals.

LMCs receive training to undertake their checks. WCTO providers also receive full training, or are under supervision. Training received by GPs is variable in relation to the Well Child specialism. The UK HCP identifies that all practitioners who work with children, young people and families demonstrate a basic level of competence in the seven areas (Department for Education and Skill 2005):

- effective communication and engagement with children and their families, in particular the capacity to build effective and sensitive relationships with parents⁴⁵
- child and young person development
- safeguarding and promoting the welfare of the child
- supporting transitions
- multi-agency working
- sharing information
- promoting health.

The question was raised whether the obligations of health professionals can be met with minimised duplication. As noted, midwives have a statutory requirement therefore they have a legislated requirement to undertake discharge checks, although the refinement of the WCTO Handbook could redefine the physical examination undertaken by the LMCs.

WCTO providers and GPs have a duty of care to ensure no harm to babies and mothers either by their actions or lack of actions. For GPs or WCTO providers not to undertake a physical assessment of the baby would require timely information that a clinical examination had been undertaken by a competent trusted health professional, detailed information on what had been completed, the findings of the assessment and awareness that appropriate action was taken. The existing information systems and processes do not facilitate the timely or detailed sharing of information, and there is uncertainty about what other health professionals are delivering. Even if aware, the timing of the checks would determine whether or not another is undertaken. For many, the recognition that the four to six week period is time of rapid change for babies and stresses for families/ whānau will heighten obligations amongst health professionals to ensure nothing is missed.

Given the ongoing assessments of the WCTO providers that children are meeting developmental milestones, baseline measures on their equipment are essential at the first visit. Again, the need to undertake physical assessment of the baby is reinforced. However, as noted by expert international stakeholders and the literature, the greatest gains are likely to come from fostering the parent-infant bond and anticipatory guidance.

“The midwife often has not seen the baby since four weeks and problems sometimes crop up over the next two weeks until the six week examination and immunisations are undertaken.” (GP)

“Babies and their mothers can easily fall through the gaps - it is important that many people/ organisations are involved in the hope that at least one of them will be acceptable/ appropriate to the family.” (GP)

Some DHBs and providers raise the question of accountability and responsibility for ensuring all babies and families/ whānau receive these services. Each health

⁴⁵ The exception is that all practitioners will comply with the National Occupational Standards for Work with Parents (Lifelong Learning UK 2011) <http://www.familymatters.org.uk/work-with-parents/national-occupational-standards> accessed 24 August 2012.

professional has a responsibility for their services, but there is little population level monitoring that confirms mothers and babies, and their families/ whānau have received these services and support, and the actions arising from them.

Summary: Providers' Contracts and Obligations

LMC:

- LMCs under Section 88 have a statutory requirement to undertake the discharge check of mother and baby. The discharge checks for mother and baby are important components of the negotiated process to complete the midwifery partnership with the women.
- LMCs have received appropriate training and are clinically competent to undertake the discharge check of mother and baby as specified in Section 88, including the physical examination of the baby.
- A framework for information management of the discharge visit (and the continuum of midwifery care) currently exists. However, data collection continues to be primarily paper-based and not easily shared with other health professionals. The Shared Maternity Record of Care is seeking to address this.
- LMCs interviewed are strongly committed to their contracted and professional obligations noting that it would be unprofessional not to undertake a thorough examination of mother and baby before transferring to WCTO provider and GP.

WCTO provider

- Core contact 1 is the first contact on the WCTO Schedule and is intended to be undertaken between four and six weeks. Across New Zealand, core contact one is being delivered by a mix of Plunket and Tamariki Ora providers in all DHBs to offer choice and increase access to WCTO service for Māori and Pacific families/ whānau.
- At core contact one, WCTO providers are contacted to deliver services across three parallel streams which are delivered as an evidenced-informed integrated package. Currently, the documentation supporting WCTO services are not completely aligned.
- WCTO nurse and Community health worker training aligns with the requirements of core contact one. Feedback on Tamariki Ora providers and DHBs suggest they have a qualified workforce. However, sustaining the current level of capacity and capability within Tamariki Ora providers is particularly challenging due to the lack of training opportunities and time to undertake professional development.
- For WCTO providers, core contact one is the start of the relationship with families/ whānau who have a new baby. Core contact 1 is an intensive visit requiring the WCTO nurse to establish a relationship with parents, undertake a number of assessments, including a physical assessment and (ideally) in consultation with the family/ whānau identify needs and agree the care plan.

GPTs

- With the changes to maternity care in New Zealand and the WCTO schedule, there is some confusion about whether or not GPs are expected to undertake the six week baby check. Further, the role of the practice nurse at the six week check within the GPT is not defined across the documents/ schedules.
- GPs interviewed had a strong sense of professional obligation to undertake a physical check of the baby before the six week immunisation. However, there are suggestions that some GPs may not perceive it is their professional obligation particularly, if already done by other competent health professionals.
- While GPs are highly skilled, it is unknown the extent to which GPs undertaking a six week check have the desired range of Well Child competencies. The six week check and other Well

Child health checks are currently part of the GP curriculum and are examinable. However, it is estimated that around one quarter of doctors working in General Practice are not vocationally registered, or participating in vocational training. Further, it is questioned whether practice nurses have the specialist training to deliver Well Child services.

- GPs appear to have differing interpretations of their professional obligations to undertake the physical assessment of the baby. As a result, there appears to be variation in its completion.

Systems perspective

- A comparison of the contractual requirements and professional obligations of LMCs, WCTO providers and GPs around the four to six weeks time period highlights similar checks and assessments are being undertaken. However, the underlying focus and philosophies of the health professionals ensures a complimentary suite of services is provided.
- Staggered delivery across providers ensures families/ whānau receive a range of services during this vulnerable and stressful period. Importantly, it seeks to confirm that families/ whānau are connected to WCTO provider and primary care services that will offer support and advice for the long-term.
- Some DHBs and providers raise the question of accountability and responsibility for ensuring all babies and families/ whānau receive these services. Each health professional has a responsibility for their services, but there is little population level monitoring that confirms all mothers and babies, and their families/ whānau have received these services and support.

6. Service Delivery at 4 - 6 Weeks

6.1 Introduction

Having detailed the contractual and professional obligations, this section presents feedback from the providers, and other stakeholders on actual service delivery. Drawing on the findings from the three case studies, the GP, DHB and Tamariki Ora surveys as well as other stakeholders, this section addresses the following review questions:

- What is happening currently at the Well Baby checks delivered by LMCs, GPs and WCTO providers at around six weeks, i.e. the LMC discharge visit, the WCTO initial visit and the six week GP/immunisation visit. Focus is also placed on:
 - the timing of visits
 - information sharing between providers
 - coverage at 4 - 6 weeks
 - increasing access for Māori and Pacific families/ whānau
 - content delivered
 - outputs (referrals) and outcomes.

6.2 Overview of service delivery

6.2.1 Systems overview

Currently, there are two main models for delivering 4 - 6 week checks in New Zealand:

- **The tradition and more dominant model is independent providers** - LMCs, GPs and WCTO providers - delivering services to families/ whānau around 4 – 6 weeks. Efforts are made to ensure smooth transfer of information. However, at a systems level there is no cohesive framework or structure, which aligns the services, provides governance, and ensures clear lines of accountability. In some areas, the traditional model is working well with providers having effective relationships and interactions to achieve positive outcomes for families/ whānau. In contrast, in other areas, there is evidence of fragmentation and uncertainty of delivery across providers.
- **Integrated model of care** which tends to sit within primary care with LMCs and WCTO providers working closely together with other services. It is unknown the strengths and weaknesses of this model and whether it results in better outcomes for families/ whānau.

“The [WCTO] nurse shares premises with us and informal communication is frequent and easy.” (GP)

Detailed below is a description of the service delivery of the differing providers, followed by their perceptions of the overarching system of care.

6.2.2 LMC

LMCs interviewed note the discharge of checks of mother and baby may occur over several visits around 4 – 5 weeks depending on the mothers' needs and preferences at each visit. LMCs indicate that if mother and baby are progressing well and the WCTO provider is engaged, they tend to undertake the last home visit around four weeks. LMCs continue however, to be contactable by phone to six weeks, when the mother is discharged.

“Continuum of events between three and four weeks – top-to-toe check overtime around key milestones. Seeking to identify issues before exit, not on the day of... Issues re PND is hard to assess using Edinburgh scale before six weeks.” (LMC)

LMCs are seeking to ensure transfer to WCTO providers and GPs occurs early after birth, ideally in the first week. However, they acknowledge this does not always happen.

LMCs are very supportive of the earlier visit by a WCTO provider. Being aware that the WCTO provider has been in contact with the mother and set up a visit (or better undertaken a visit) offers reassurance that the mothers are connected to other services and will be supported after discharge.

One challenge of the earlier visit by the WCTO provider is the potential overlap of visits. Feedback from WCTO nurses, in particular, highlighted their diary is very tightly managed to maximise the number of visits completed. Parents have to fit in with the WCTO nurses' availability and not their preferences. As a result, the WCTO provider and LMC may see the mother on the same day, or the mother may negotiate with the LMC to change their visit.

The LMC and WCTO provider visiting on the same day may be beneficial in enabling a more detailed face-to-face handover of care, as suggested by members of the Expert Advisory Group and international experts. However, no evidence of joint visits was noted in discussions with mothers or providers. The potential downside to this model of care is if it results in large gaps between provider visits during these stressful early weeks. International experts also suggested that the handover from LMC to WCTO provider should be a gradual process, although evidence in New Zealand does not suggest this is occurring.

“We are working to ensure that if [the WCTO provider] visits at four weeks, we come in at five weeks – a level of informal cooperation.” (LMC)

Most LMCs are supportive of GPs undertaking a six week check of the baby, reflecting they may have assessed the child at four weeks and much may have happened before seeing the GP at six weeks. GPs undertaking a six week check of the baby offers LMCs reassurance that nothing has been missed which reflects the challenges of undertaking clinical examination of babies. LMCs are keen to ensure the mother is connected to primary care before discharge as the women may not have seen their GP for a significant period of time.

“GPs need to check for heart murmurs – good practice for GP as introduces GP to baby when fit. Women expect it and need to be re-connected to primary care as many have not seen GP for ten months. GP needs to know early if baby is in trouble – they need to know if the baby was transferred to Starship so they don't look foolish.” (LMC)

6.2.3 Plunket

Plunket nurses note, while it is challenging to fit earlier contacts into their diaries, visiting mothers for core contact one around four weeks is preferred. The benefits identified include ensuring no gaps between LMC discharge and seeing WCTO providers, better outcomes for breastfeeding, and ability to identify short and long-term needs, and offer support based on clinical judgement. Plunket nurses acknowledge this is a particularly important stage to be offering anticipatory guidance to strengthen the maternal-infant bond, and foster their partnership relationship.

On receipt of the transfer form from LMC, Plunket nurses seek to contact the mother ideally within 48 hours. Plunket nurses describe the purpose of core contact one as the opportunity to introduce the service and self, seek to develop a relationship with parents, and gain their informed consent to use the service. They also seek to obtain a history and make an initial assessment of the baby to inform the development of a care plan, especially for families who are identified as high needs.

“Core one covers – what’s on top for mum, physical assessment top-to-toe (document any body things e.g. birthmarks). Overview of Plunket and what we offer, assess and refer as needed. It gives a picture of the baby at that point of time. Looks at how mum is responding to and dealing with baby. Identify risk and protective factors. Lasts one hour – longer for first time mum. Re-book for next visit at 8 - 10 weeks. Ideally give a phone call between core one and two.”
(Plunket nurse)

Delivery style of the core contact one content appears to vary depending on the experience of the Plunket nurse. More experienced Plunket nurses tend to use a conversation style approach to cover the content, although the newly trained may focus on the completion of the Health Record and then follow up with a conversation. The need for flexibility to address mothers’ pressing needs is acknowledged.

“I tend to work systematically through, but you need to be flexible, for example if the mum is distressed, I might not do everything. You need to ensure a common sense approach... it is a judgement. If you do not cover everything then you can follow up at core contact two or book an additional follow-up appointment.”
(Plunket nurse)

6.2.4 Tamariki Ora Providers

On receipt of the LMC transfer notice, the Kaiāwhina and Pacific Community Health worker acknowledges receipt and seeks to make contact with the family in 48 hours. Tamariki Ora providers use a range of strategies to engage with high needs families/whānau including text, phone call, dropping off appointment forms and assessment slips, and working through community networks such as kōhanga reo and family members.

For Tamariki Ora providers, focusing on high-needs families, intensive work is undertaken to engage with families/ whānau. The Kaiāwhina and Pacific Community Health worker is critical to finding and gaining consent to engage in the WCTO programme, and providing ongoing support. They are described as the “*heart and roots of the service*”; able to open doors and allow the service to come in. As noted by Tamariki Ora providers, Kaiāwhina know and are known by their community, and their use of a Kaupapa Māori approach enables access to marae and other key networks. Pacific Community Health workers are also known by their communities and can negotiate access. Further, they offer a wrap around service which provides the opportunity to act quickly on a range of issues, such as smoking, mental health issues, in seamless and non-threatening way.

Once contact is made⁴⁶ the Kaiāwhina or Pacific Community Health worker visits the family and seeks their informed consent to be enrolled with the Tamariki Ora provider. The enrolment process tends to focus on health and safety, consumer rights, and informed consent, and following consent a booking is made for the core content one visit. Dependent on the contract specifications, the Tamariki Ora provider may also have to check eligibility against their DHB contract.

“Referrals come from the LMCs. We can only register clients if we receive a referral from LMC. The caregiver has to give consent first. Following receipt of referral, we need to review against criteria as we are only funded to service 1200 for core contacts one to eight for Māori, Pacific, and high needs.” (Tamariki Ora provider)

Recognising the difficulty of engagement, the Tamariki Ora nurses seek to maximise the contact and cover as much as possible. The Tamariki Ora nurse visits at home for around an hour. The purpose of core contact one is to offer families/ whānau reassurance, provide key health information and support with breastfeeding, as well as ensure safety of baby at this critical time. Content covered at the core contact one is gaining a background history, assessing the household situation (smoking, use of a car, drinking), a top-to-toe assessment of infant and health education (mental health / postnatal depression, contraception, family support, family violence). Depending on identified needs there is a follow-up by the Tamariki Ora nurse using additional contacts, or by Kaiāwhina or Pacific Community Health worker, or other services.

“So when you get them, you do everything at once.” (Tamariki Ora provider)

The visits are predominantly undertaken in the home for core contact one, and in the case of Tamariki Ora providers other core and additional contacts are home-based.

For some Māori and Pacific providers, Tamariki Ora services sit within their wider remit of providing Whānau Ora services. In this context, a very holistic service is offered that seeks to strengthen families. The focus of the core contact one is therefore a holistic service focused on baby and the whānau. Consideration is therefore given to the other children’s immunisation status, food, clothing, transport to services, heating and so on to seek to address the wider primordial factors that will impact on the health outcomes, not just for the baby, but the whole whānau. As noted by a Pacific Tamariki Ora provider, focusing solely on the WCTO checks can be difficult when the family needs so much other support. Addressing wider primordial factors is an important component of the WCTO programme and is expected to be incorporated into the needs assessment and care plan developed in partnership with families/ whānau.

⁴⁶ While differing delivery models exist across Tamariki Ora providers, this service delivery model was evident across the providers interviewed.

6.2.5 General Practice Teams (GPTs)

Feedback from GPs and practice nurses indicate a range of practices around babies and children being seen by a GP before immunisation. Some GPTs see the baby at the six week immunisation for the six week check, and do not see the baby/ child at other immunisations. Some GPTs see the baby/ child before each of their immunisations. One practice noted they are running a 'parallel WCTO service' doing checks at six weeks, four, nine, 18 months, three years, B4SC, and five years. Visits were staggered to avoid the contacts by WCTO providers. While acknowledging this is unusual, their dual system addresses their concerns that some parents are not using WCTO services.

For babies enrolled, GPTs may send out a letter or welcome card to invite parents to bring baby for their six week immunisation. Others parents make appointments assumingly based on reminders from their LMC or WCTO provider. As one GP noted "*this is the time [six weeks] where the mother and child may slip through the net as baby is not registered.*"

Practice varies on whether the baby and mother are seen by the GP before the immunisation is given, usually by the practice nurse. Most practices undertaking a six week check, set up a double appointment for the baby with the GP and the practice nurse. The mother does not normally have an appointment as this would incur a fee. It is expected that the midwife will have undertaken the postnatal discharge examination of the mother.

At the six week check, the GP tends to focus on the undertaking the physical examination of the baby with a particular focus placed on listening to the heart and lungs, and checking the eyes. While an appointment is not made to examine the mother postnatally, most GPs undertaking the six week check observe mother-infant interaction and ask questions to assess for postnatal depression and contraception.

The practice nurse tends to weigh and measure the baby, offer anticipatory guidance and vaccinate the baby. In some practices, the 20 minute wait time after vaccination is used by the practice nurses to '*chat and see if there are any issues or stresses at home*'.

Appointments are clinic-based. GPs note that the checks they undertake are limited to their shorter consultation period. As a result some providers query whether the GPs can deliver a comprehensive six week assessment. GPs perceive that the division of labour between the GP and practice nurse ensures the content of the six week check is covered. Fasher (2012) argues that "*in a time-poor environment, it is possible to both examine the baby and establish a relationship with the family that overtime may enhance the child's health and lifelong wellbeing.*"

If the baby does not attend for the six week check, the follow-up focus is on delivering the immunisation and not the six week check. Follow-up strategies used are determined by the practice and vary. If the baby is transferred to outreach and the immunisation is delivered at home a six week check is unlikely to be completed by the GP. Some GPs expressed concern about timely information transfer from LMCs.

6.2.6 Providers' system perspective

LMCs, WCTO providers and GPs acknowledge there are current benefits having three providers offering parents services at this vulnerable time, more specifically:

- Security for families/ whānau as the earlier core contact one ensures that WCTO provider has visited before the LMC discharge at six weeks.
- Intensive support for families/ whānau particularly in the early days when parents often lack confidence and feel especially vulnerable.
- Access as families/ whānau may prefer seeing one type of provider to the other. Providers note that visiting GPs can be daunting for vulnerable families.
- Assurance for providers that no physical or medical issues have been missed, given the difficulty of assessing a baby, and the difficulty in detecting issues like heart murmurs.

“All providers offering something different. LMC is finishing, WCTO provider is starting and will see babies when well and GP is starting and will see baby when sick. I don’t really feel it’s one or other. I tell mums the GP check is different as they use a stethoscope.” (WCTO nurse)

“Need the overlap [between LMC and WCTO provider] in case there are issues with growth, child protection – so that families don’t feel alone for one week – one week can be a long time for a new mum.” (WCTO Nurse)

In contrast, a few Tamariki Ora providers, particularly Whānau Ora providers, were less supportive of the mix of providers. They note it is not helpful to bombard new mothers with lots of services, and to have differing providers offer services.

“Preference for [Tamariki Ora provider] ‘primary care’ model with 95% of six week checks being done in the clinic. The GP does comprehensive physical check (first priority), the WCTO nurse does health promotion and support, establishes relationship for future checks. It is very important that nurse is involved because nurse gives immunisations over long-term and has important support role.” (Tamariki Ora provider)

Providers identified the following key improvement areas:

- **More detailed discharge information from the LMC** (refer section 6.4)

“More liaison with midwife in transfer as not as good as it should be. With the move into Whānau Ora, we need to be aware of wider issues for whānau, not just tamariki. Midwife doesn’t have time to address these wider issues. [Tamariki Ora provider] has a Whānau Ora contract, including a Navigator, and can provide appropriate support within [name] for example drug and alcohol.” (Tamariki Ora provider)
- **Timely transfer from LMC to GP and WCTO providers** (refer section 6.4).
- **Enhance GPs’ communication with WCTO providers** (refer section 6.4).
- **Central database of Tamariki Ora providers** so highly mobile families/ whānau can be easily transferred and ensure support is in place if they move to another region.
- **GPs being informed of referrals made by other providers.**
- **Clarifying to parents the roles and timing of visits of differing providers.** LMCs in particular note that parents need to be aware that the WCTO providers will not be visiting as often as their midwife. However, if the family has an identified high-need this may not be the case if additional contacts are used.
- **Creating awareness of WCTO provider choice through increasing LMCs awareness of the different providers and differing services offered.** Some

Tamariki Ora providers are also Whānau Ora providers so can offer high-needs families/ whānau a wrap-around service.

- Plunket appears to be the ‘default’ provider which means that families are not offered a choice.
- Perceptions of Tamariki Ora providers are highly variable. Some are held in very high esteem, and LMCs, Plunket and GPs have an effective working relationship, and are confident to transfer. Others are perceived to lack core competencies and capabilities, and there is reluctance to transfer high needs families/ whānau.

“I never think to refer to Tamariki Ora providers – I really should be offering that choice and I will from now on.” (LMC)

“More promotion and education about our service to midwives to encourage whānau referrals to be received earlier. We can increase breastfeeding support and encouragement for mums. Increase in parenting education for at-risk whānau.” (Tamariki Ora provider)

- **Enhance the relationship between Plunket and Tamariki Ora providers** to work collaboratively as each bring a unique skill set that the other cannot replicate. Both are required for improved WCTO outcomes. In some regions, the relationship appears to be a competitive one, potentially resulting in duplicate enrolments of babies. In other areas, there are strong signs of collaboration occurring through co-location and shared clinical leadership. For both providers finding time to get together can be challenging due to the pressure of delivering core contacts. Furthermore, turnover of staff can also make it difficult to maintain the relationship.

“Ideally we would have regular meetings with Plunket to avoid duplication of clients, reduce ‘patch protection’ and enhance collaboration - people can’t remember whether they’ve been to Plunket.” (Tamariki Ora provider)

6.3 Timing of visits

Informally LMCs, WCTO providers and GPs talk about having a staggered pattern of 4-5-6 week checks for the families/ whānau. In theory, providers support this timing as it ensures that families/ whānau have weekly contact, and as said by many ‘a week can be a long time with a new baby’. Feedback indicates there is variation about the timing of when actual checks take place. Provider perception on staggered timing reinforces that their focus tends not to be on integrating the service to family/ whānau but more about avoiding provider overlap.

Analysis of the WCTO database was undertaken for core contact one to determine when WCTO providers were completing it (refer Figure 4 and Table 15). Almost all of core contact one is being conducted when the baby is aged between four and six weeks, and most often aged between five and six weeks. A noticeable amount (5%) of core contact one is conducted between three and four weeks of age. It is assumed this reflects WCTO providers seeking to target high-needs families/ whānau earlier. Following the changes to the timing of core contact one from five weeks to four to six weeks, 40% of families/ whānau receive visits earlier, while 60% continue to receive their first WCTO visit between five and six weeks.

Figure 4: Timing (in days from birth) when WCTO providers complete core contact one

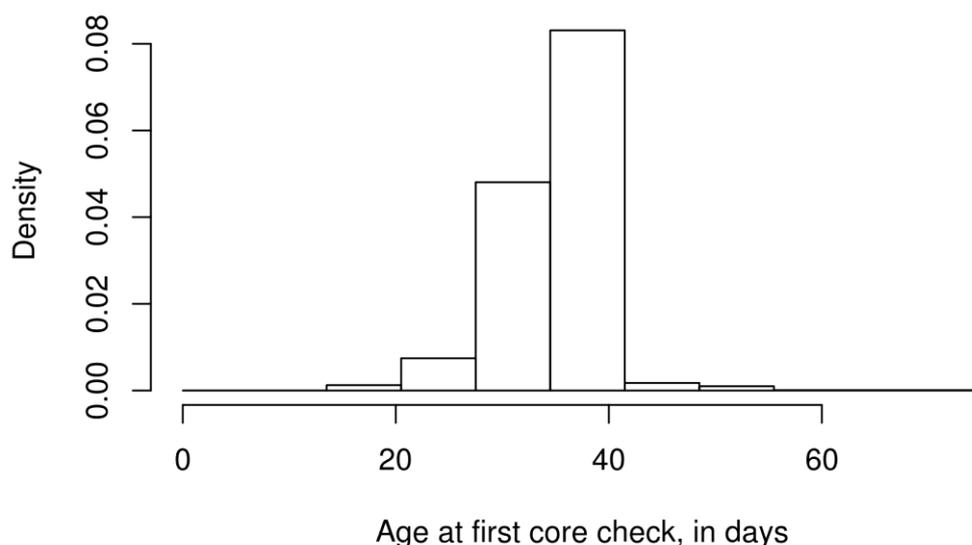


Table 15: Baby's age when receiving core contact one

Core Contact	Count	%
< 21 days	191	1%
21-27 days	1134	5%
28-34 days	7322	34%
35-41 days	12661	58%
>= 42 days	475	2%

Source: WCTO database

Base: Babies who experienced the 4 - 6 week core contact.

Feedback from Counties Manukau DHB suggests that by week four, mothers are often starting to get out and about, or moving between different homes. Having the WCTO provider contact families/ whānau earlier would therefore increase the chances that more families will be connected (at least for core contact one) to WCTO provider.

Timing GP's six week check with the immunisation makes practical sense, and aligns with the literature recommendation for undertaking the final physical and clinical assessment of a baby (Hall et al 2009).

"Midwives are referring high-need whānau earlier so the relationship and support networks are working well. Our nurses working closely with our social workers ensures a holistic approach is taken in terms of service delivery." (Tamariki Ora provider)

6.4 Information sharing between providers

Currently, there is no population-based electronic information system that enables joint data collection and information sharing across all the WCTO providers delivering services when the baby is aged between four and six weeks.

Information transfer across providers is predominantly paper-based. LMCs are faxing, mailing or emailing transfer documents to the WCTO provider and discharge form to the GP. **The system of transfer from the LMC in particular has been criticised by DHBs, GPs and WCTO providers for its lack of timeliness, and lack of detailed information** on clinical assessment and risk factors likely to have a significant impact on health and wellbeing, particularly for high needs families/ whānau (Litmus 20012g and e). GPs also note they are not being informed of referrals, for example to Maternal Mental Health services. GPs note it is critical they are aware of referrals so they are informed when the mother comes to see them for the same or other matters.

In several regions, WCTO providers have instigated a system whereby they text to inform LMCs they have received the transfer form and contacted the mother. This feedback loop is appreciated by the LMCs, provided they are texted in business hours. However, some LMCs stated that when they send the transfer information to GPs, no confirmation of receipt is sent back to the LMC.

“The more information the better. A recent example is a baby on morphine withdrawal – it would have been good to know that from the LMC.” (WCTO nurse)

Feedback indicates some improvement to timely transfer, information sharing and population monitoring which reflects a range of strategies being implemented regionally and locally. For example CMDHB have Kidslink, which notes when a child is born, records the linkages between the child and the nominated GP and WCTO provider, and ensures that the GP and WCTO provider are also informed. When the provider completes the immunisation or check, Kidslink is updated. The system calculates when the various immunisations and WCTO checks are due, and automatically sends reminders to the GP or provider if the relevant event has not been recorded on schedule (Rowe and Brimacombe 2003). This system means that WCTO providers and GPs are not completely reliant on LMCs making timely referrals.

“The Tamariki Ora service now sits within a wider DHB planning strategic process. Establishing an LMC auditing process to make sure tamariki are referred to GP and Tamariki Ora providers within the first four weeks. Have installed MedTech advanced form in three of the four providers. Immunisation Action Plan has been developed. This includes a Charter for Immunisation which expects LMC referral to WCTO by four weeks post birth. This is further reinforced with a Letter of Expectation from our Chief Executive outlining his expectations of GPs, LMCs, Midwives and WCTO providers.” (DHB)

Information sharing between WCTO providers and GPs is also variable. GPs complain that they are not aware of issues or referrals arising from WCTO checks until the family/ whānau inform them at an appointment. GPs note a strong preference to be informed of any referrals or relevant information by letter (as similar to their protocols with specialists). In contrast, WCTO providers note that GPs in many instances are their first referral point. However, after referral, the WCTO provider does not receive feedback from the GP on the outcomes of the referrals. Like GPs, their key source of information is discussions with the families/ whānau, which assumes a level of health literacy to pass on information appropriately, or that they will interact with the parent/ caregiver who saw the GP (vice versa). Across the seven core WCTO contacts, there appears to be little communication between the WCTO providers and GPs.

“In the case of children we often have absolutely no idea that a family is seeing Family Start or CYFS and that there may be some concerns about the child or family. We need to be in the loop. We have a good working relationship with midwives working locally and nearly always receive good information from them. They will also contact me if there are concerns re: the mother e.g. postnatal depression.” (GP)

“I believe that GP should be kept up to date with all information that can affect the health of children. For example, a specialist referring to another specialist always copies the referral letter to the GP. This really helps us understand what is happening to patients.” (GP)

It is expected that the piloting of the Shared Maternity Record and the Newborn Enrolment being introduced in October 2012 may go some way to address some of these concerns.

6.5 Coverage

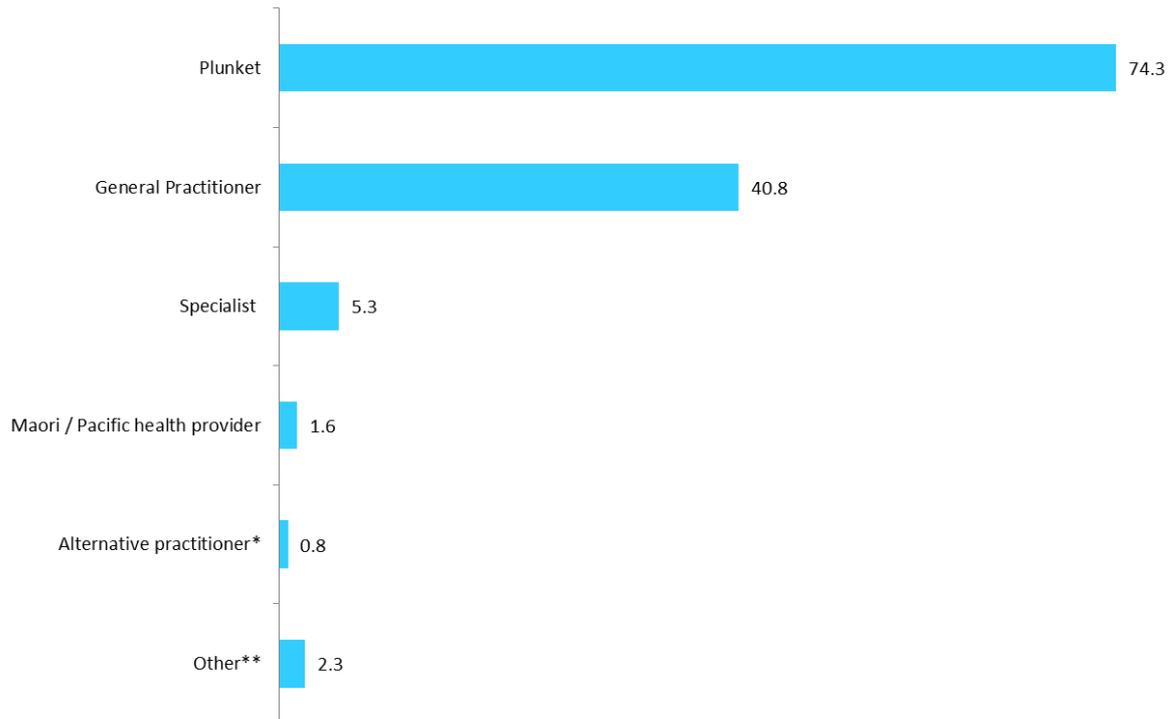
No centralised data exists that presents a collated overview of the reach of the services offered by LMCs, GPs and WCTO providers around the 4 - 6 week check.

For the purpose of this review, the proportion of babies receiving checks between four and six weeks has been estimated using the results from the Growing Up in New Zealand research (Morton et al 2012), immunisation uptake and the preliminary data from the WCTO data set.

Growing Up in New Zealand is a longitudinal study that provides an up-to-date, population-relevant picture of what it is like to be a child growing up in New Zealand in the 21st century. Growing Up in New Zealand recruited pregnant women who were due to have their babies between 25 April 2009 and 25 March 2010. 6,822 pregnant women and 4,401 of their partners were recruited. An additional 200 families in a ‘Leading Light: Roopu Piata’ group were recruited in late 2008.

In the first six weeks after the Growing Up in New Zealand babies were born it was found that (Morton et al 2012, refer figure 5):

- LMCs engaged with nearly all families (over 99%), at least once
- almost three-quarters (4,604, 74%) of families were in contact with Plunket, and 2% a Tamariki Ora health provider
- 41% (2,525) had taken their babies to a GP.

Figure 5: Postnatal care providers in the first six weeks

Source:

Morton et al 2012

Excludes LMCs

Percentage of mothers who reported this information

Multiple response(s), therefore will total to more than 100%

*Includes osteopath, chiropractor or cranial osteopath

**Includes lactation consultant, community or hospital nurse

A majority of Growing Up in New Zealand babies had been able to access the WCTO checks, with mothers of over 91% of the cohort reporting that their child had had their checks at birth, two weeks, six weeks, three months and five months of age (Table 16). At six weeks of age, the six week WCTO checks for this cohort were more likely to have been completed by a WCTO nurse (3255, 51%) than a midwife (2476, 39%), and 27% (1708) of the visits at this age were completed at General Practice.

Table 16: Providers of WCTO checks in the first nine months

Provider	Birth (n=6286) n(%)*	2 weeks (n=6259) n(%)*	6 weeks (n=6347) n(%)*	3 months (n=6237) n(%)*	5 months (N=6134) n(%)*
Midwife	5389 (85.7)	5583 (89.2)	2476 (39.0)	114 (1.8)	61 (1.0)
Plunket / Well Child Nurse	113 (1.8)	406 (6.5)	3255 (51.3)	5343 (85.7)	5283 (86.1)
Public Health Nurse	85 (1.4)	60 (1.0)	92 (1.4)	135 (2.2)	146 (2.4)
Māori Health Provider	9 (0.1)	20 (0.3)	44 (0.7)	72 (1.2)	73 (1.2)
Pacific Health Provider	5 (0.1)	8 (0.1)	36 (0.6)	40 (0.6)	45 (0.7)
GP /GP Practice	145 (2.3)	160 (2.6)	1708 (26.9)	1219 (19.5)	1137 (18.5)
Paediatrician / Specialist	1089 (17.3)	235 (3.8)	223 (3.5)	67 (1.1)	61 (1.0)
Other	18 (0.3)	12 (0.2)	8 (0.1)	7 (0.1)	9 (0.1)

Source: Morton et al 2012

* Multiple response(s) therefore will total to more than 100%.

Based in the NIR data⁴⁷, for the 12 month period ending December 2011, 71% of children who turned six months between 1 January 2011 and 31 December 2011 had completed their age appropriate immunisations.

- 76% for New Zealand European babies
- 56% for Māori babies
- 69% for Pacific babies.

Based on the WCTO database, Tables 16 to 22 summarise coverage at core contact one for July to December 2011 by ethnicity, gender, DHB, deprivation deciles and quintiles.

Key points to note are:

- Around three quarters of babies born received WCTO core contact one.
- **Less than half of Māori and two thirds of Pacific babies born received core contact one**, given the known health inequities for these children. As shown in Figure 7 and Table 27 (Annex 5) reach of the WCTO programme for this period peaks in core contact two. It is unknown whether this increase is reflected in an increase of Māori and Pacific babies receiving a WCTO visit.
- Compared to the total birth population, across DHBs reach at core contact one ranges from a 37% to 84%, and reach to Māori babies is consistently under 50% with the exceptions of Auckland (57%) and Hawkes Bay (61%).

⁴⁷ <http://www.health.govt.nz/our-work/preventative-health-wellness/immunisation/immunisation-coverage/national-and-dhb-immunisation-data> accessed 21 August 2012. Data was not available for the six week immunisation event.

- Those living in least deprived deciles/ deprivation quintiles have lower reach than those in most deprived areas. These statistics may reflect the success of WCTO providers to reach those living in most deprived areas. Conversely, it may also reflect that those living in least deprived areas do not perceive WCTO services to be relevant and are therefore refusing service or simply not engaging.

Table 17: Population coverage at core contact one by ethnicity

Prioritised ethnic groups	Contacts	Births	Coverage
All NZ	21785	30048	72.5%
Māori	4075	8527	47.8%
Pacific	2338	3593	65.1%
Asian	2964	3737	79.3%
European	11858	15914	74.5%
All NZ	21785	30048	72.5%

Source: WCTO database period July-December 2011

Base: Babies who experienced the 4-6 week core contact.

Table 18: Population coverage at core contact one by gender

Gender	Contacts	Births	Coverage
All NZ	21785	30048	72.5%
Female	10584	14618	72.4%
Male	11183	15430	72.5%

Table 19: Population coverage at core contact one by DHB

DHB	Contacts	Births	Coverage
Auckland	2611	3224	81.0%
Bay of Plenty	974	1422	68.5%
Canterbury	2085	2966	70.3%
Capital and Coast	1385	1909	72.6%
Counties Manukau	2881	4236	68.0%
Hawkes Bay	840	1105	76.1%
Hutt	729	1020	71.5%
Lakes	463	752	61.6%
Midcentral	882	1138	77.5%
Nelson Marlborough	629	818	76.9%
Northland	653	1120	58.3%
Otago	731	1048	69.8%
South Canterbury	210	296	71.1%
Southland	666	788	84.5%
Tairāwhiti	160	371	43.2%
Taranaki	465	753	61.8%
Waikato	1796	2635	68.2%
Wairarapa	313	267	117.2%
Waitemata	2933	3932	74.6%
West Coast	83	224	37.1%
Whanganui	276	407	67.9%

Table 20: Population coverage for Māori babies at core contact one by DHB

DHB, Māori babies only	Contacts	Births	Coverage
Auckland	263	458	57.5%
Bay of Plenty	290	662	43.8%
Canterbury	152	518	29.3%
Capital and Coast	190	391	48.7%
Counties Manukau	528	1164	45.4%
Hawke's Bay	304	497	61.2%
Hutt	161	293	54.9%
Lakes	120	434	27.7%
Midcentral	230	419	55.0%
Nelson Marlborough	83	176	47.2%
Northland	314	644	48.8%
Otago	90	189	47.6%
South Canterbury	25	51	49.0%
Southland	72	177	40.8%
Tairāwhiti	103	261	39.5%
Taranaki	114	257	44.4%
Waikato	442	1025	43.1%
Wairarapa	99	82	121.5%
Waitemata	397	762	52.1%
West Coast	9	50	18.0%
Whanganui	88	176	50.1%

Table 21: Population coverage at core contact one by deprivation deciles

Deprivation deciles	Contacts	Births	Coverage
1 (least deprived)	1495	2344	63.8%
2	1861	2674	69.6%
3	1752	2492	70.3%
4	1686	2562	65.8%
5	2065	2941	70.2%
6	2060	2724	75.6%
7	2407	3055	78.8%
8	2741	3566	76.9%
9	2852	3654	78.1%
10 (most deprived)	2846	4038	70.5%

Source: WCTO database period July-December 2011

Base: Babies who experienced the 4-6 week core contact.

Table 22: Population coverage at core contact one by deprivation quintiles

Deprivation quintiles	Contacts	Births	Coverage
1 (least deprived)	3356	5017	66.9%
2	3438	5054	68.0%
3	4125	5665	72.8%
4	5148	6620	77.8%
5 (most deprived)	5698	7692	74.1%

Source: WCTO database period July-December 2011

Base: Babies who experienced the 4-6 week core contact.

The coverage rates shown above should be interpreted cautiously. Contact data is not yet available for around half of the Tamariki Ora providers, so the contact counts and coverage rates will be underestimates.

Other caveats include that the denominator data is also based on periods that are not a perfect match for the WCTO database cohort, so the rates here assume that births are distributed uniformly enough that these mismatches are immaterial. The demographic variables in the WCTO database have some missing data, also leading to some underestimation. The denominators for ethnic groups (other than Māori) and the deprivation breakdown are estimated from two data sources, so the corresponding rates rely on additional assumptions.

The Growing up in New Zealand, NIR and WCTO data suggests:

- **Near universal coverage by midwives after birth and tapering off as expected at six weeks.** The data does not give any insight into the proportion of mothers who see a midwife at four weeks, or a breakdown by ethnicity or deprivation.
- **Near universal coverage of at least one health check at six weeks through use of the range of providers (WCTO, GPT, LMC).**
- **WCTO providers are currently reaching three quarters of the universal population.**
- **Of significant concern is less than half of Māori and only two thirds of Pacific babies are receiving WCTO services at core contact one.** There is a significant need therefore to understand the barriers and facilitators to uptake of the WCTO programme by Māori and Pacific families/ whānau.
- **Less than half of mothers had taken their baby to a GP in the first six weeks after birth, and only a quarter had the six week check done by a GP or in general practice.** The NIR data also highlight significantly lower uptake of six month immunisations by Māori and Pacific babies reinforcing the perception Māori and Pacific families/ whānau face barriers accessing primary health care. The data reinforces therefore that not all GPs are undertaking six week checks.

6.6 Increasing access for Māori and Pacific families/ whānau

The WCTO programme as a universal programme seeks to reach all babies. Within the universal programme particular emphasis is placed on reaching Māori, Pacific and high deprivation families/ whānau, and those identified as having high needs. The WCTO Tier two service specification notes that services must be provided in a way that recognises the needs of identified priority groups, including Māori, Pacific people, children

from families with multiple social and economic disadvantages and children with high health and disability support needs. WCTO providers are expected at the core contact one to undertake an assessment to identify needs and the level of support required.

Positively, LMCs are engaged with nearly all families postnatally (over 99%), at least once. However, little is known about whether their services are meeting the needs of priority populations. Research into the LMC and Shared Care models of midwifery delivery in CMDHB highlighted that neither service effectively met the needs of young disadvantaged mothers (Litmus 2011). Discord was noted between the different providers as they struggle to deal with the wider primordial factors of this community of mothers.

For GPs, it is unknown the extent to which they are proactively following up families/ whānau to undertake a six week check. As indicated, follow-up focus tends to be placed on completion of immunisations. However, as the NIR data indicates, uptake of immunisations by Māori and Pacific babies at six months is significantly lower than European babies suggesting a lack of contact. An established relationship with the primary health care provider has been identified as a critical factor in the timely delivery of immunisations. On this basis, there is a need for more effective facilitation of early engagement with a primary health care provider (Grant et al 2011).

Plunket has a long history of seeking to ensure Māori and Pacific families/ whānau are offered the service. However, feedback from some key stakeholders indicate that while focused on ensuring engagement, the culture of service delivery does not align well with Māori and Pacific values.

DHBs are contracting Tamariki Ora providers to specifically target Māori and Pacific high needs families/ whānau. It is estimated that Tamariki Ora providers are delivering service to around 10% of babies born in New Zealand. Key stakeholders believe that Tamariki Ora providers are doing a good job at accessing hard-to-reach Māori and Pacific whānau, and are culturally competent to deliver these services.

- Three quarters of DHBs rate their Tamariki Ora providers as excellent/good at facilitating and improving access to WCTO services for high-needs, Māori and Pacific families.
- Most DHBs rate their Tamariki Ora providers excellent or very good on the appropriateness of service delivery at core contact one for Māori, Pacific and high-needs families (Litmus 2012g).

Māori and Pacific Tamariki Ora providers acknowledge the challenges of ensuring access to services for hard-to-reach Māori and Pacific whānau which require perseverance, flexibility and the ability to build trust and relationships. 17 out of the 23 Tamariki Ora providers have systems and databases to facilitate the development of strategies and tactics to ensure families/ whānau can access the service. Key challenges noted in, particularly from CMDHB are:

- **Need to offer services outside of normal working hours**, as most parents have to work and babies are being cared for by other people. The preference was noted by providers and parents for engagement with parent/s when completing core one check. As explained by a Pacific parent, they did not know what happened as the baby's grandparents struggled to understand what the WCTO nurse was doing due to language barriers.
- **Inability to contact by phone** as no credit on phone and only willing to text if same telecommunication providers. Landlines are non-existent or cut off.

- **High mobility in the first three months** as Pacific mothers and babies spend time with their families. Mother and baby can therefore be difficult to locate.
- **Tailoring the approach to differing ethnicities**, specifically what works for Māori whānau may not work for Pacific families. Further, there is a need to recognise and work within the cultural diversity of Māori and the Pacific nations.

“Whānau appreciate our ability to tailor frequency of visits to need, thereby offering additional contacts as needed.” (Tamariki Ora provider)

“Home visits combined with immunisations. Tamariki are more relaxed in their own environment compared to a GP/Clinic environment.” (Tamariki Ora provider)

“Although we have rated appropriateness high, we acknowledge that staff are not fluent in Te Reo for our monthly Marae and Kōhanga Reo clinics. We know that this would be a definite advantage in these environments but have been fortunate that these organisations have been very accommodating as they see our service as a priority.” (Tamariki Ora provider)

Strategically, Tamariki Ora providers have a key role in targeting priority populations, particularly Māori and Pacific families/ whānau to access and remain engaged with the WCTO programme. The added benefit of these providers is many offer a Whānau Ora approach of a more holistic, integrated, culturally appropriate service delivery which seeks to address wider psychosocial factors and to strengthen protective factors for health and well-being of the whānau. Given these benefits, some stakeholders question whether more focus should be placed on building the capacity and capability of these providers. Current, funding models do not facilitate this development.

Targeting vulnerable families were identified in the DHB and Tamariki Ora provider surveys as a priority quality improvement area, which reflects the very low reach to these target populations. A number of suggestions were put forward:

- Identifying at-risk mothers antenatally who are referred to a multi-disciplinary team meeting for regular review, and as appropriate referral to support services.
- Tailoring and integration of services antenatally (e.g. Tamariki Ora nurses working with Social Services, offering Whānau Ora, the multi-disciplinary Maternal Care, Child Protection and Wellbeing Groups, additional funding for antenatal visits).
- Increasing service to rural populations who have increased vulnerability due to travel cost, distances, and lack of services. One midwife suggested the need for more interfaces with community-based health professionals so families/ whānau have easy and more immediate access to help and support with known and trusted professionals.

6.7 Content of checks delivered

Across providers there appears to be some uncertainty about what assessments and health promotions are being undertaken by other health professionals for mothers and babies aged around 4 - 6 weeks. The current lack of detailed information sharing reinforces this uncertainty.

“Due to lack of information sharing, I was unaware of what routine baby checks are carried out by other health providers at 4 - 6 weeks of age.” (GP)

Across the providers, there are similarities in the assessments being undertaken, although there are philosophical differences in their application and focus. Detailed in Table 23 is a comparison of checks undertaken by the providers. Key points of note are:

- LMCs are collecting data that aligns with their contractual obligations. However, it is unknown the extent to which all components are consistently completed across New Zealand.
- Based on the WCTO database, only half of parents are asked about family violence and half of boys' testes are checked. Of note is that only 80% of mothers were asked questions about postnatal depression.
- GPs (who responded to the survey) are undertaking the clinical examination of the baby and asking mothers about breastfeeding, postnatal depression and their contraception (i.e. the health and development assessments, and interventions and support components of the six week check). The practice nurse tends to weigh and measure, and undertake the promotion of health and development. As noted, not all GPs are undertaking the check. Feedback from parents and GPs indicate that there is variation in the completion of all the components:
 - If baby has been recently weighed and measured by LMC or WCTO, and the WCTO Health Book notes these measures and is at the consult, then they may not be repeated. These GPs note that it is not good practice to be undertaking measurements using different scales.
 - Briefer examination if GPs trust the other health professional and feedback is received from the parent a thorough examination was undertaken.

"If the mother reports good contact with the [WCTO] service and there has been a good six week check and no concerns I do a briefer examination." (GP)

"Babies will be weighed routinely if not weighed within last week or so by midwife or WCTO nurse. [They use] different scales, so not routinely weighed unless there is concern." (GP)

"It does sometimes seem wasteful, but I just use the weights and lengths from [WCTO] and it is sometimes useful to have two people's opinion on a baby's exam." (GP)

"Accident prevention, smoking, violence, etc. are covered in depth by [the WCTO provider] and are not always duplicated by us unless we are aware of an issue. Much of the physical exam is also duplicated by [the WCTO provider]." (GP)

Table 23: A comparison of domains completed between 4 and 6 weeks

Core Contact 1 Domains	LMC (MMPO forms) ⁴⁸	WCTO (MoH WCTO data) ⁴⁹	GP's n=54 ⁵⁰ %	Practice nurse N=54 %
Weight (growth)	✓	98%	24	61
Head circumference	✓	✓	33	43
Length	✓	✓	15	54
Development	✓	✓	98	0
Congenital Hip Deformity	✓	94%	98	0
Vision (red reflex)	✓	94%	100	0
Vision fix and follow	-	✓	91	2
Hearing/ ears	-	86%	96	0
Undescended testes/ genital	✓	55% ⁵¹	100	0
Skin	✓	✓	98	0
Fontanelle/ head	✓	✓	100	0
Nose/ mouth	✓	✓	98	0
Heart	✓	-	100	0
Lungs/ respiration	✓	✓	98	0
Abdomen	✓	✓	100	0
Umbilicus/ cord	✓	✓	98	0
Femoral pulse	✓	✓	100	0
Back	-	✓	98	0
Anus	-	-	96	0
Reflexes, movement, tone	✓	✓	100	0
Family violence / abuse	✓	56%	22	19
Maternal postnatal depression	✓	80%	67	7
Smoking cessation	✓	98%	48	39
SUDI	✓	96%	24	30
Injury and accident risk	-	96%	24	20
Breastfeeding	✓	87%	65	30
Parenting age and stage	-	89%	50	26
Immunisation	✓	✓	✓	✓
Contraception	✓	-	87	4
Vitamin K	✓	-	n/a	n/a
Colour	✓	-	n/a	n/a
Alcohol / other substances	✓	-	n/a	n/a
Metabolic screen	✓	-	n/a	n/a
New born hearing screen	✓	-	n/a	n/a
Red reflex screen	✓	-	n/a	n/a

⁴⁸ No data was available on the checks completed by LMC. Feedback from MMPO highlighted that LMCs are not paid until the MMPO forms are completed. The ticks in the column therefore indicate whether or not this information is required in the MMPO forms – a pseudo measure of completion.

⁴⁹ WCTO providers based on their tier 2 schedule are required to provide this information six monthly to the Ministry. WCTO data was first received on January 2012. Data presented is taken from the completion rates in the WCTO database. Ticks indicate that this assessment is expected to be completed.

⁵⁰ Source GP survey; base all those who completed the survey.

⁵¹ The figure given for undescended testes is the percentage of *male* babies where this was checked.

Feedback across stakeholders and providers indicate key quality issues with the completing the checks to contractual requirements:

- **Lack of data about what domains are being completed at each check and to what standard across all providers.** Data is now being collected for WCTO providers at core contact one. However, there is no central repository for data on the checks completed by LMCs or GPs between 4 - 6 weeks.
 - About a third of DHBs were unable to rate the service delivery at a domain level for the Tamariki Ora providers they contract as this information was not a reporting requirement.
- **Variability in the service delivery across WCTO domains for core contact one.** Postnatal depression, family violence prevention, injury prevention, and parenting for age and stage service delivery was not rated highly by Tamariki Ora providers.
 - Service delivery across the following domains were in the main rated excellent or very good: child growth and development - clinical aspects, hearing, vision, immunisation, SUDI prevention, breastfeeding and infant nutrition, and smoking cessation. Potentially, this may reflect the level of guidelines and protocols in place to ensure consistency of delivery and that three are nationally monitored.
- **Measurements of height and weight.** Concern was raised that Practice Nurses are not trained to undertake these measures. There is potential for inaccuracy in the measurements as Practice Nurses are doing a one-off measure and using different equipment, which can result in incorrect judgements being made about growth.
- **Challenging for WCTO providers to deliver all assessments within the allocated timeframe.** WCTO providers indicate this contact tends to take around an hour, and even then it is rushed, given the breadth of information to be covered, and the duplication in documentation completion.

“The updated WCTO service specification places huge expectations upon providers to deliver the gamut of assessments, education and interventions required. On-going provision of workforce development opportunities and resource support are needed if Tamariki Ora providers are to compliment the work of Plunket by reaching those children/whānau of high risk, who are not accessing WCTO services.” (Tamariki Ora provider)

“Time allowance per each home visit is at times unrealistic as a lot of our whānau require a lot of input due to complex issues pertaining to the whānau as a whole.” (Tamariki Ora provider)

6.8 Outputs and outcomes

6.8.1 Referrals

Key outputs being sought through the checks when baby is around 4 – 6 week are:

- All babies have received a thorough check (refer section 6.7).
- All babies, with parental consent, are connected to a WCTO provider and GPTs (refer section 6.6).
- A needs assessment has been undertaken and families/ whānau have an agreed pathway to address any short or long-term needs identified.

- Actions, interventions and referrals have been made and actioned, as appropriate.

Currently, it is unknown the level of referrals made by LMCs and GPs. Data from the WCTO database on core contact one highlight the following indicative patterns of referrals (refer Table 24):

- 17% of families are referred for parenting support.
- 7% of families are referred for breastfeeding support.
- The remaining referrals are 1% or less for congenital hip deformity, smoking cessation, growth, undescended testes, vision and hearing loss.
- No referrals were made relating to family violence, PND, SUDI or injury/ accident, this may reflect very low need or the inappropriateness of referral at this point in time.

Table 24: Components of the WCTO contact completed and referrals made

Component	Action	% of 4-6 week contacts	% of checks referred
Congenital hip deformity	Checked	93.9%	1.0%
Vision	Checked	94.4%	0.1%
Hearing loss	Checked	86.2%	0.2%
Family violence/abuse	Checked	56.1%	-
Maternal PND	Checked	79.6%	-
Smoking status	Checked	97.6%	1.0%
Growth	Checked	97.8%	1.1%
SUDI	Information provided	95.7%	-
Injury/accident	Information provided	96.1%	-
Breast feeding status	Checked	87.5%	6.8%
Parenting support	Checked	89.1%	17.0%
Undescended testes	Checked	55.2%*	0.6%

* The figure given for undescended testes is the percentage of male babies where this was checked at the 4-6 week core contact.

Source: WCTO dataset

Base: Data on completion of the various components is not entirely clean, and is missing for a small proportion (generally 1-2%) of 4-6 week contacts. The hearing loss component is an exception; completion data is missing for 4.5% of contacts for this component. The completion percentages are based on all 4-6 week contacts, so the missing completion data has effectively been treated as equivalent to 'not completed'.

Limitations: The above referrals percentages are based on all babies who were checked for that component. It would probably be more useful to base it on babies with problems; this information is not available for most components. Referrals for babies who were not checked are omitted, as well as for babies for whom check completion data is missing. For most components the omitted cases are negligible, but they would amount to half of the hearing referrals, 86% of the vision referrals, and three quarters of the referrals for undescended testes. There is also a moderate amount of missing referral data.

Feedback from DHBs and Tamariki Ora providers indicate there are specialist services to refer, although this is not universal for SUDI and injury prevention.

Ratings of the referral process are mixed, and few DHBs had referral protocols from WCTO providers to specialist services.

- Four DHBs rated the referral from WCTO providers to specialist service as excellent, three good and the eight so or poor. Four DHBs did not know (Litmus 2012g).

A quarter of DHBs do not know whether or not their specialist services have capacity to promptly service WCTO referrals or that the referral process from WCTO provider to specialist services is effective. Immunisation, smoking cessation and family violence prevention stand out as areas of excellence. In contrast, less than quarter of DHBs rate the following excellent (from highest to lowest ratings):

- child growth and development - clinical aspects
- injury prevention
- SUDI prevention
- postnatal depression
- parenting for age and stage.

Tamariki Ora providers' perceptions of the capacity of different specialist services to promptly service WCTO referrals are mixed. Similar to DHBs, Tamariki Ora providers also noted a lack of capacity for referrals for growth, hearing and vision, postnatal depression and parenting for age and stage.

"In regard to maternal mental health issues, referral is difficult, not timely and outcomes poor. Unless in crisis unlikely to be seen. For postnatal depression counselling is only available through the wellness service if you are in a particular PHO. Not a universal service. This needs to be rectified urgently." (Tamariki Ora provider)

WCTO providers' perception of the capacity of specialist services to deal with referrals promptly may determine whether or not they make a referral. As noted by Tamariki Ora providers receiving a referral can be challenging for vulnerable families due costs, lack of understanding of the referral, their mobility and the need to prove eligibility for service.

"If clients require travel to these specialist services sometimes families require travel, availability and advocacy services. Hearing and vision services are not available and Ear Clinic is offered only once a month. Sometimes the timing of specialist services is also an issue with families. Families are charged full price for optometrist appointments if they do not have a community services card!" (Tamariki Ora provider)

"Parents and caregivers are always educated to value the referrals of their children when they are referred to specialist for this is important for health and safety of their children when they grow up and become strong and healthy workforce for future of New Zealand." (Tamariki Ora provider)

As commented by an international expert, the purpose of the six week check is not just about detecting issues, it is about the next steps and ensuring that families/whānau can access a cascade of services regardless of which provider they see.

The findings from this review are inconclusive about the appropriateness of referrals made and interventions given, and the ability of families/whānau to overcome potential barriers to access these services. Further, research is needed in New Zealand to explore this part of the pathway.

6.8.2 Outcomes

Currently, the outcomes being sought around 4 – 6 weeks for babies and their families/ whānau are not explicit in the WCTO programme, although they are implied.

At 4 – 6 weeks, there is no monitoring of outcomes at a population and regional level across the services delivered by LMCs, GPs and WCTO providers. With the newly introduced WCTO database, monitoring of outputs at national and regional level will be commencing. This information will enable the monitoring and identification of key areas for quality improvement at a system and service delivery level.

The primary objective for providers of WCTO services is to support families /whānau in maximising their child's developmental potential and health status between the ages of 0–5 years, establishing a strong foundation for ongoing health and development. Based on this objective, there are a number of suggested outcomes being sought for families/ whānau and the baby which are summarised in Table 25.

At present, there is no agreed framework against which to facilitate an intersectoral approach of continuous quality improvement for the WCTO programme. Collecting, monitoring and feedback of information that is part of the quality improvement framework of the WCTO programme will inform national and regional multi-disciplinary teams to discuss how best to enhance the quality of the programme at a system level. This information will also demonstrate the value of the programme in supporting families and whānau to maximise their children's developmental potential and health status between the ages of 0–5 years, and lifelong. Specific focus should be placed on monitoring and seeking to address the inequities of access.

This sector-led quality improvement framework is currently under construction, together with key indicators.

Table 25: Suggested outcomes being sought from the 4 - 6 week checks

Components	Outcomes 4 - 6 weeks
Health and development assessments	Parents are knowledgeable and understand the stages of their children's development
	Parents have the skills to parent positively
	Parents are reassured
	Parents access appropriate services to meet short and long-term needs
	Family violence / abuse/ neglect is reduced
	Mothers with postnatal depression receive prompt support
	Parent/ child bonding is fostered
Interventions and support	High proportion of congenital, inherited or acquired conditions identified by 6 weeks
	Baby's growth and development is monitored
Promotion of health and development	Increased breastfeeding rates
	Reduction in SUDI
	Infants put on their back to sleep from birth
	Increased immunisation at 6 weeks (fully vaccinated)
	Reduction in injuries
	Reduction in babies being shaken
	Parents connected to support networks
	Parents cope with sleeping, crying and other issues
Decrease in parent smoking and increase in smoke free environments	

Summary – Service delivery at 4 - 6 weeks

Reach

- Near universal coverage by midwives after birth and tapering off as expected at six weeks.
- Near universal coverage of WCTO health checks at six weeks through use of the range of providers.
- WCTO providers are currently only reaching three quarters of the universal population.
- **Of significant concern is less than half of Māori and Pacific babies are receiving WCTO services at core contact one.**
- Less than half of mothers had taken their baby to a GP in the first six weeks after birth, and only a quarter had the six week check done by a GP or in general practice. The NIR data also highlights lower uptake of six month immunisations by Māori and Pacific babies. The data reinforces that not all GPs are undertaking six week checks.

Access for Māori and Pacific families

- Tamariki Ora providers have a key role in targeting Māori and Pacific families/ whānau to access and remain engaged with the WCTO programme. However, their volumes appear relatively small, and reflect the size of their organisations.
- Māori and Pacific Tamariki Ora providers acknowledge the challenges of ensuring access to services for hard-to-reach Māori and Pacific whānau which require perseverance, flexibility and the ability to build trust and relationships.

Content coverage

- LMCs are collecting data that aligns with their contractual obligations. However, it is unknown the extent to which all components are consistently completed.
- WCTO providers are delivering most of the content for core contact one, although only half of parents are asked about family violence and half of boys' testes are checked. Improvements are also needed to ensure all mothers are asked sensitive questions about postnatal depression, and their breastfeeding status.
- GPs who undertake a six week check tend to focus on the physical examination of the baby and asking mothers about breastfeeding, postnatal depression and their contraception. The Practice Nurse tends to weigh and measure, and undertake the promotion of health and development.
- While there is broad adherence to the content of the 4 - 6 week checks, providers need to be able to use their professional judgement to focus on the priority needs of families/ whānau.

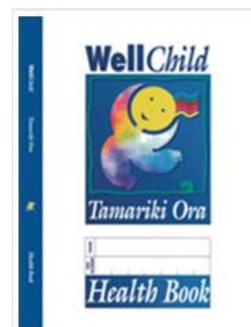
Effectiveness

- Currently, there is no population-based electronic information system that enables joint data collection and information sharing across all the providers delivering services when the baby is aged between four and six weeks.
- Currently, it is unknown the level of referrals made by LMCs and GPs. Referral data now being collected by WCTO providers. WCTO data highlights that most referrals are for parenting and breastfeeding support. No referrals are being made for family violence, PND, SUDI or injury/ accident. The latter may reflect WCTO provider uncertainty of where to refer to, or the perception of a lack of services, particularly for SUDI and injury presentation.
- Currently, the outcomes being sought around 4 – 6 weeks for babies and their families/ whānau are not explicit in the WCTO programme, although they are implied.
- At present, there is no agreed framework against which to facilitate an intersectoral approach of continuous quality improvement for the WCTO programme. Monitoring of the quality improvement framework of the WCTO programme would demonstrate the value of the programme and inform national and regional multi-disciplinary teams how best to enhance the quality of the programme at a system level. This quality improvement framework is currently being developed, together with key indicators.

7. Well Child/Tamariki Ora Health Book

The review was asked to explore whether the current information available to parents and the page for recording the six week check in the parent-held WCTO Health Book is adequate. The section provides an overview of parents' and providers' perception of the WCTO Health Book with a particular focus on the information available and page for recording the six week check⁵². This section addresses the following review question:

- Is the current information available to parents and the page for recording the six week check in the parent-held WCTO handbook adequate?



7.1 Parental feedback

Parents' feedback was sought on the WCTO Health Book focusing on information when the baby is 4 – 6 weeks.

In the main, Māori, Pacific and Pākehā parents like and use the book. Use of the WCTO Health Book is particularly high with the first baby, and tends to tail off with subsequent babies.

“I read this from front to back with my first child, then barely looked at it for rest.”
(Parent, Taranaki)

“I think it’s good if you’re a first-time parent.” (Parent, Christchurch)

Pākehā and Māori parents use the WCTO Health Book as a **reference book to check their baby/ children are developing normally**. Pacific parents (and also Pākehā and Māori parents) use the book to gain tips on ‘good parenting practice’.

“I found myself reading through the book and seeing what is normal at a particular age, and I was happy just reading it. I read my first one cover-to-cover and now I just go to the relevant age group.” (Parent, Christchurch)

“It has a lot of information. Car seats, tells you to talk to your baby, sing to your baby, no smoking in the house, tells you about how they should sleep on their back, not on their side.” (Parent, Taranaki)

Māori, Pacific and Pākehā parents use the WCTO Health Book as a **health record, particularly for immunisations**. Most try to remember to take the book if visiting their GP, so the GP is aware of what other providers have done and noted. A few parents use this as an opportunity to cross-check the recommendations of their WCTO provider with their GP. Some parents commented their LMC was not completing the WCTO Health Book.

“It is good because if [the WCTO provider] fills it in then the doctor can check it and cross reference.” (Parent, Taranaki)

⁵² <https://www.healthed.govt.nz/resource/well-childtamariki-ora-health-book> accessed 2 August 2012.

“The book gets signed for all immunisations and that and it is good to have the information all together.” (Parent, Taranaki)

A few parents use WCTO Health Book as a **personal diary of ‘baby firsts’**.

“I refer to it sometimes. It’s a nice record to have. I haven’t kept a baby book, so I can look back and look. I always take it to appointments with me. It’s good for the immunisation certificate inside.” (Parent, Christchurch)

Feedback from parents suggests the need for a **directory of key contacts regionally** so parents are aware of the range of services and support available and can make an informed decision about the services they used.

For parents, the key quality consideration is ensuring all families/ whānau in New Zealand can access this wealth of information to inform their parenting in a culturally and age appropriate way. From this quality review, it is unknown the extent to which the WCTO Health Book is understandable and appropriate for those with low health literacy and English as another language. Given the increasing use of social media in New Zealand and its accessibility by younger people, the use of YouTube and Facebook could be considered as a mechanism by which to exchange information with parents and even to maintain an electronic health record (e.g. app on a smart phone).

Overall, no significant issues were raised about the WCTO Health Book. However, **further research is required to determine whether the book is understandable by those with English as an additional language or with low health literacy, and its overall usability.** Of particular focus are young Māori and Pacific parents due to their potentially lower levels of literacy and health literacy.

7.2 LMCs, GPTs and WCTO provider perceptions

Like parents, providers are **mainly positive about the content of the WCTO Health Book**; although areas of improvement are identified. Variation in the use and completion of the WCTO Health Book, particularly for LMCs and GPs for babies aged around 4 – 6 weeks is marked.

“The book is great – it’s the common thread across the providers.” (GP)

“The Well Child book serves as a very good interface between GP and midwife/ [WCTO] nurse for the first six weeks, and between GP and [WCTO] nurse thereafter. [The WCTO Nurse] also write separately if they have specific concerns.” (GP)

7.2.1 Value and relevance of the WCTO Health Book

Across all providers, the value and relevance of the WCTO Health Book to parents and in particular first-time parents are acknowledged. Providers note the WCTO Health Book is *‘very useful for parenting information’*. For providers, the book is also an aide memoire of key things to talk about with parents at 4 - 6 weeks (WCTO Handbook 2010e, p102). Further, the recording of immunisation at the back of the book provides another mechanism by which to establish whether or not vaccinations have been given. The latter reflects the delays that can occur in updating the NIR.



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“Useful if they have it (WCTO Health Book). [WCTO] nurse gave for example the imms and the NIR database was saying that the baby hadn’t had imms, and mum was saying baby hadn’t had imms. However, mum found the WCTO book which recorded that imms had been given.” (GP)

7.2.2 Use of the WCTO Health Book

The WCTO Health Book is seen as an important mechanism for sharing information across providers, particularly as there is currently no shared information system.

Some GPs commented that they rely on the information in the WCTO Health Book to be informed on the interaction and findings about a newborn baby and their family by the LMC and the WCTO provider.

“I rely totally on the Well Health booklet - I virtually never have a phone call from a midwife nor a [WCTO] nurse about a new baby. Sometimes a DHB funded paediatrician also writes in these booklets, I also tend to get the birth summary which gives me very basic info about the birth only.” (GP)

“We have the parent held [Well Child] book which is useful but relies on the parent's bringing it with them. Writing is not always clear though. It is useful that the parents can also see what information is being shared, although difficult to relay concerns regarding the family e.g. violence, neglect etc.” (GP)

While of noted importance, not all GPs and LMCs are recording notes of their appointments with parents and babies in the WCTO Health Book. For some LMCs non-completion of the WCTO Health Book reflects the duplication of the book with their parent-held maternity notes. These LMCs note that they have to complete three sets of paperwork per visit. LMCs also note that the parent copy of the referral form sent to the WCTO provider and GP is not readable as the carbon copy does not work effectively.

“Some do, some don’t complete it. It is a copy of maternity notes. I leave the six week check page for the doctors to complete. There are too many pages between the birth and first week and not enough at the first week. I fill in the five week and leave the six week.” (LMC)

“LMCs duplicate too faint for parents to be able to read. I am not completing both as it adds to time having to repeat the information.” (LMC)

“When mothers do take kids to GPs – it never gets written in the book. No feedback for me.” (LMC)

LMCs also perceive that GPs do not complete the WCTO Health Book when parents visit with sick baby. In contrast, GPs are critical of the lack of information they receive from LMCs, in general. However, they note that the WCTO Health Book is not the place to be noting concerns of family violence, or alcohol or drug abuse.

“I don’t look in the book – just fill in the immms section.” (GP)

There is confusion about who completes the progress, assessment and other information requirements at the 4 - 6 week contact (WCTO Handbook 2010e p103).

For GPs, their completion of the WCTO Health Book is dependent on undertaking a six week check and the parent or caregiver bringing the book to the visit. However, some GPs find that this section is completed usually by LMCs. WCTO providers note that they do not complete this section as some of the assessments require the use of a stethoscope which they do not carry (e.g. heart, lungs).

“Often depends if the mother brings in the Well Child book- if she forgets it we have very little information.” (GP)

“I do the six week check then open the Well Child book and everything has been done in about 25% of times.” (GP)

“It can’t be [the WCTO provider] because there’s a lung check in there. [WCTO] nurses don’t have stethoscope so can’t listen to heart. GPs manipulate hips not [the WCTO nurse].” (WCTO nurse)

It appears that WCTO providers are completing the WCTO Health Book, as expected at each visit. However, some WCTO providers are unsure where they should fill in the details of core contact one undertaken when the baby is around 4 - 6 weeks old.

7.2.3 Enhancing the WCTO Health Book

While in the main providers like the WCTO Health Book, key areas for improvement suggested were to strengthen accessibility and use by parents, and make it easier for providers to find the sections they need to complete.

Accessibility for all parents, particularly those with English as another language

- Simplify the language and translate the book into other languages (particularly Samoan and Tongan) to increase relevance and use by families who have English as another language. Some providers note that translations will facilitate a more rigorous informed consent processes.

“Should be in three to four different languages. Or in the inside of front cover Samoan, Tongan, Mandarin or a supplement insert.” (LMC)

Increase content

- Increase the amount of information about sleeping and breastfeeding of babies to ensure information is standardised across providers.

Easy to find information

- Ensure important information such as CPR for newborns, immunisation, and alerts about unwell babies is easier to find and understandable by all parents.
- Use of aids to enable parents and providers to easily find relevant pages, e.g. indents at the side pages for ease of reference.
- Increase size, location and order of growth chart so it is easier to use (Litmus 2012b). Providers note a location preference of placing the growth charts on the back page or to the back of the book.
- Increase the number of pages so all providers (e.g. lactation consultants) can complete their interactions and support given to parents.

“WHO growth charts in the Well Child book need to be inserted in a more easy to read fashion. The reader has to go through different sections for head circumference and height, instead of having the same information for different sexes together.” (WCTO Nurse)

“WHO graphs are not used as too small to plot – I can’t read or plot. They also don’t tell parents anything useful.” (LMC)

“Hard to find your way around as so much information – not user friendly.” (GP)

Summary: Well Child/Tamariki Ora Health Book

- The WCTO Health Book has credibility and relevance for most parents. The WCTO Health Book offers parents access to a wealth of important and useful information to assist and inform them through the ages and stages as their baby grows and develops from birth to five years. The tone of the book is encouraging.
- In the main, Māori, Pacific and Pākehā parents use the book. Use of the WCTO Health Book is particularly high with the first baby, and tends to tail off with subsequent babies. The WCTO Health Book is used as a reference book to check the baby/ child is developing normally, and health record, particularly for immunisations.
- Further research is needed to determine whether the book is understandable by those with English as an additional language or low health literacy. Of particular focus are young Māori and Pacific parents due to their potentially lower levels of literacy and health literacy.
- Without the existence of a shared information system to record interactions with parents, the WCTO Health Book is a key mechanism to share information across a range of providers. Sharing information is important because it ensures consistency of approach, follow-up of issues of concern, and that parents have received appropriate services or referrals.
- Providers are mainly positive about the content of the WCTO Health Book. However, not all GPs and LMCs are recording notes of their appointments with parents and babies in the WCTO Health Book. There is confusion about who completes the progress, assessment and other information requirements at the 4 - 6 week contact.
- Until a shared information system exists, the following actions are needed to allow information sharing across providers:
 - accessibility for all parents, particularly those with English as another language
 - increase content
 - easy to find information.
- Using the WCTO Health Book is currently a solution that creates duplication of the data entry across a number of electronic and hard copy reporting formats. Thus, it is not an ideal or sustainable solution. Until a shared information system exists, the following actions are needed to allow information sharing across providers:
 - Ensure all providers (including LMCs, GPs, WCTO providers and other providers) are aware that they must make an entry each time they see the parent and child.
 - Clarify the section that each provider completes, and at 4 - 6 weeks, clarify who completes page 103.
 - Review the design so it is clear where providers should detail the findings from their engagement with parents, and make it easier for providers to find key information/ charts, etc.

8. Future Directions

8.1 Introduction

This section draws together the findings from the quality review of the content and implementation of the Well Child checks conducted at around six weeks. These findings will inform the ongoing policy, delivery and quality improvement of these checks and related services delivered to mothers and babies in the early postnatal period. Initial consideration is given to the following review questions in the context of the wider system of care:

- Who is best placed to undertake a six week check regarding their relationship with the family and ensuring continuity of care?
- Is it possible or desirable to train/equip this professional group to undertake the full six week check?

Finally, an overview of quality improvement areas identified through the review is presented. Section 9 follows offering suggestions for future areas of research to further strengthen the evidence-base of the WCTO programme.

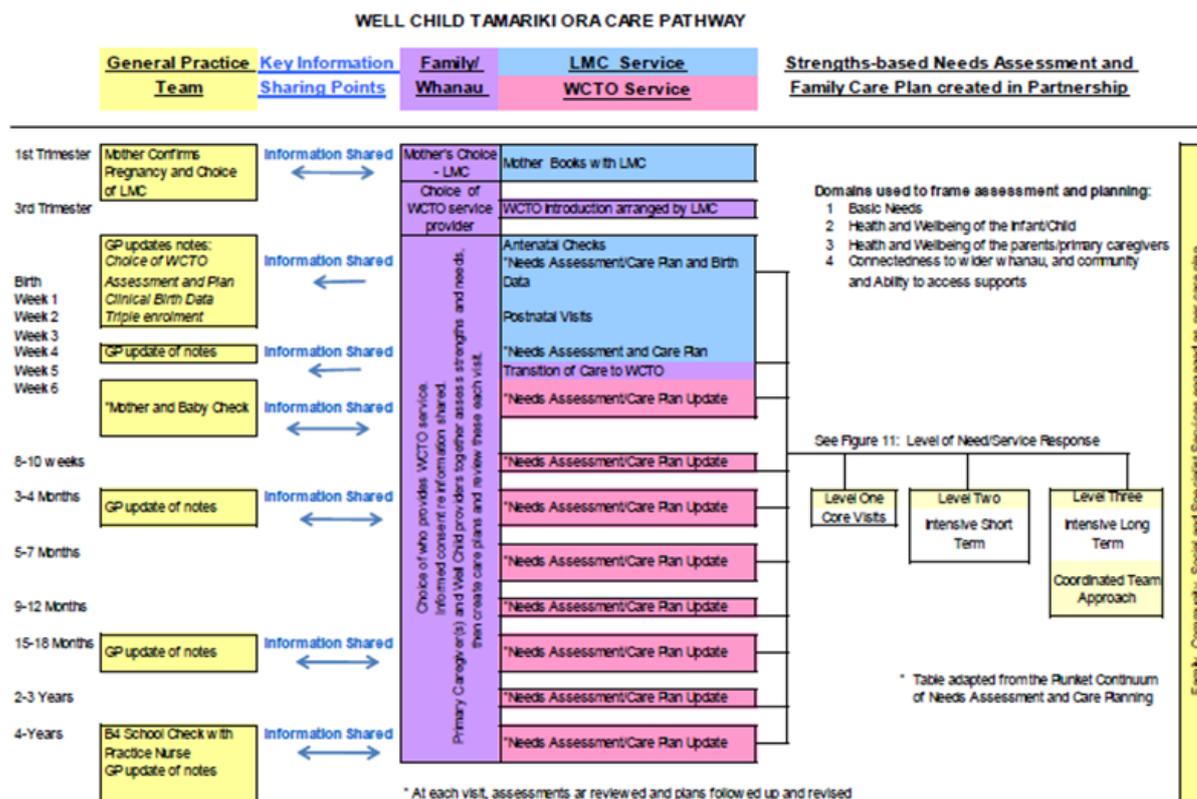
8.2 Best practice or pragmatic approach

The WCTO programme is delivered by a multi-disciplinary team of providers including LMCs, GPT, WCTO providers as well as services that are referred to or offer a range of interventions to strengthen families/ whānau. **LMCs, GPTs, WCTO providers offer differing but complimentary services to families/ whānau when the baby is around 4 – 6 weeks old that reflect their competencies, relationship with and obligations to families/ whānau and babies.**

The entry point to the WCTO programme lies in the antenatal period through the families/ whānau relationship with their LMC. The 4 - 6 week period therefore marks a time of transition from ideally one trusted and relationship-based service provider (LMC) to other providers who will offer support and services to the families/ whānau during early childhood (WCTO providers) and lifelong (GPT). **Ideally, through this transition period there will be a continuation of the negotiated care plan agreed in partnership with families and based on their needs assessment.** This continuation of service and care pathway is summarised in Figure 6, which draws from the needs assessment and care planning process tools piloted by the Werry Centre (2011). Figure 6 demonstrates the continuous updating of the plan through the families/ whānau pathway from pregnancy to five years.

As advocated by WCTO providers, this transition period may be assisted particularly for high needs families/ whānau by a visit antenatally to establish and build an effective relationship. However, whether an antenatal visit by a WCTO provider will result in improved health and wellbeing outcomes for these families/ whānau is not yet proven.

Figure 6: WCTO Care Pathway



Source: Werry Centre (2011, appendix ii, p2)

A key output when baby is 4 – 6 weeks is ensuring all are enrolled with a WCTO provider and GPT that best fit with the preferences, values and needs of families/ whānau. In this context, it is preferable for families/ whānau to establish or re-strengthen these important relationships. Parents engaged with the WCTO programme expect and like this mix and intensity of service as it offers a sense of reassurance, support and connection, given the anxiety that can be created following discharge from their LMC.

A key focus when baby is 4 – 6 weeks is strengthening the parent-infant bond and monitoring maternal mental health as these positively correlate to the development and wellbeing outcomes for both the parents and infant. The evidence also highlights the importance of offering anticipatory guidance on key parenting issues (e.g. sleeping, feeding, crying) and health promotion (e.g. SUDI, smoking cessation). **A physical examination of the baby is also recommended around six weeks**, which parents particularly welcome as it offers reassurance that any health issues or abnormalities in their baby will be identified and appropriate help and intervention offered. Given this focus, the question is who is best placed to undertake a six week check?

In many ways, LMCs are well placed to undertake the six week check, given their mainly positive relationship with mothers, their near universal coverage postnatally, and their training which covers all components of the check. Many LMCs undertake their last visit around four weeks which does not align with some cardiac conditions being easier to detect at 6 – 8 weeks of age. Without more detailed and timely information sharing and enhanced trust, it is unlikely that all GPs will accept as reliable a six week check completed by an LMC. As advocated by international experts, GPTs need to remain both engaged and trained in WCTO services to ensure child health issues are on their agenda when families/ whānau and children visit the practice. A potential adverse consequence of excluding GPs from undertaking the six week check may be a negative impact on immunisation rates. For the GPTs, there are questions about reach at six weeks and training to cover all aspects of core contact one (i.e. health promotions and anticipatory guidance).

WCTO providers could be trained to undertake the full physical assessment of the infant (i.e. red reflex and cardiac assessment). However, this would require retraining, and carries the potential risk of shifting the intent of the WCTO programme from child health promotion to a more predominant focus on child health surveillance. Given parents' dislike of the perceived shift from a relationship-based to transactionally-focused service delivery, this may not be welcomed. Current coverage figures show that more than half of Māori and a third of Pacific families/ whānau do not receive a core contact one visit. Consequently, if WCTO providers were to solely undertake the six week check this could result in a widening of existing health and wellbeing inequities. While overall coverage increases at core contact two, it is unknown whether this is reflected in an increase of coverage for Māori and Pacific babies.

As indicated by Morton et al (2012) near universal coverage of WCTO health checks at six weeks is achieved through use of the range of providers. This finding reflects feedback from an international expert who commented that Well Child programmes are shifting in focus to providing a cascade of services. **It should not matter how families/ whānau access services; reaching any door should trigger a service cascade.** Focus is on a 'place-based approach – a seamless system at a local level'. In this context, the question of who is best placed to undertake the six week check becomes redundant as the focus is on **multiple transition points delivered by a multi-disciplinary team situated in a range of organisations and locations.** For such an approach to be effective, a shared information system is required containing information on whether the check is completed, the needs assessment and agreed care plan, and actions and interventions. It also requires greater trust across providers relating to their competencies to undertake effective assessment of a newborn.

Barlow et al (2008) reinforces this approach citing there appears to be some consensus that Well Child programmes are more effective when they are multi-component, using different forms of delivery or combining more than one therapeutic approach. Given the indications that more than half of Māori and Pacific families/ whānau are not receiving services from WCTO providers, a mix of service delivery may be beneficial. However, it is not proven that multiple transition points delivered by a multi-disciplinary team will address these access issues. Using a multiple-disciplinary approach also requires good governance, monitoring and clear accountabilities at a regional and national level.

In summary, based on this review and the current level of information sharing across providers, there are strong benefits for parents to have interactions with LMCs, WCTO providers and GPTs. For GPTs, the content delivered could be refined to the physical examination of the baby, particularly the eyes, heart, hips, and testes, immunisations and for the mother postnatal depression, family violence, parent-infant bond, contraception and smoking cessation (refer Table 23). However, such a refinement to the WCTO schedule would need to be reviewed by a Technical Advisory Group. Given some GPs are no longer undertaking a six week check, reflection is needed on the process for re-engaging GPs and the processes for ensuring checks are completed within the wider monitoring of the WCTO programme (e.g. linking to the six weeks immunisation recording on the NIR).

Condon (2008) highlighted that a successful implementation of changes to the WCTO programme requires careful planning, consultation and promotion to ensure health professionals understand and support the rationale for the change and therefore implement the desired change. When this does not occur evidence shows that health professionals revert to their preferred ways of working citing professional obligations as the rationale for no change. Any changes also need to ensure that WCTO providers retain their ability to use their professional judgement to best meet the short and long-term needs of families/whānau, and to truly develop a partnership-based relationship with families/whānau.

Table 26: Suggested delivery of core domains around 4 – 6 weeks

Components	Assessment and content	LMC discharge check WCTO Schedule (2010)	WC/ TO Providers (Ministry, 2010 & WC Health Record)	GP Suggested Revision
Health and development assessments	Maternal physical and emotional wellbeing / nutrition	√	√	-
	Maternal postnatal depression	√	√	√
	Family violence / abuse	√	√	√
	Family health and wellbeing – care plan, parent-child interaction and bonding	√	√	√
Interventions and support	Head	√	√	
	Fontanelles		√	
	Weight	√	√	
	Length/ height	√	√	
	Eyes (red reflex, following, pseudostrabismus)	√	√ (not red eye)	√
	Mouth		√	
	Ears (reaction to loud noise)		√	
	Skin and fingernails, colour		√	
	Cardio-vascular (heart and lungs)	√	(not with stethoscope)	√
	Chest/ respirations		√	√
	Abdomen	√	√	
	Healing of umbilicus		√	
	Palpate femoral pulses	√		√
	Boy – bilateral descent of testes		√	√
	Girl - hygiene		√	
	Stability of hips, hip screening	√	√	√
	Reflexes			
	Vit K	√		
	BCG/ Hep B vaccine due/ organised/	√		√
	Promotion of health and development	Breastfeeding promotion	√	√
SUDI prevention		√	√	
Immunisation		√	√	√
Parenting advice (crying, infant development)		√		
Prevention in babies being shaken		√		
Recognition of minor illness		√	√	√
Maternal and family/ whānau support networks		√		
Smoking cessation		√	√	√
Parenting age and stage		√	√	
Safety/ injury prevention		√	√	

8.3 Quality improvement areas

8.3.1 Working well

Feedback from DHBs, providers and other stakeholders indicate a number of key strengths with the delivery of services when the baby is around 4 – 6 weeks old, and some are applicable across other core contacts:

- **Universal entitlement** with all families entitled to services.
- **Credibility and relevance of the WCTO programme** amongst DHBs and providers.
- **Consumer-centred approach.** DHBs and other providers note that once a child is enrolled with WCTO providers, they receive access to services and ongoing family/ whānau support. Additional contacts are an important component of a consumer-centred approach to WCTO services.
- **Home-based service delivery** or close to home.
- **Safety net for families /whānau** having a range of providers deliver services.

8.3.2 Areas for quality improvement

Across DHBs, providers and stakeholders, a range of quality improvement issues were identified that reflected ways to strengthen the current service delivery, and the interfaces between providers. However, consideration is needed on how to implement quality improvements that will ensure the outputs and outcomes being sought at this life-stage are achieved and families/ whānau are supported to maximise positive long-term health and wellbeing outcomes.

At an overarching systems level, while there are identified service pathways, there is no agreed overarching structure or interlinking governance framework, with clear accountabilities and responsibilities. While providers individually are offering services to families/ whānau, there is a lack of integration of services and at times competition and fragmentation. The ability to monitor population outputs and outcomes is not possible therefore the need for a safety net of multiple providers is reinforced.

The goal of universal entitlement based on preliminary WCTO data is not being achieved, and Māori and Pacific families/ whānau are missing out. Thus, the risk of increasing health and wellbeing inequities for Māori and Pacific children continues. Further, there are currently no coherent regionally based population strategies for ensuring that all families/ whānau are connected to a WCTO provider and GPT that best meets their service preferences and needs. It is acknowledged that steps are being taken to address this through the Shared Maternity Record Pilot and GP Enrolment at birth strategy. A key challenge with these changes will be ensuring that their implementation achieves the desired benefits and outcomes for families/ whānau.

A quality improvement framework offers a national structure by which the WCTO sector as a whole can collectively focus and work together to meet the needs of families/ whānau and, working in partnership, empower them to realise their goals and aspirations for their children and family/ whānau. To create cohesion in implementing the framework, a set of agreed sector-wide principles and associated standards is also required.

Focusing at a system level, suggested quality improvement areas are:

Family/ whānau focus/ parental choice

- Ensuring families/ whānau can choose the WCTO provider that best fits with their values and needs.
- During the informed consent process informing families/ whānau about the goals of the WCTO programme and demonstrating the alignment with hopes and aspirations for their children and family/ whānau.
- Strengthening the family/ whānau partnership through a relationship-based and not transactional-based service to create relevance and ongoing value.
- Developing and using the needs assessment, care plan and additional contacts to appropriately target services and offer the appropriate intensity of support.

Ensuring access to the WCTO programme

- **Multiple enrolment at birth** to ensure the baby and family/ whānau can be identified, followed up and if consenting, receive appropriate services. Ideally, the baby will receive their NHI number, be enrolled on the NIR, and with a GP and WCTO provider.

Increasing access for vulnerable families

- Increasing access to the WCTO programme for Māori and Pacific families is critical and should be a priority area of focus.
- Identifying potentially vulnerable families/ whānau antenatally and fostering positive relationships that enable WCTO providers and families/ whānau to work together to address wider primordial factors and link to appropriate services.
- Ensure access to more intensive programmes (e.g. the Family Nurse Partnership, Family Start) and determine whether they are effective in enhancing the long-term health and wellbeing outcomes for high needs families/ whānau.

Improved information sharing and monitoring

- **An integrated information system** to ensure smooth transfer of families/ whānau and their detailed information and care plan across providers in relation to assessments undertaken, referrals, interventions, actions and importantly, any areas of particular ongoing concern. The shared maternity record may address this.
 - WCTO providers need to know whether babies have had a six week check, and if not, what action needs to be taken and who is responsible and accountable if the babies do not receive the check.

Workforce competency and sustainability

- Seek to strengthen WCTO providers' capacity and capability, in particular the sustainability of the Tamariki Ora providers.
- Identify whether there are workforce shortages and seek collaborative strategies to address these.
- Ensure ongoing engagement by GPTs so the focus of Well Child is embedded into all their interactions with families/ whānau. In this context, identify how to support and engender ongoing training in Well Child specialism for the GPT.
- Have greater clarity of the roles and expectations around the 4 – 6 week period, and for GPTs and WCTO providers across the 0 – 5 years of early childhood.

Content coverage

- Identify key priority areas that must be completed by providers.
- Ensure that providers can use their professional judgement to best meet family/ whānau needs.

Referral pathways

- Needs assessment and care plan should be negotiated with families/ whānau to ensure receive appropriate (and wanted) short and long-term support, services and interventions.
- Ensure clear referral pathways and evidence-informed interventions are available and that providers have capacity to effectively and manage timely referrals.
- Where needed, facilitate access and remove cost, transport and other access barriers.

Monitor outputs and outcomes

- Use the quality improvement framework to:
 - foster inter-agency discussions about the WCTO programme's vision and results at local and regional levels to create a greater multi-disciplinary focus on population level results and not individual service delivery
 - agree changes to the WCTO programme locally and regionally to enhance families/ whānau experience of the service and to identify ways to improve service delivery that will affect positive health and wellbeing outcomes.

Governance and accountability

- Develop regional and local multi-disciplinary governance structures in relation to the completion of the 4 – 6 weeks, and other core contacts, similar to the B4SC, to have leadership, governance and clinical oversight of the WCTO programme.
- Ensure clinical supervision and referral reviews are in place and maintained. For smaller Tamariki Ora providers consider local collaborative models to ensure these structures and processes are established and sustained.

Foster multi-agency connections and collaborations

- Foster multi-agency connections and collaborations across WCTO providers at national, DHB and local levels.
- Foster a multi-sector approach to create more effective pathways to address primordial factors that contribute to health inequities.

Ongoing development of the WCTO evidence-base for New Zealand

- Continue to monitor the international evidence and seek to test in the New Zealand context.
- Recognising New Zealand's unique context and challenges, consideration is needed on how to develop local innovations and solutions.
- Set up a Technical Advisory Group to review evidence and make suggested recommendations to the WCTO programme.

9. Suggested Research Areas

This review has identified a number of future research areas which, if undertaken, would strengthen the evidence-base for the WCTO programme. Based on the findings of this quality review, the priority research areas reflect the need to increase access to the WCTO programme for Māori and Pacific families, and ensure the relevancy of the WCTO programme to all families long-term. Suggested research areas in priority order are:

- Research into understanding how 'parenting' concepts differ between ethnic groups and associated implications for the WCTO programme.
- Research to explore the underlying reasons for low coverage of Māori whānau within the WCTO programme (i.e. research with Māori whānau who do not use the service).
- Research to explore the underlying reasons for low coverage of Pacific families within the WCTO programme (i.e. research with Pacific whānau who do not use the service).
- Evaluating the delivery and impact of Tamariki Ora providers' WCTO model (encompassing whānau Ora) to determine whether they achieve positive short and medium-term outcomes for high-needs families (e.g. success case methodology).
- Research to explore attitudes, motivations and behaviours to identify ways to strengthen WCTO service delivery relevancy and partnership approach with families/whānau.

Other research areas identified included:

- Content of 4 - 6 week checks:
 - Research to identify effective interventions across a range of domains including family violence, child abuse, postnatal depression, and obesity in children.
 - Research to test the effectiveness of promotional interviewing as both a means of enabling practitioners to identify families in need of further support and to help families to develop problem-solving skills.
 - Research about the effectiveness of anticipatory guidance, and its potential role in preventing mental health problems in children.
- First-time parents' perceptions of the WCTO programme, and how the WCTO programme is meeting their needs and long-term aspirations for their children.
- Research into referrals to identify the appropriateness of referrals made and interventions given, and the ability of families/whānau to overcome potential barriers to access these services.
- Research to ensure the WCTO Health Book is understandable by those with English as an additional language or with low health literacy, and its overall usability, particularly for young Māori and Pacific parents.

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Annexes

Annex 1: Plunket's adapted continuum of needs assessment and care planning model

The matrix below is adapted from the Plunket Continuum of Needs Assessment and Care Planning model.



<i>Level One: Universal Service</i>	<i>Level Two: Intensive Short Term</i>	<i>Level Three: Intensive Long Term</i>
Needs can be met through own resources and universal (core) care.	Short term needs that may be low or high in intensity.	Long term needs with high intensity and involvement of multiple resources and/or agencies. Service maintained at level three even though balance of strengths and needs may change.
<p>Presence of a wide range of protective factors such as:</p> <ul style="list-style-type: none"> • Support networks • Seeking advice • Engagement in health seeking behaviour • Sound parenting skills connected to a culturally specific knowledge base • The child is growing and developing as expected • No health, emotional, safety, or social needs identified with the whānau. <p>And Needs:</p> <p>Neither the family nor the WCTO provider has any significant concerns in any of the domains</p>	<p>Presence of protective factors such as:</p> <ul style="list-style-type: none"> • Support networks • Seeking advice • Engagement in solution-seeking behaviour • Adequate parenting skills <p>And Needs:</p> <p>Readily modifiable and require specific, usually short term interventions such as:</p> <ul style="list-style-type: none"> • A woman who has a breastfeeding problem • First-time parents adjusting to parenthood • Mild postnatal depression • Needs identified related to attachment difficulties • A whānau with limited community links • Unexpected obstetric outcome e.g. NICU admission, prem delivery, C-Section or difficult vaginal delivery with complications • Baby slow in milestones <p>Some families may develop ongoing needs and on review may require long term support and interventions.</p>	<p>Presence of protective factors includes all factors mentioned in Level Two as well as:</p> <p>A number of agencies and NGOs already actively and positively engaged with the family e.g. Family Start, adult mental health services.</p> <p>Protective factors may be present alongside complex and enduring family situations including risk factors. A coordinated team approach to management is required.</p> <p>Examples of needs that fit into this category include:</p> <ul style="list-style-type: none"> • Parents with little family support/teenage parents • Key caregivers living with mental illness • Parents with alcohol and drug concerns • Families with a history of violence/child abuse • Families with needs related to parenting practices • Disabilities with ongoing impact on health and wellbeing • Families with complex social needs, including repeated or multiple crises, a number of interacting adversities • Transience • Need for support is identified

Annex 2: Overview of UK, Victoria Australia and US Well Child Programmes

UK Healthy Child Programme (Department of Health 2009) recommends universal health and development reviews to:

- Assess family strengths, needs and risks of individual children and families, to plan for the next stage of childhood and evaluate service. Topics covered depend on the experience and confidence of parents and their choices.
- Provide opportunity to discuss concerns and aspirations.
- Assess growth and development.
- Detect abnormalities.

UK HCP's core function is to recognise disability and development delay, and a responsibility to provide information, support, referral and notification to others. Those undertaking the health and development reviews are expected to have knowledge of child development and of the factors that influence health and wellbeing, and the normal range of development. Competent physical examinations should be undertaken at birth and six to eight weeks.

The reviews are undertaken in partnership with parents recognising their strengths, concerns and aspirations for their child. The partnership between practitioners and parents is the key to delivering the HCP effectively. Promotional interviewing is used to promote the early psychosocial development of babies and the transition to parenting.

The content of the six week check is focused. However, it follows an intensive new baby review at 14 days with mother and father, which has both universal and progressive components and a focus on families at high risk. The six week check is followed by three to four months, one year, two to two and a half years, and three to five years visits.

The UK HCP workforce delivering services during pregnancy and the first years of life are a multi-skilled team working involving a range of practitioners across general practice, maternity services and children's centres services with a defined lead role for the health visitor. The team are required to have up to date knowledge and skills and competencies to work in partnership with children, mothers, fathers and families to deliver the core elements of the HCP and to work across service boundaries. The key to success is the shared understanding by parents and providers of the roles and responsibilities and potential contribution of the different practitioners and organisations (Department for Children, Schools and Families 2009).

- GP and primary care team provide child health surveillance and health protection clinical care.
- The Health Visitor is responsible for coordinating the HCP to a defined population. The leadership model is one of distributed responsibility whereby everyone has an equally important role to play in delivering component parts of the HCP.

Victoria Australia's Maternal and Child Health Service (MCH service) offer a universal service for all families with children from birth to school through a series of consultations at key ages and stages, and other activities including parents groups **(Department of Education and Early Childhood Development 2011)**. Additional support is also available through Enhanced MCH Service which responds to disadvantaged children and families. The emphasis of the programme is on prevention, health promotion, early detection and intervention where necessary.

The MCH service can:

- help to identify children and families who require further assessment, interventions, referral and/ or support
- bring families together, foster social networks, support playgroups and strengthen local community connections
- deliver other services and supports, such as family support services and immunisation programmes.

The MCH service provides a comprehensive and focused approach for the promotion, prevention and early detection of the physical, emotional or social factors affecting young children and their families, and intervention where appropriate.

- **Vision:** All Victorian children and their families will have the opportunity to optimise their health, development and wellbeing during the period of a child's life from birth to school age.
- **Mission:** To engage with all families in Victoria with children from birth to school age, to take into account their strengths and vulnerabilities, and to provide timely contact and ongoing primary health care in order to improve their health, development and wellbeing.
- **Goal:** To promote healthy outcomes for children and their families, providing a comprehensive and focused approach to managing the physical, emotional and social factors affecting families in contemporary communities.
- **Principles:** Consultation and participation; access and availability; primacy of prevention; capacity building; equity; family-centred; diversity; inclusion; partnership; quality; evidence and knowledge; evolution of services; continuously improving and adding value to services.
- **Standards:** Universal access; optimal health and development outcomes; family partnership and community collaboration; competent and professional workforce; inter-agency, responsible and accountable; quality and safe.

Figure 6: Overview of MCH service key ages and stages framework for 4 and 8 weeks

KAS visit	Health & Development Monitoring	Intervention*	Promotion of Health & Development
4 weeks	Family Health & Wellbeing Maternal Health & Wellbeing check Hips Weight, length, head circumference	Family Violence- safety plan Respond to assessments Post Natal Depression	Breastfeeding Immunisation Women's Health
8 weeks	Family Health & Wellbeing Full physical assessment - includes Developmental Review	Respond to assessments	Immunisation SIDS risk factors

Source: Department of Education and Early Childhood Development (2009, p4)

*At all visits nurses will respond to parental concerns (e.g. parenting, safety or health issues) and act on professional observation and judgement (including notifications under the Child, Youth and Families Act 2005)

In Victoria, Australia, there are 2 week and 4 week visits, and the 8 week visit is followed by an 8 months, 12 months, 18 months, 2 years and 3.5 years visits.

It is expected the MCH nurse will use their professional judgement to decide if additional activities are warranted such as additional consultations, further assessment/ activities, more flexible approach to service delivery, follow-up, and referral to secondary services.

In the MCH service, the universal service is offered by registered nurses and midwives who have additional qualifications in Maternal and Child Health. The Enhanced MCH Service is provided predominantly by MCH nurses. However, services also benefit from employing professionals from other backgrounds. These may include Aboriginal health workers, early childhood workers, family support workers, alcohol and drugs workers, social workers and psychologists. A multidisciplinary approach is encouraged within the Enhanced MCH Service.

The US's Bright Futures⁵³ is a set of principles, strategies, and tools that are theory-based and systems orientated that can be used to improve the health and wellbeing of all children through culturally appropriate interventions that address the current and emerging health promotion needs at the family, clinical practice, community, health systems and policy levels (Hagan et al 2008 pix). Bright Futures is underpinned by a philosophy of preventative care, health promotion activities and psychosocial factors of health, and a focus on youth and family strengths. The goals of Bright Futures are to:

- Enhance health care professionals' knowledge, skills, and practice of developmentally appropriate health care in the context of family and community.
- Promote desired social, developmental, and health outcomes of infants, children, and adolescents.
- Foster partnerships between families, health care professionals, and communities.
- Increase family knowledge, skills, and participation in health-promoting and prevention activities.
- Address the needs of children and youth with special health care needs through enhanced identification and services.

The Bright Futures recognises that effective health promotion and disease prevention require coordinated efforts across a multi-disciplinary team, families, and the community.

The six core concepts of Bright Futures are:

- building an effective partnership
- fostering family centred-communication
- promoting health and preventing illness
- managing time for health promotion
- educating families through teachable moments
- advocating for children, families and communities.

Bright Futures recommends a first week, one month then two month visit. In the US, there are 1, 2, 4, 6, 9, 12, 15 and 18 months visits followed by 2, 2.5, 3, 4, 5 year visits continuing with two yearly visits until 21 years.

⁵³ http://brightfutures.aap.org/3rd_Edition_Guidelines_and_Pocket_Guide.html accessed 24 August 2012

In the US, Bright Futures' pediatricians undertake checks. However, Coker et al's (2006) review of evidence highlights that pediatricians reported they do not have adequate time or training or receive adequate reimbursement to provide comprehensive Well Child services including anticipatory guidance, development screening and psychosocial screening. In the US, recognising these challenges, there is growing support that these Well Child services should be provided by non-physician professionals with the notable exceptions of physical examinations.

Annex 3: Section 88 relevant clauses

DA1 Aim of lead maternity care

- (1) The aim of lead maternity care is to provide a woman with continuity of care throughout pregnancy, labour and birth, and the postnatal period
- (2) Lead maternity care is available to women, and their new-born babies.

CB3 Manner of providing primary maternity services

A maternity provider must ensure that primary maternity services that are provided by the maternity provider-

- (a) Are provided in a safe, timely, equitable, and efficient manner to meet the assessed needs of the person who is eligible for primary maternity services; and
- (b) Are provided in a manner which supports and promotes continuity of care; and
- (c) Are provided by sufficient numbers of suitably skilled and qualified practitioners; and
- (d) Are provided in a manner that is appropriate to the culture of the person who is eligible for primary maternity services (including their family or whānau).

DA6 General responsibilities of LMCs

- (1) The LMC is responsible for-
 - (a) Assessing the woman's and baby's needs; and
 - (b) Planning the woman's care with her and the care of the baby; and
 - (c) The care provided to the woman throughout her pregnancy and postpartum period, including-
 - (i) The management of labour and birth; and
 - (ii) Ensuring that all the applicable primary maternity services are provided; and
 - (iii) Ensuring all the applicable Well Child Tamariki/Ora services are provided to the baby.
- (2) The LMC or a backup LMC will be available 24 hours a day, 7 days a week to provide phone advice to the woman and community or hospital based assessment for urgent problems, other than acute emergencies.

DA29 Service specification: services following birth

(1) A LMC is responsible for ensuring that all of the following services are provided for both the mother and baby:

- (a) reviewing and updating the care plan and document progress, care given and outcomes, and ensuring that the maternity facility has a copy of the care plan if the woman is receiving inpatient postnatal care:

(b) postnatal visits to assess and care for the mother and baby in a maternity facility and at home until 6 weeks after the birth, including—

- (i) a daily visit while the woman is receiving inpatient postnatal care, unless otherwise agreed by the woman and the maternity facility; and
- (ii) between 5 and 10 home visits by a midwife (and more if clinically needed) including 1 home visit within 24 hours of discharge from a maternity facility; and
- (iii) a minimum of 7 postnatal visits as an aggregate of DA29 (1) (b) (i) and (ii):

(c) as a part of the visits in clause (b), examinations of the woman and baby including—

- (i) a detailed clinical examination of the baby within the first 24 hours of birth; and
- (ii) a detailed clinical examination of the baby within 7 days of birth; and
- (iii) a detailed clinical examination of the baby as defined by the Well Child Tamariki Ora National Schedule before transfer to a Well Child provider; and
- (iv) a postnatal examination of the woman at a clinically appropriate time and before transfer to the woman's primary care provider.

(d) as a part of the visits in clause (b), the provision of care and advice to the woman, including—

- (i) assistance with and advice about breastfeeding and the nutritional needs of the woman and baby; and
- (ii) assessment for risk of postnatal depression and/or family violence, with appropriate advice and referral; and
- (iii) provide appropriate information and education about screening; and
- (iv) offer to provide or refer the baby for the appropriate screening tests specified by the Ministry of Health and receive and follow up the results of these tests as necessary;
- (v) provision of Ministry of Health information on immunisation and the National Immunisation Register (NIR) and provision of any appropriate or scheduled immunisations consented to; and
- (vi) provision of or access to services, as outlined in the Well Child Tamariki Ora National Schedule; and
- (vii) advice regarding contraception; and
- (viii) parenting advice and education.

(2) If a birth has occurred in a maternity facility, the LMC, in discussion with the woman and the maternity facility, must determine when the woman is clinically ready for discharge.

(3) If a general practitioner or obstetrician LMC uses hospital midwifery services, the LMC must—

(a) make a prior agreement with the maternity facility on the use of the hospital midwifery services; and

(b) ensure that the respective responsibilities of the LMC and the hospital midwifery services are clearly documented in the care plan and that a copy of the care plan is given to the hospital midwifery services and to the woman; and

(c) be available to provide consultation and treatment on request.

Defined in this notice: birth, care plan, general practitioner, home visit, hospital midwifery services, inpatient postnatal care, LMC, maternity facility, maternity provider, midwife, NIR, obstetrician, Well Child provider

DA30 Payment rules: services following birth

- (1) The fees for inpatient postnatal care may be claimed only if the woman receives inpatient postnatal care.
- (2) The fees for no inpatient postnatal care may be claimed only if the woman does not receive inpatient postnatal care.
- (3) In addition, in accordance with this clause, the full fee, the first partial fee or the last partial fee may be claimed, as the case may require.
- (4) If a LMC uses hospital midwifery services the maternity provider must claim the fee that applies if a general practitioner or obstetrician has used hospital midwifery services.
- (5) A maternity provider may claim only the first partial fee if the woman was registered with the maternity provider, but changed maternity provider during the first, second or third week following birth.
- (6) A maternity provider may claim only the last partial fee if the woman first registered with the maternity provider during the fourth, fifth or sixth week following birth.
- (7) If subclauses (5) and (6) do not apply, the maternity provider may claim the full fee.
- (8) Only 1 payment for services following birth will be paid per woman, per pregnancy except where the mother and baby have different residential addresses. If separate fees for services following birth are sought, details of the circumstances must be provided with the claim. In particular:
 - (a) for the claim for services following birth for the birth mother, the birth mother's NHI and the baby's NHI must be provided on the claim;
 - (b) for the claim for services following birth for the baby and its caregiver, the caregiver's NHI and the baby's NHI must be provided on the claim. In addition, the caregiver must be registered with the maternity provider.
- (9) The fee for additional postnatal visits may be claimed only once per woman if the LMC has provided 12 or more postnatal visits. This fee may not be claimed by an LMC who has used hospital midwifery services.

Defined in this notice: additional postnatal visits, birth, claim, general practitioner, hospital midwifery services, inpatient postnatal care, LMC, maternity provider, NHI, obstetrician, services following birth

DA9 Service linkages: transfer to Well Child services

- (1) A transfer of the care of the baby from the LMC to a Well Child provider must take place before 6 weeks from birth.
- (2) The LMC must give a written referral to a Well Child provider that meets the guidelines agreed by the New Zealand College of Midwives and providers of Well Child services, before the end of the 4th week following birth.

(3) If the baby has unusually high needs, the LMC may request that a Well Child provider becomes involved as early as 2 weeks from birth to provide concurrent and co-ordinated care with the LMC.

Defined in this notice: birth, LMC, Well Child provider

DA10 Service linkages: transfer to primary health services

(1) A transfer of the care of the woman and the baby from the LMC to the woman's primary health services provider must take place before 6 weeks from birth.

(2) The LMC must give a written referral to the woman's general practitioner that meets the guidelines agreed by the New Zealand College of Midwives and the Royal New Zealand College of General Practitioners, before discharge from lead maternity care.

(3) If a woman does not have a regular general practitioner, the maternity provider must inform the woman about the primary health services available in the local area.

Defined in this notice: birth, general practitioner, LMC, maternity provider, primary health services

Annex 4: LMC requirements in Well Child National Schedule - Birth to four to six weeks (Ministry of Health 2010c).

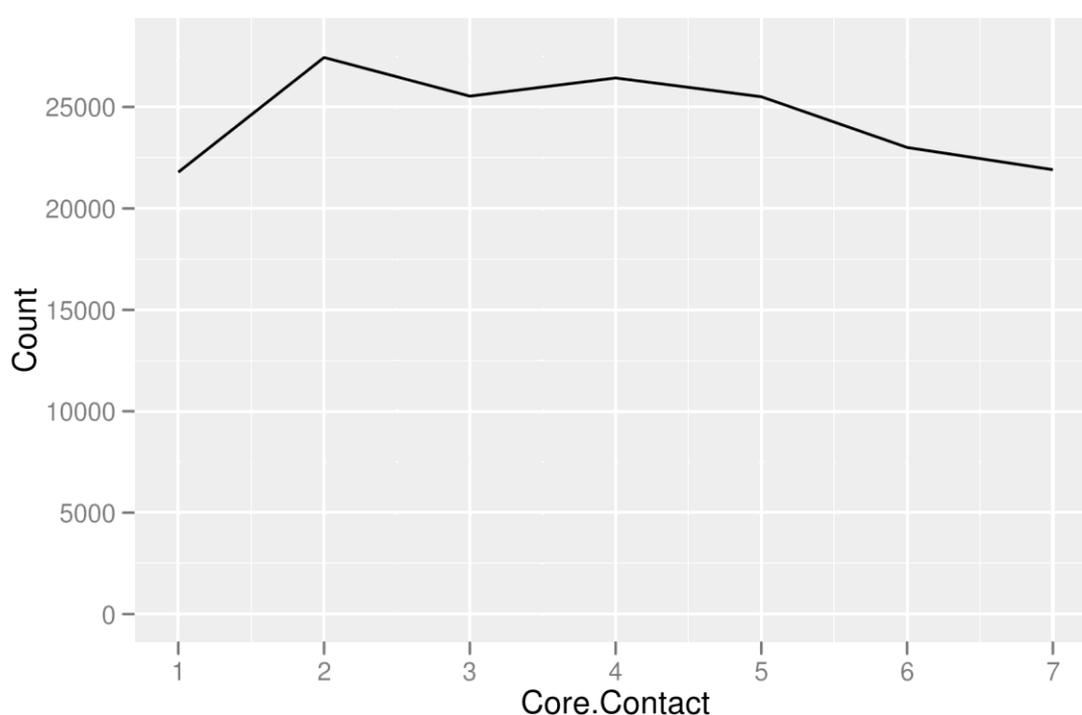
Well Child/Tamariki Ora Schedule – Birth, to four to six weeks

Contact	Health and development assessments	Interventions and support	Promotion of health and development
Birth to 24 hours (LMC)	Maternal wellbeing Child health and wellbeing	Detailed clinical examination of the baby within 48 hours, with initial examination usually undertaken at birth Respond to assessments and refer as required	Promote and support breastfeeding and maternal nutrition
24-48 hours (LMC)	Maternal wellbeing Family health and wellbeing Child health and wellbeing Metabolic screening as soon as possible after 48 hours Newborn hearing screening	Vitamin K (oral or IM) Appropriate information and education about screening Hepatitis B vaccine and immunoglobulin for infants of Hepatitis B Surface Antigen positive mothers (refer to Immunisation Handbook) within 12 hours of birth Facilitate access to BCG vaccine if indicated for infants at risk of tuberculosis (refer to Immunisation Handbook)	SUDI prevention, including safe sleeping for baby and promotion of smokefree environments Immunisation
Up to 1 week (LMC)	Maternal wellbeing Family health and wellbeing Child health and wellbeing	Detailed clinical examination of the baby within 7 days ABC smoking cessation if indicated (support should have already begun in pregnancy) Family violence screen and respond if indicated (will have been assessing and responding to this during the pregnancy) Respond to assessments and refer as required Vitamin K (oral 2 nd dose if not given IM at birth)	Parenting advice including dealing with baby's crying and understanding infant development Provide information on preventing babies being shaken Advise parents on the recognition and management of minor illness
2 to 4 to 6 weeks (LMC)	Maternal wellbeing, including emotional wellbeing Family health and wellbeing Child health and wellbeing	Detailed clinical examination of the baby at discharge from maternity services ABC smoking cessation Family violence screen and respond Handover care to Well Child provider/GP team Referrals as appropriate Vitamin K (oral 3 rd dose if not given IM at birth)	Maternal and family/whānau support networks

Annex 5: Continuity of use of WCTO services

Analysis of the WCTO database highlights some drop-off is visible in the last two core contacts (six and seven), based on overall check counts, as well as considerable build-up between the first and second core contacts, and slight drop-off from the second contact to the next three. The data essentially only covers checks in the second half of 2011, so it is not extensive enough to look at the later checks longitudinally (i.e. for the same child).

Figure 7: Number of babies and children receiving core contacts 1-7



Source: WCTO database

Table 27: Number of babies/ children receiving core contacts 1-7

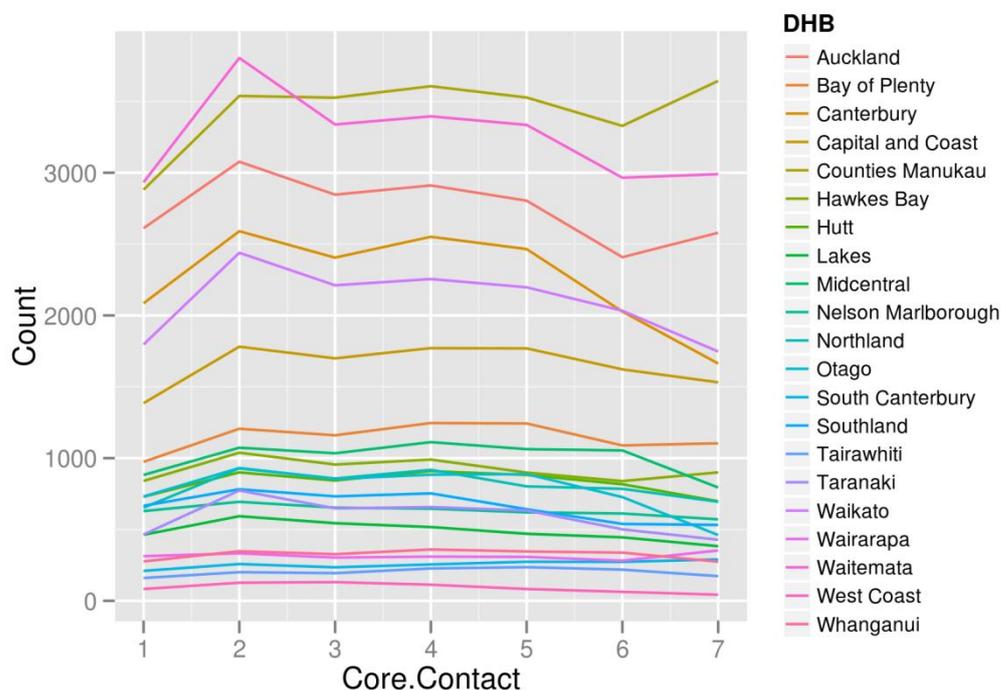
Core Contact	Age of baby/ child	Number receiving contact
1:	4-6 weeks	21,785
2:	8-10 weeks	27,441
3:	3-4 months	25,534
4:	5-7 months	26,431
5:	9-12 months	25,505
6:	15-18 months	23,004
7:	2-3 years	21,908

Source: WCTO database

Base: all children who received core contacts 1-7

There is some variation from this pattern for individual DHBs - e.g. less drop-off for the last two in Counties Manukau, or a much larger peak for the second core contact in Waitemata.

Figure 8: Number of babies and children receiving core contacts 1-7 by DHBs



Source: WCTO database
 Base: all children who received core contacts 1-7

Table 278: Number of babies and children receiving core contacts 1-7 by DHBs

DHB	1	2	3	4	5	6	7
Auckland	2611	3077	2846	2911	2804	2408	2579
Bay of Plenty	974	1206	1160	1246	1243	1089	1104
Canterbury	2085	2590	2405	2551	2465	2027	1663
Capital and Coast	1385	1781	1699	1771	1769	1622	1531
Counties Manukau	2881	3538	3526	3606	3527	3328	3643
Hawkes Bay	840	1038	955	990	899	839	900
Hutt	729	900	843	909	882	817	698
Lakes	463	593	544	517	470	445	383
Midcentral	882	1073	1034	1112	1063	1054	794
Nelson Marlborough	629	694	653	646	620	612	571
Northland	653	928	857	918	802	785	694
Otago	731	931	855	884	888	727	461
South Canterbury	210	258	235	255	274	273	290
Southland	666	782	732	753	642	539	532
Tairarwhiti	160	201	194	227	236	219	173
Taranaki	465	773	648	657	633	501	428
Waikato	1796	2439	2211	2255	2197	2033	1747
Wairarapa	313	333	303	310	308	282	353
Waitemata	2933	3804	3338	3395	3335	2965	2990
West Coast	83	127	131	113	83	63	43
Whanganui	276	348	327	360	346	338	274

Source: WCTO database
 Base: all children who received core contacts 1-

Quality Review of Three Assessment Tools: Preface

This report has been prepared for the Ministry of Health by Liz Smith and Lisa Gregg, Litmus Ltd with contribution from Lisa Davies, Kaipuke Consulting and James Reilly, Statistical Insights Ltd. We acknowledge and thank all those who contributed to the quality review of the three assessment tools, including parents, the New Zealand College of Midwives, The Royal New Zealand College of General Practitioners, The Royal New Zealand Plunket Society, Tamariki Ora providers, District Health Board managers, and national and international experts. We also thank our Advisory Group members, Dr Amanda D'Souza, and Sue Johnston, Artemis Group for their expert advice and input for the duration of the quality review.

We acknowledge the contribution of the WCTO programme Quality Improvement Framework Expert Advisory Group (Appendix 1).

Please contact Liz Smith liz@litmus.co.nz or Lisa Gregg lisa@litmus.co.nz if you have any questions about this report.

This report is the draft report of the quality report for three assessment tools. Appendices for this report (and the reports of the quality review of the Before School Check and four to six week check [Litmus 2012g and a]) are contained in a separate volume (Litmus 2012d).

Glossary of terms

For clarification, in this report the following terms have been used as follows:

- B4SC – Before School Check
- CDC – Centers for Disease Control
- DHBs – District Health Boards
- GPs – General Practitioners
- GPT – General Practice Teams
- LMC - Lead Maternity Carer
- NZCOM – The New Zealand College of Midwives
- PEDS – Parental Evaluation of Developmental Status
- PHN – Public Health Nurse
- PHO – Primary Health Organisation
- Plunket – The Royal New Zealand Plunket Society
- RNZCGP – The Royal New Zealand College of General Practitioners
- SDQ – Strengths and Difficulties Questionnaire
- VHTs – Vision and Hearing Technicians
- Tamariki Ora providers - Unless stated refers to both Māori and Pacific providers delivering WCTO services
- WCTO programme – Well Child Tamariki Ora programme which refers to the programme as a whole including core contacts one to seven, plus additional contacts and the B4SC and GPTs and LMCs
- WCTO providers – Refers to all providers delivering WCTO service (i.e.Plunket and Tamariki Ora providers for core contacts one to seven, and for the B4SC this also includes GPTs, Public Health Nurses and VHTs)
- WHO – World Health Organisation.

1. Executive Summary

1.1 Introduction

The 2007/08 review of the Well Child Tamariki Ora (WCTO) programme resulted in the phasing in of a range of evidence-based changes, including the introduction of three new assessment tools: Parental Evaluation of Developmental Status (PEDS), Lift the Lip oral health assessment, and the World Health Organisation growth charts.

The purpose of this quality review was to assess how well new assessment tools have been adopted into the WCTO programme and what impact they are having on outcomes. The review will provide learnings for implementing future changes, and inform the need for additional training or resources as well as the ongoing development and quality improvement of the programme.

1.2 Review approach

A mixed method data collection process was used to inform the quality review of the three new assessment tools, including: literature review, discussions with international and national experts and key WCTO stakeholders, DHB stocktake and survey, WCTO provider survey, analysis of WCTO data from Plunket and Tamariki Ora providers, case study of service delivery in three DHBs, focus groups with Māori, Pacific and Pākehā parents in Christchurch, Counties Manukau and Taranaki DHBs, and input from an Expert Advisory Group.

Data collection and the review was conducted between February and June 2012.

1.3 Overview of review findings

1.3.1 Evidence-base

The implementation of the three new assessment tools (PEDS, Lift the Lip and WHO growth charts) was an evidence-informed change into the WCTO programme to improve the health outcomes of New Zealand children.

PEDS: PEDS is an evidence-based tool that is shown to be as accurate and effective as other, professionally administered, developmental assessment tools. However, further research is required to assess whether identification rates from the implementation of PEDS will equate to improved child health outcomes. There is some evidence demonstrating challenges to the use of PEDS including: fundamental differences in parenting approaches between indigenous and other population groups, and parents with low education and literacy levels experiencing difficulty in completing PEDS. Indications from the quality review suggest that such challenges may be relevant for Māori and Pacific whānau in New Zealand. If PEDS is not effective for these whānau, then the standard use of it in the WCTO programme has the potential to accentuate existing health inequities.

Further research is needed into the use of the PEDS with Māori and Pacific to ensure the use of PEDS does not increase health inequalities in New Zealand.

Lift the Lip: There are significant gaps in the evidence-base for the use of the Lift the Lip oral health assessment in the WCTO programme. Therefore, few judgements can be made as to the value of Lift the Lip in a child health programme, and its impact on child oral health outcomes. There is also little evidence that providing information on dental oral health improves oral health outcomes. However, there is a rationale for the inclusion of the oral health assessment in the WCTO programme, in that there is very clear evidence of substantial inequalities in oral health outcomes and access to dental health services for children in New Zealand. There is some evidence that the earlier preventative interventions are introduced, the more likely they are to establish good oral health practice in children. Further research is needed to assess the impact of Lift the Lip on oral health outcomes.

WHO growth charts: The growth of infants and children is recognised as an important indicator of health and wellness, and routine growth monitoring is considered standard practice for the health surveillance of infants. There is evidence that WHO standards generally correspond with clinical assessments of malnutrition, and BMI is generally considered the best measure of obesity for community and public health use. However, there is also evidence of a risk of causing unnecessary harm with growth monitoring. Unnecessary referrals can result from inaccurate measures taken, and the inappropriate delivery of growth messages to parents can adversely affect the parents' on-going relationship with the provider and their willingness to action any interventions.

1.3.2 WCTO providers' delivery of the three assessment tools

This quality review has found that the three new assessment tools are being used by WCTO providers. However, they are not completely embedded in the WCTO programme core contacts. Some quality issues have been identified in the delivery of the tools by WCTO providers, and the fidelity of the delivery to the tool protocols and guidelines.

PEDS: There is some variation in how PEDS is delivered by WCTO providers, which is likely to be due to the lack of understanding of the value of using PEDS as a standardised tool. Some providers are embedding PEDS in the core contacts and using it as a starting point for a conversation with parents. Others are using PEDS as a check list at the end of the contact.

WCTO providers are also varying the delivery of PEDS to ensure parents' understanding of the PEDS questions, for example, variation in parents completing PEDS independently or in a face-to-face interview with the WCTO provider, and WCTO providers translating the PEDS questions. Some variation is consistent with the PEDS guidelines. However, caution is required in varying the questions or responses, and discussing the questions with parents before the questionnaire is completed, as this will impact on the validity of the tool. It needs to be made clear to WCTO providers, where flexibility can be integrated into the delivery of PEDS, and where strict adherence to the delivery protocols is required to ensure the validity of the tool.

Lift the Lip: There are also indications of a lack of fidelity of the delivery of Lift the Lip to the delivery guidelines. It is unclear whether WCTO providers are consistently lifting the child's lip to inspect the teeth (not simply asking the child to smile), and using the appropriate tools and positions for sitting the child when inspecting their teeth.

WHO growth charts: WCTO providers are taking growth measures in the WCTO core contacts. However, not all providers are using WHO growth charts. Some providers, particularly those based in primary care, and some LMCs, take the growth measures, but tend not to plot them on the WHO charts. In the clinic setting providers tend to use the growth measures that are on their computer systems, commonly the Centers for Disease Control (CDC) growth measures. WCTO providers frequently identified challenges in using the WHO charts in the WCTO Health Book, such as the small size of the charts, which may be hindering their use by providers.

1.3.3 *Parents' perceptions of the tools*

The quality review has explored parents' experiences of each of the three new assessment tools.

PEDS: Parents' experiences with PEDS in the WCTO programme was mixed with some liking the opportunity to reflect on, and write down, their concerns about their child's development. Other parents experienced difficulty using the tool because English was not their first language or because they had no frame of reference to assess concern. There was a difference in how Māori and Pacific parents experienced PEDS, compared to European parents. Some Māori and Pacific parents were uncomfortable with and anxious about identifying potential developmental problems with their child, and worried they may be viewed as a bad parent if a problem was identified.

Lift the Lip: Parents had good recall of oral health messages delivered in the WCTO core contacts, such as messages about teeth cleaning. However, it is unknown whether this results in good oral health behaviour. Only some parents recalled WCTO providers checking their child's teeth, and no parents recalled being shown how to Lift the Lip at home.

WHO growth charts: Parents generally liked the growth checks being taken to see how their child is growing. However, there was variation in the value parents place on the growth measures. Parents also have different experiences with WCTO providers discussing growth and healthy nutrition with them. Some parents found the conversation useful, and others found the conversations unsettling and unsympathetic towards their child.

1.3.4 *Completion rates*

Data from the B4SC shows that if children are receiving the B4SC, the three assessment tools are being delivered by WCTO providers. However, Māori and Pacific children are less likely to have the B4SC completed (61% and 50% respectively) than European children (75%). This means that Māori and Pacific children are less likely to be assessed for developmental delay using PEDS, assessed for dental decay using Lift the Lip, and less likely to have their growth monitored. Because higher proportions of Māori and Pacific children are not being assessed, any developmental issues, dental decay, and growth issues are less likely to be identified and they are less likely to receive interventions to address these issues. This finding is of particular concern given the inequalities in health outcomes already experienced by Māori and Pacific children.

1.3.5 Appropriateness of the tools for Māori and Pacific

PEDS: While this project did not extensively test the use of the PEDS tool with Māori and Pacific whānau, the preliminary feedback on the tool suggests there may be some issues around the appropriateness and effectiveness of the tool for Māori and Pacific whānau. Further research is needed into the use of the PEDS with Māori and Pacific, to ensure it does not increase health inequalities in New Zealand. If PEDS is not effective for these whānau, then the standard use of it in the WCTO programme has the potential to accentuate existing health inequities.

Lift the Lip and WHO growth charts: For both Lift the Lip and the growth measurements some Māori families may have an issue with the delivery method, which requires the child's head to be touched (growth measures), and rested on the WCTO provider's lap (for the Lift the Lip assessment). WCTO providers should be trained and aware of how to deliver these checks appropriately with Māori.

WHO growth charts: Some WCTO providers raised concerns over identifying children as being overweight and having limited referral pathways available, and limited services to refer to. This was particularly problematic for Māori and Pacific children. In some instances, WCTO providers are referring children to general practice, as per the referral pathways. However, this was not always considered the best approach for Pacific children, as providers felt more family-centred approaches are required.

1.3.6 Child health outcomes and referrals

Findings from the B4SC data (Table 1) show that Māori and Pacific children are more likely than children of other ethnicities to experience dental decay and extreme obesity. Māori children are also more likely than children of other ethnicities to be identified with high risk of developmental delay.

Table 1: Number and proportions of children identified with high risk of developmental delay, dental decay, and extreme obesity at the WCTO core contact eight (B4SC), by ethnicity

Ethnic group	Children identified with high risk of developmental delay (PEDS Pathway A) at the B4SC		Children identified with dental decay (level 2-6) at the B4SC		Children identified as extremely obese at the B4SC	
	(n)	(%)	(n)	(%)	(n)	(%)
All children	-	6.4%	-	16.3%	-	1.9%
Māori	3063	8.6%	10025	28.1%	1166	3.3%
Pacific	827	6.0%	4831	34.9%	1032	7.5%
European/ Other	8028	6.1%	13745	10.5%	1264	1.0%
Asian	665	4.5%	3322	22.6%	260	1.8%

Source: B4SC data exported 23 March 2012.

Base: All children who completed the PEDS test, or Lift the Lip assessment, or growth measures, during the B4SC contact.

PEDS: Findings from the B4SC data show that most children are identified as having no developmental issues. Overall, six percent of children were identified as a high risk of developmental delay, with male children being more likely than female children to be identified as high risk. Referral rates for children identified as high risk of developmental delay are low, with only 23% of cases referred, where close to 100% is expected. Explanations may include that the child is already receiving treatment, or the WCTO provider (or clinical reviewer in DHBs where there are such roles) have used their clinical judgement to determine a referral is not required.

Lift the Lip: In the B4SC, 16% of children who received the Lift the Lip check were found to have decay levels of two or more, and only 18% of these children were referred. The findings are consistent with other New Zealand studies that show, Māori and Pacific children have higher rates of decay (28% and 35% respectively), compared to European children (11%). Children from more deprived areas also have much higher rates of decay (28%), compared to those in less deprived areas (9%).

WHO growth charts: In the B4SC, 2% of children in the birth cohort were recorded as extremely obese (with a BMI over 21) in the B4SC. Only 16% of children identified as being extremely obese were referred. Pacific children were much more likely to be classed as extremely obese than any other ethnic group, and rates of extreme obesity increased in areas of greater deprivation.

Findings from the review clearly identify issues with referrals rates. Across all three tools, the referral rates are substantially lower than what is expected. The reasons for the low referral rates are not explicit, and further research is required to investigate this issue. Possible explanations explored in the quality review, suggest that changes may be required to the recording data to enable accurate recording of, for example, children that are already receiving treatment, or that there is no service available to refer to.

1.4 Recommendations

The following recommendations are made to improve the integration of the three new assessment tools into the WCTO programme core contacts.

- refresher training for WCTO providers
- feedback to WCTO providers on the impact of the new tools in achieving WCTO programme aims
- consideration of the barriers to families accessing services referred to and where the accountability sits in the referral pathways, to ensure that families are receiving the services they are referred for
- PEDS is tested for its effectiveness with Māori and Pacific whānau with particular attention to ensure its use does not increase health inequalities in New Zealand
- development of processes for parents to give informed consent at each of the WCTO core contacts
- further research to explore the low referral rate from the tools.

The following recommendations are made to ensure a smooth integration of any new tools into the WCTO programme.

- having a system in place to review and determine inclusions and exclusions of new tools in the WCTO programme, based on the developing evidence base
- clear evidence base for the new tool that is recognised by the New Zealand health sector, including assessment of the appropriateness and likely effectiveness of the tool for Māori and Pacific
- establishment of national protocols for delivering the tool, including updating WCTO programme documents and providing training
- data monitoring, including feedback loops at a national, DHB and organisation level on the uptake and outputs of the tool, outcomes monitoring, and referral pathways
- review of the tools to ensure no unintended consequences.

2. Introduction

2.1 The Well Child Tamariki Ora programme

The prenatal and early childhood period is a crucial time for laying the foundations for life-long health and wellbeing. New Zealand has not performed well in child health in international comparative studies (OECD 2009) and has significant health inequalities, particularly for Māori and Pacific children (Craig, Jackson, and Han 2007). However, New Zealand has a strong platform of early childhood services on which to build, and a workforce committed to improving the health and wellbeing of New Zealand children and reducing inequalities.

The three cornerstones of early childhood health care services in New Zealand are primary maternity services, the Well Child Tamariki Ora (WCTO) programme, and primary health care services. All three are interrelated and are expected to promote a holistic approach, recognising the physical, social, and emotional needs of the mother, child and family/whānau. The role of the WCTO programme is to support and promote the healthy development of children and their families from birth to five years and is based on the principle of universal provision of services for all, with additional services according to need (Ministry of Health 2002e). WCTO services are provided free of charge and encompass clinical assessment, health promotion, family/whānau support, and interventions or referral as appropriate.

The WCTO programme interfaces with a number of other Ministry of Health ('the Ministry') work programmes that aim to improve outcomes for children and their families, such as the national immunisation programme, newborn metabolic screening, and universal newborn hearing screening. It also interfaces with agencies and services external to the health sector, such as the Whānau Ora initiative and a range of family support, early childhood education and early intervention services (Ministries of Education and Social Development).

Over the last ten years, the Ministry has undertaken a range of measures to improve the WCTO programme. First the introduction of the WCTO Framework in 2002 (Ministry of Health 2002a, 2002b) was designed to improve consistency in service delivery. 2007/08 saw the beginning of a major review of the WCTO programme (Ministry of Health 2010a, 2010e) and alongside this, the introduction of the comprehensive Before School Check (B4SC) at age four.

The 2007/08 WCTO review resulted in the phasing in of a range of evidence-based changes across the WCTO programme, including changes related to the timing and content of the contacts (Ministry of Health 2010a, 2010b). The current core schedule involves four contacts during the postnatal period provided by lead maternity carers, a six week check by general practice, and a further eight contacts from four to six weeks through to five years (Ministry of Health 2010c, 2010f). The B4SC (Ministry of Health 2008a) is the final core contact, with DHBs employing different delivery mechanisms. Most of the other seven contacts are provided by Plunket (to approximately 85 to 90% of children) with DHBs responsible for the remainder (with over 50, mainly Māori or Pacific, providers).

The initial focus of the 2007/08 review related to the content of the programme. Content areas included the response to psychosocial factors (such as violence and child abuse), oral health, growth monitoring, development and behaviour screening, vision and hearing, smoking cessation, and maternal and infant mental health. Other developments included

piloting of a new approach to needs assessment and care-planning and investigating how best to meet parent information needs using different communication modalities (such as internet, face-to-face, telephone advice services and other more novel methods such as texting).

2.2 Overview of the 2012 quality review for the WCTO programme

The Ministry built on the 2007/08 review with a 'second phase' review of the WCTO programme. In 2012, the second review focused on implementation, quality, and the way in which services are delivered.

The Ministry commissioned Litmus to concurrently review the content and implementation of components of the WCTO programme, to inform ongoing WCTO policy, delivery and quality improvement. The specific components of the programme being reviewed were:

- the content and implementation of four to six week checks of mothers and babies (Litmus 2012a)
- the content and implementation of the B4SC (Litmus 2012g)
- the three new assessment tools introduced in 2010: Parental Evaluation of Developmental Status (PEDS) questionnaire, updated World Health Organisation (WHO) growth charts, and the 'Lift the Lip' oral health screen.

From the findings of these quality reviews and in consultation with key WCTO stakeholders in New Zealand, an ongoing Quality Improvement Framework and indicators for the WCTO programme has been developed (Litmus 2012c).

The Ministry has also undertaken a quality review focusing on the 'validation of the Strengths and Difficulties Questionnaire (SDQ) in the New Zealand context'. This third project is being conducted independently by the School of Rehabilitation and Occupation Studies, Auckland University of Technology⁵⁴.

This report details the findings of the quality review of the three assessment tools: PEDS, Lift the Lip, and the WHO growth charts.

2.3 Quality review of the three assessment tools

2.3.1 Background

Three new assessment tools were introduced into the WCTO programme as a result of the 2007/08 review:

1. *PEDS*: at every core contact, from three months, to help identify any developmental or behavioural concerns
2. *Lift the Lip*: oral health screen, at every core contact from 9-12 months, to check for early signs of tooth decay and promote good oral health practices to parents

⁵⁴ Key contact - Associate Professor Paula Kersten, Phone +64 9 9219180 | paula.kersten@aut.ac.nz.

3. *WHO growth charts*: updated growth charts, at every core contact, for recording length, height, weight and head circumference.

2.3.2 Purpose

The purpose of this quality review of the three tools was to assess how well the new assessment tools have been adopted into the WCTO programme and what impact they are having on outcomes. The review will provide learnings for implementing future changes, and inform the need for additional training or resources as well as the ongoing development and quality improvement of the programme.

2.3.3 Review objectives

The objectives of the quality review of the three new assessment tools are to assess:

- the score distributions, referrals and outcomes
- the outcomes against current literature, New Zealand and international data and trends, and B4SC data
- uptake of the new assessment tools by providers
- ease of use and relevance of protocols and guidelines for delivery
- how well delivery follows set protocols and guidelines
- effectiveness of service delivery
- training, experience, professional development, supervision, etc. of the WCTO providers
- communication with parents and parent satisfaction.

Appendix 2 contains the detailed review questions. Appendix 3 lists the quality review team members.

2.4 Overview of quality review approach

A mixed method data collection process was used to inform the quality review of the three new assessment tools, including:

- **Literature review:** The purpose was to identify best practice in delivering PEDS, Lift the Lip, and WHO growth charts. Dr Amanda D'Souza provided expert advice and guidance on the literature review.
- **Discussions with international expert interviews:** Eight interviews were conducted. These interviews provided information about best practice models and quality improvement approaches for delivering WCTO programmes based on international experience.
- **Discussions with New Zealand experts and key stakeholders:** 21 interviews were conducted. These interviews provided information about best practice, quality improvements, and provided a deeper understanding of the WCTO programme from a diverse range of perspectives. Interviews included discussions with representatives from The Royal New Zealand Plunket Society (Plunket), The Royal New Zealand College of General Practitioners (RNZCGP), The New Zealand College of Midwives (NZCOM), Tamariki Ora providers, District Health Board (DHB) representatives, Vision and Hearing representatives, and the Ministry of Health.

- **DHB stocktake and survey:** Their purpose was to gather operational and infrastructural information on six week checks, B4SC and the new assessment tools, specifically: overview of Tamariki Ora and B4SC contracts, delivery models, protocols and guidelines, processes and linkages, workforce capability and development, service delivery, information management, and key quality improvement areas. Planning and Funding Managers from all 20 DHBs submitted stocktake and survey responses.
- **Tamariki Ora provider survey:** Survey of Māori and Pacific WCTO providers, to gain an understanding of the WCTO services offered, the number of staff and their WCTO competency, clinical governance structures, availability of training, WCTO protocols and guidelines, WCTO information management and technology, and their suggestions on quality improvements to the WCTO Programme. 19 Māori and 4 Pacific WCTO providers completed the survey out of a potential 56; representing a 41% return rate. The survey was e-mail based with one e-mail reminder and took place over a two month period.
- **Analysis of WCTO and B4SC data:** Using the WCTO and B4SC datasets, analysis was undertaken of provider delivery of the three assessment tools and the referral pathways used.
- **Case study of three DHBs:** The purpose of the case study was to gain a deeper understanding of on-the-ground delivery of the B4SC and well baby checks undertaken around four to six weeks of age. Three DHBs were selected to represent the three service delivery models for B4SC: Canterbury DHB (primary care-led), Counties Manukau DHB (WCTO provider-led), and Taranaki DHB (public health-led). In each of the DHBs, interviews were undertaken with providers involved in the delivery of four to six week checks and the B4SC: DHB staff, Public Health Nurses, Vision and Hearing Technicians (VHTs), Plunket, Tamariki Ora providers, Primary Health Organisations (PHOs), General Practice teams (GPT), Lead Maternity Carers (LMCs), and B4SC Coordinators.
- **Focus groups with parents:** Eight focus groups were conducted with Māori (3 groups), Pacific (2) and Pākehā (3) in Christchurch (3), Counties Manukau (3) and Taranaki (2) DHBs. Parents recruited had children who had recently completed the B4SC. At least half of the parents in each group had a child under one, and had used a Māori or Pacific Tamariki Ora provider. The groups explored parents' expectations and views of the services received around four to six weeks and at the B4SC.
- **Expert Advisory Group:** A sector-wide multi-disciplinary Expert Advisory Group was set up to inform the development of a quality improvement framework for the WCTO programme. The Expert Advisory Group was kept updated on the data collection for the three quality reviews. The preliminary findings from the three quality reviews were presented to the Expert Advisory Group for validation and discussion.

Methodological details of each of the quality review activities are contained in Appendix 4. All quality review tools are in Appendix 5. Supplementary information about the detailed findings from the GP survey, DHB and WCTO stocktakes and surveys can be found in Litmus 2012 h, e, and f.

2.5 Quality review limitations

The quality review team is confident that the report accurately represents the views and perceptions of participants who contributed to the quality review and is supported by the wider literature and data. The consistency of themes across participants and their support

through the wider surveys, data and documentation strengthens and validates the findings presented.

In considering the findings of this quality review of the three new assessment tools, a number of limitations are acknowledged:

- The literature review undertaken was not a systematic literature review, although care was taken to ensure that systematic reviews (where they existed) were included. Although extensive searching was undertaken, Litmus cannot guarantee that all literature relevant to the reviews were identified and included in this report.
- Four in ten Tamariki Ora providers completed the stocktake and survey therefore findings are indicative and not definitive.
- The online survey of GPs is not representative of the GP population in New Zealand. Of particular note is the higher level of GP response from Canterbury, and that all GPs who participated were undertaking six week checks. Qualitative feedback from parents and anecdotally from other stakeholders highlights that not all GPs in New Zealand undertake a six week check when a baby presents at General Practice for the six week immunisation.
- Analysis of WCTO data is based on data returns from Plunket and around 50% of Tamariki Ora providers. The low return rate reflects that this is the first time the Ministry has sought this return data, and some providers are struggling with the data management process. Other limitations noted in the analysis of the data include missing data and potentially data being entered incorrectly. Efforts were made to remove duplication in the data. Findings need to be treated as preliminary. Data on the B4SC come from a more mature reporting process and is more comprehensive.
- Quantitative surveys of Plunket nurses and LMCs were not undertaken therefore the information about service delivery is informed by national level interviews and qualitative interviews in the three cases. It is acknowledged therefore that the diversity of service delivery and practice may not have been fully captured.
- Focus groups targeted parents with more than two children to include those who had recently experienced the B4SC and four to six week checks. Consequently, first time parents were not included in the groups – an important audience for the WCTO programme.
- Case study participants who contributed to the case studies were identified by the DHBs. It is possible therefore that some wider issues may not have been identified due to sample selection bias.

2.6 Report structure

This report is divided into three distinct sections:

- PEDS
- Lift the Lip
- WHO growth charts.

Within each of these sections, information is provided on the background to the tool, the evidence base for its implementation in the WCTO programme, the intended delivery, and the actual delivery of the tool. The actual delivery is based on information drawn across all

data streams of the quality review. A summary is provided at the end of each of the three sections. The report finishes with conclusions and recommendations across the three tools.

3. PEDS

3.1 Brief overview of PEDS

PEDS was developed in the USA by Dr Frances Glascoe, and first published in 1998. It is a standardised and validated tool for the early identification of developmental delays and behavioural issues in children from birth to eight years, which has been shown to be as accurate and effective as other, professionally administered tools (Glascoe 1997). PEDS uses a family-centred approach to detect developmental delays and establish a pathway for early intervention to improve child health and wellbeing outcomes.

“PEDS is the only evidence-based screen that elicits and addresses parents’ concerns: PEDS tells you when parents’ concerns suggest problems requiring referral and which concerns are best responded to with advice or reassurance.”
(PEDStest.com accessed 21 June 2012)

PEDS is made up of three components:

1. *Parent Questionnaire*: ten questions that parents complete about their child’s behaviour, development, speech and language, and fine and gross motor skills (refer Annex A1)
2. *Score Form*: providers transfer parent’s responses from the PEDS parent Questionnaire into the PEDS Score Form (refer Annex A2)
3. *Interpretation Form*: providers use this form to interpret the scores and decide what pathway is required for the child and family (refer Annex A3). There are five possible pathways:
 - a. refer for assessment
 - b. re-screen or refer for screen
 - c. counsel in areas of difficulty and follow up
 - d. where parental language barriers are identified re-screen, use a second screen, refer for screening, or seek an interpreter
 - e. no further action, use PEDS at future contact.

PEDS can be used as a developmental screening tool, a tool for developmental surveillance, or as an informal means to elicit and respond to parental concerns about their child’s development. PEDS is not a diagnostic tool. If issues are identified, a formal developmental assessment is needed to determine and diagnose developmental or behavioural disorders.

Developmental screening and surveillance is recommended by the American Academy of Pediatrics, and is included in the US Bright Futures well-child care guidelines (Schonwald 2009; Brothers, Glascoe and Robertshaw 2008). PEDS is also used in Victoria, Northern Territory and New South Wales, Australia. It is not recommended in the UK as it does not meet the UK criteria for introducing an organised screening programme at a population level. However, providers can use validated developmental screening tools, such as PEDS, as a resource to support their professional judgement in assessing developmental and behavioural concerns (Department of Health 2009).

The Melbourne Centre for Community Child Health has adopted PEDS and made small modifications to meet Australian language usage. The WCTO programme uses the

Australian version. PEDS has also been translated from English into Spanish and Vietnamese, and is licensed for translation into numerous other languages including Chinese and Malaysian. However, to date, PEDS has not been translated into Māori or any Pacific Island languages.

3.2 PEDS in the WCTO Programme

3.2.1 Introduction of PEDS in the WCTO programme

PEDS was introduced into the WCTO programme after the 2007/08 review. It was introduced based on evidence of a strong link between early developmental delay and later school learning difficulties, and evidence that early interventions for developmental delay leads to better outcomes (Ministry of Health 2010b). In 2008, the Australian version of PEDS was implemented with the roll out of the B4SC (core contact eight). In 2010, PEDS was introduced into the WCTO core contacts three to seven.

In the WCTO programme, PEDS is used as a tool for surveillance of developmental and behavioural issues, and as a method to engage with, and respond to, parents' concerns. Using PEDS in a surveillance model involves a multi-dimensional approach, including longitudinal observation of a child, involving parental concerns about their child, and the provision of guidance and advice.

“PEDS is a reliable way to elicit information from parents and undertake developmental surveillance.” (Ministry of Health 2008a, p37)

3.2.2 Rationale for using PEDS in the WCTO programme

PEDS is intended to identify developmental delays and establish a pathway for early intervention to improve child health and wellbeing outcomes. Severe developmental delays are commonly identified by methods other than screening, such as clinical observation (Centre for Community Child Health 2002; Hall and Elliman 2006). The intention of developmental surveillance and screening tools, such as PEDS, is to detect the less obvious developmental delays. Developmental delay refers to:

“A delay in the acquisition of developmental tasks or milestones, or (less commonly) a disorder of development in which milestones are achieved but qualitatively different (such as with disordered word combinations).” (Centre for Community Child Health 2002, p179).

Early interventions for a life course approach

Child development is a powerful determinant of health in adult life. There is evidence of the effectiveness of early interventions for children with many developmental conditions such as autism, speech and language disorders, and cognitive disabilities, which have shown to improve educational, behavioural, developmental and social outcomes for children (Anderson, Shinn, Fullilove 2003; Berlin, Brook-Gun, McCarton, and McCormick 1998; and Hill, Brooks-Gun, McCarton, McCormick 2003 as cited in Sices, Stancin, Kirchner and Bauchner 2009; Centre for Community Child Health 2002).

Interventions from early identification of mild developmental issues are more effective for children and families long-term, and more cost effective for the health system (Williams and Holmes 2004). There are also benefits of interventions for children who are at the lower

range of normal, but who do not meet diagnostic criteria (Centre for Community Child Health 2002).

In this context, including PEDS in the WCTO programme provides opportunities for children with less obvious developmental delays to be identified through surveillance across multiple contact points. In recognition that children's development is continual, the WCTO programme uses PEDS as a tool for on-going, longitudinal surveillance of a child's development over time. It is not a one-off screen for developmental delays.

“Developmental surveillance is the process of eliciting and attending to parents’ concerns, making accurate and informative longitudinal observations of children, and promoting children’s development. Developmental surveillance may include the use of developmental screening tests.” (Ministry of Health 2008a, p36).

Standardised tool

Using PEDS in the WCTO programme provides a standardised approach to developmental surveillance. There is some evidence to suggest that a standardised tool is an effective approach to assist in overcoming the challenges of identifying developmental delay that would benefit from early interventions. A review of evidence by the Centre for Community Child Health (2002) suggests clinicians are typically not accurate in identifying children with less severe developmental delays, largely due to the difficulties of identifying delays in a short period of time and the need to focus on more acute matters at hand.

- Studies in the US report that few paediatricians use effective means to screen for developmental delays (Council on Children with Disabilities 2006), or standardised screening tools (Sand and Glascoe 2005), despite recommendations from the American Academy of Pediatrics (AAP) for using validated screening tools with longitudinal monitoring and surveillance of child development.
- The Council on Children with Disabilities (2006) suggest that the low detection rates of child developmental disorders is linked to paediatricians not using a standardised tool for the identification of mild developmental issues.

Family-centred approach

Parental involvement in PEDS is consistent with the family-centred approach in the WCTO programme. PEDS identifies potential development and behavioural problems, and is also a means of eliciting parental concerns about their child's development. Providers can respond to parents' concerns irrespective of whether a developmental issue is identified (Ministry of Health 2008a).

“Developmental surveillance is a shared activity between parents and health professionals, and uses both parties’ knowledge of the child to monitor the child’s ongoing development.” (MOH 2010d, pvii).

PEDS can be used to facilitate conversations with parents about their areas of concern with their child's development (Ministry of Health 2008a; Davies and Feeney 2009). Evidence suggests parental concerns regarding child development can be accurately obtained by using well-structured, validated questionnaires (Glascoe 2002 as cited in Department of Health and the Department for Children, School and Families 2009; Coghlan, Kiing, and Wake 2003; Hall and Elliman 2006). Parental involvement may also increase the breadth of developmental issues identified compared to professional observation or milestone assessment methods, as they do not target specific developmental disorders.

“This different mode of detection (survey rather than observation or milestone review) may access an array of new information from parents who otherwise are

less revealing, may illuminate needs in children with more subtle difficulties in any area, or may pick up those children whose needs are not evident during the busy office visit.” (Schonwald 2009, p66).

Glascoe and Robertshaw (2007) consider parental assessments to be beneficial for the following reasons:

- parents have more opportunity to observe their children than providers
- parents completing the forms independently reduces the time required of providers during a WCTO visit
- parents are more likely to return for scheduled visits and follow through with recommendations when they are engaged in the process
- providers can focus on the issues of interest to families
- parents see professionals as ‘true collaborators’ in child development
- a broader range of needs are identified.

3.3 Evidence on the effectiveness of PEDS

3.3.1 Assessing effectiveness

In assessing documented evidence on the effectiveness of PEDS, consideration was given to identifying:

- evidence demonstrating value in the use of PEDS
- evidence demonstrating a lack of value in the use of PEDS
- gaps in the current evidence base, where there is no evidence for or against using PEDS, and further research is required.

PEDS is used in the WCTO context as a tool for developmental surveillance over time, rather than a screening test. However, the criteria established by the New Zealand National Health Committee for assessing screening programmes (National Health Committee 2003b) may be relevant in this context (refer Annex A4). In reviewing the evidence on the effectiveness of PEDS, the following aspects were considered:

- Does PEDS correctly identify children with developmental delay, lead to referrals for intervention, and result in improved health outcomes for children and their families?
- Is there parental acceptance of PEDS?
- Does PEDS cause any harm to children and their families?
- Are there any health equity issues in the application and outcomes from the use of PEDS?

Evidence base

The evidence identified in this section is restricted by the literature review parameters and search criteria outlined in the Appendices Report (Litmus 2012d). No systematic reviews, or meta analyses were identified in the literature search that investigate the impact of PEDS on child health outcomes. The information here is drawn from individual papers and research projects into the application of PEDS in different countries and settings.

3.3.2 The validity of PEDS: Identification of children with developmental delay

PEDS was developed out of four cross-validated studies on a representative sample of 771 American children (Ministry of Health 2010b; Hamilton 2006). The validity of PEDS was assessed through comparisons with a series of other tests, including the Woodcock-Johnson Psychoeducational Battery: Tests of Achievement, Stanford-Binet Intelligence Scale, and the Bayley Scales of Infant Development–II (Hamilton 2006).

PEDS is as accurate and effective as other, professionally administered, developmental assessment tools, with similar levels of sensitivity and specificity (Armstrong and Goldfeld 2004), and meets the gold standard for sensitivity⁵⁵ and specificity⁵⁶ (Wagner, Jenkins, and Smith 2006). PEDS sensitivity ranges from 74-80%, meaning that 74-80% of children with developmental difficulties are correctly identified as such. Specificity ranges from 70-80%, meaning that 70-80% of children without developmental difficulties are identified as developing normally (Wagner, Jenkins, and Smith 2006; Armstrong and Goldfeld 2004; Limbos and Joyce 2011).

The sensitivity and specificity levels expected for developmental screening tools are relatively low compared to the standards for other screens used in medicine, to allow for the dynamic nature of child development (Hamilton 2006). A recent study also found that the specificity for PEDS fell below the 70% cut-off (Limbos and Joyce 2011). However, unlike other developmental assessments, PEDS has additional advantages that may encourage providers to use the standardised tool. These advantages include that PEDS is quick to administer, does not require specialist equipment and has a strong emphasis on parental involvement (Armstrong and Goldfeld 2004; Limbos and Joyce 2011).

Using PEDS with a secondary screen improves the specificity of the tool. In Victoria, the Brigance screen is used to test children identified as Pathway A or B in PEDS, which increases the specificity to over 82% (Armstrong and Goldfeld 2004). Frances Glascoe has also developed PEDS:DM as an additional tool to use after PEDS where concerns are identified, but further information is needed for a referral to services (mostly used for PEDS Pathways B and D).

Studies on the implementation of PEDS have reported some evidence to suggest PEDS is identifying children with developmental or behavioural issues (Davies and Feeney 2009; Schonwald 2009; Limbos and Joyce 2011). For example, Schonwald's (2009) study found a significant increase in the identification rate of developmental concerns in three year old children and behavioural concerns in two year old children, after the implementation of PEDS in primary care settings. However, in testing whether this increase was a result of PEDS or from increased awareness and education on child development, Schonwald found no significant difference, suggesting the increase in identification may be attributed to providers increased knowledge of child development.

Other studies on the implementation of PEDS in Australia and the UK provide details on the rates of identification of children with developmental issues from using PEDS (Armstrong and Goldfeld 2004; Coghlan, Kiing and Wake 2003; Davies and Feeney 2009). Results from these studies are compared against the outputs from the New Zealand WCTO programme in Section 3.9.4.

⁵⁵ Sensitivity: true positives that are correctly identified in the test (false positives are those where there is a positive test result for those who do not have the condition).

⁵⁶ Specificity: true negatives which are correctly identified (false negatives are missed cases).

3.3.3 Referral rates and improving child health outcomes

There is minimal information on the impact PEDS has on referral rates, access to services when a need is identified, and the implications for child health outcomes. Two studies identified in the literature review show mixed results on the impact on referral rates. Schonwald's (2009) study found no significant increase in referral rates as a result of the implementation of PEDS in primary care settings. However, Bethell, Reuland, and Schor's (2011) study found that children identified as having developmental issues were more likely to be receiving the services they required if they had received a parent-centred developmental screen, particularly for those identified as being high risk on the PEDS score (Pathway A).

While there is some evidence into the effectiveness of PEDS to identify children with developmental issues, further research is required across different practice settings, to assess whether identification rates from the implementation of PEDS will equate to improved health outcomes and child wellbeing.

3.3.4 Parental acceptance of PEDS

Parental involvement is a key feature of PEDS, and is an important alignment with the WCTO family/ whānau approach. International studies into parents' experiences have found that parents generally have positive experiences using PEDS (Davies and Feeney 2009; Coghlan, Kiing and Wake 2003). PEDS is generally well-received by parents (Davies and Feeney 2009), the questionnaire is considered easy to complete (Coghlan, Kiing and Wake 2003; Armstrong and Goldfeld 2004), and parents feel involved in the check of their child (Davies and Feeney 2009). Some parents in Davies and Feeney's (2009) study commented that PEDS gave them the opportunity to consider their response to the questions on their child's development.

Studies into parent's involvement in PEDS emphasise the importance of the conversation providers have with parents (Davies and Feeney 2009; Cox, Huntington, Saada, Epee-Bounya, and Schonwald 2010). For example, Cox et al's (2010) study found that parents tend to use PEDS questionnaires to share information about their child that is not directly relevant to the questionnaire. Many comments parents made indicated a misunderstanding of typical development for their child's age (Cox et al 2010), emphasising the importance of placing PEDS within the context of a conversation with parents about their concerns about their child's development. Some parents in Davies and Feeney's (2009) study also reported a lack of discussion with providers on developmental milestones to know if their child is on track.

"Parents frequently used the PEDS forms to communicate additional concerns regarding their child or provide positive feedback on their child's progress. The inappropriate developmental expectation, limited health literacy, and culturally distinct comments on the PEDS forms reinforce the importance of using screening tools to enhance the care provided during visits but not to replace patient-provider communication." (Cox et al 2010, p170).

While the findings are generally positive, studies also provide some insights into the challenges with the parental involvement required in the PEDS assessment, including:

- *Parental education requirements:* Most parents find PEDS easy to complete. There are indications that parents with low education levels may experience difficulties in completing PEDS (Coghlan, Kiing and Wake 2003; Armstrong and Goldfeld 2004).

- *Parental language requirements:* The evaluation of the New Zealand B4SC pilot programme recommended that WCTO providers deliver PEDS face-to-face to address issues with parents' ability to read, understand and correctly interpret the PEDS questionnaire, particularly for parents where English is an additional language (CBG Health Research Limited 2007).
- *Parental/ caregiver attendance at WCTO contacts:* Children coming to WCTO appointments without a caregiver who knows the child creates difficulties for providers in getting the questionnaire completed and having conversations about the child's development (Schonwald 2009).
- *Perceived legitimacy of the tool:* Parents with a tertiary education level are less likely than other parents to view PEDS as a helpful tool for providers (Coghlan, Kiing and Wake 2003; Armstrong and Goldfeld 2004). This may suggest that highly educated parents do not see PEDS as a legitimate tool for assessment.

3.3.5 Health equity

There is minimal evidence assessing potential implications of PEDS on health equity issues⁵⁷ in a New Zealand or international context. Further research is needed into the use of the PEDS with Māori and Pacific, to ensure the use of PEDS does not increase health inequalities in New Zealand.

One study by Cox (2010) suggests a cultural difference in how parents respond to the PEDS questionnaire. They found that PED questionnaires completed in English had significantly more concerns identified, than Spanish questionnaires, and that the English questionnaires were more likely to contain written comments to qualify the concerns identified.

There are also suggestions from Australia, that testing is required to assess the use of PEDS among remote Aboriginal populations. PEDS is not used in remote areas of the Northern Territory due to significant and fundamental differences in parenting approaches between remote Aboriginal parents and non-Aboriginal parents (Northern Territory Department of Health and Families and the Charles Darwin University 2009). Aboriginal families see the child as the active agent, meaning parents respond to the child's needs as they are expressed, rather than predicting what those needs are. The Northern Territory Department of Health and Families and the Charles Darwin University (2009) state this fundamental difference in parenting could significantly impact on the reliability of PEDS, and suggest that further research is required to test and validate PEDS on remote Aboriginal families before it can be implemented. It is possible that there are similar cultural considerations that need to be addressed when using PEDS in the New Zealand context.

There are known literacy and health literacy inequities among Māori and Pacific. Māori aged 19-24 years of age have the poorest health literacy compared to the rest of the population (Ministry of Health 2010g). Māori and Pacific students are over-represented at the lower levels of reading proficiency when compared with Pākehā-European and Asian students (Telford and Caygill 2007). Thirty percent of Pacific and 25% of Māori students aged 15 years do not show proficiency in reading above Level 1. If parents with low education levels experience difficulties in completing PEDS, this may have implications for the use and suitability of PEDS for Māori and Pacific families (refer Section 3.3.4).

⁵⁷ In this context, health equity refers to: equity of access to the assessment, quality of service received in using the assessment, identification of issues, access to services for interventions where relevant, and reduction of inequalities of health outcomes for Māori and Pacific.

3.3.6 Assessment of harm

Consideration of harm is important for implementing any screening and surveillance programme. In the PEDS context, harm could be the identification of issues with a lack of effective referral pathways and secondary services to address any issues identified. Harm can also be in referring children and families for interventions, when further testing demonstrates no intervention is needed. Marks and Glascoe (2010) note that when PEDS identifies a child with a potential issue, even if a referral to specialist services is not required, it is likely that the child is having difficulties with an area of development and they are likely to benefit from early intervention. That is, these children often benefit by intervention, even if they do not meet diagnostic criteria for developmental delay (i.e. there is likely to be less harm from false positives).

There is also potential for parental anxiety and stigma from the identification of a potential developmental delay in their child. No studies were identified in the literature search that assessed the potential for parental anxiety and stigma from using PEDS. Further research is required to test this aspect of parents' experience of harm.

3.4 Intended delivery of PEDS in New Zealand

3.4.1 Timing of the delivery process

PEDS is used at six of the eight WCTO programme core contacts, starting at core contact three (three – four months). It is used at every core contact from that point, to core contact eight (B4SC). Details of the PEDS process and quality requirements are included in the B4SC Handbook for Practitioners. The WCTO National Schedule Handbook (Ministry of Health 2002b) has not been updated with the inclusion of PEDS. It is unclear what information is available on the expected delivery of PEDS to WCTO providers who do not perform the B4SC as no national level Ministry of Health documents were identified, other than the information in the B4SC Handbook for Practitioners.

The B4SC Handbook for Practitioners outlines the following process for using PEDS:

- PEDS is explained to parents:
 - reducing parental anxiety about PEDS
 - responding to parents questions about PEDS.
- Parents choose to complete PEDS on their own or with the WCTO provider.
- PEDS parent questionnaire is completed by the parent on their own or in a face-to-face interview with the WCTO provider.
- WCTO provider scores the parent's questionnaire using the PEDS score form. The PEDS score is calculated by adding the number of significant and non-significant concerns as identified in the parent questionnaire.
- WCTO provider interprets the score form using the interpretation form to determine the appropriate clinical referral pathway.
- WCTO provider discusses the results with the parents, and offers advice or referral as determined by the pathway.

3.4.2 Informed consent

The B4SC Handbook for Practitioners (Ministry of Health 2008a) states that WCTO providers are required to obtain parental consent to the B4SC, and specifies a requirement for providers to have a discussion with parents to ensure they understand what is involved in the B4SC, and how their information will be used, shared and stored. This includes the delivery of the PEDS, as one of the assessments performed in the B4SC. The B4SC Handbook for Practitioners includes an informed consent standard to assist WCTO providers to deliver this process appropriately. This requirement for informed consent is not in the WCTO National Schedule Handbook. This is a gap in the requirements for the WCTO core contacts one to seven.

3.4.3 Referrals and secondary assessments

Where PEDS identifies one significant concern (Pathway B) a second screen is required, as specified in the referral pathways. This is consistent with Australian PEDS protocols. It improves the sensitivity of the tool, and ensures that children are not being referred to specialist services unnecessarily. The B4SC Handbook does not recommend a specific tool for this second assessment, but suggests the use of the Ages and Stages questionnaire, as this is used by several services (Ministry of Health 2008a). There are other options, for example, Victoria uses the Brigance screen for the secondary assessment.

Some DHBs have a clinical review process to review any referrals made from PEDS. The clinical reviewers assess whether and what referral may be needed based on the information gained through the PEDS assessment. Not all areas have such a clinical review process, and in some areas the clinical review is restricted to referrals from the B4SC only, and does not include referrals from WCTO core contacts three to seven. Other areas may have an administrative oversight of the referrals. However, this is to monitor the pathway of the referrals, and is not a clinical review of the need and type of referral needed.

3.4.4 Delivering the tool

The B4SC Handbook for Practitioners (Ministry of Health 2008a) recommends that PEDS should be completed as part of a face-to-face interview with parents, with the provider checking off the parent's responses. This is based on findings from the 2007 pilot of the B4SC that recommended that PEDS is delivered in a face-to-face interview between WCTO providers and parents to mitigate any literacy or language barriers (CBG Health Research Limited 2007).

While a face-to-face delivery of the tool is recommended, the handbook clearly states that providers are not to change the wording of the questions or answers, as this will change the validity of the tool. Providers are to keep discussion on the responses to after parents have completed the questionnaire. This recommendation is consistent with the Centre for Community Child Health's PEDS administration and scoring guide, which states that altering PEDS questions will lead to substantial under-identification of children with problems.

3.4.5 Protocols and guidelines

A review of documents suggests there are few guiding documents for providers who deliver the WCTO programme core contacts three to seven and not the B4SC. The WCTO provider handbook has not been updated with the PEDS protocols. There may also be gaps in information that is applicable at a local level as some areas have developed local

pathway maps for providers to clarify the referral pathways and improve consistency across providers.

The following guidelines and protocol documents are used by WCTO providers:

- PEDS Brief Administration and Scoring guide 2005 (Authorised Australian version)
- B4SC Handbook for Practitioners
- B4SC Training Handbook
- Health Pathways (in Canterbury only, Health Pathways is a website that provides assessment, management and referral pathway information to health providers)
- Starship Guidelines (unspecified).

3.5 New Zealand delivery of PEDS: Clinical quality

3.5.1 Information sources

Findings in this section are based on the analysis of the B4SC and WCTO data, three DHB case study sites, focus groups with parents, survey of Tamariki Ora providers, and a stocktake and survey of DHB planning and funding managers. The findings are discussed in the context of the information drawn from the literature search and from discussions with international and national experts.

3.5.2 Purpose

WCTO providers generally understand and appreciate the need for assessing developmental issues in children in the WCTO programme. However, the purpose and value of having a standardised tool is not widely understood by WCTO providers.

Some WCTO providers appear to have a lack of understanding of the purpose of using PEDS as a standardised tool for identifying developmental issues. Some providers reported that developmental issues are already covered in the conversations they have with parents in the WCTO programme core contacts. From this perspective the introduction of PEDS is seen as an additional and unneeded tool that interferes with the delivery of the core contact, duplicates matters already covered, and undermines the practice of the nurse.

Some WCTO providers also feel that PEDS is less relevant for younger children, and more relevant for children from 15 months old. For example, the question 'Do you have any concerns about how your child is learning preschool or school skills?', was thought by some providers to be inappropriate for children aged 3-12 months (core contacts three, four and five).

3.5.3 PEDS completion rates in WCTO core contacts three to seven

Analysis of PEDS in core contacts three to seven is limited by the data available:

- no Plunket data on PEDS was provided for core contacts three to seven
- only approximately 50% of Tamariki Ora providers gave data to the Ministry on core contacts one to seven, and of these, only 43% had PEDS data included.

From the available data, PEDS was completed in 95% of the core contacts, and was more likely to be delivered to children in more deprived areas, possibly reflecting the focus Tamariki Ora providers have on children living in highly deprived areas.

While the data presents a high completion rate of PEDS in core contacts three to seven, the broader situation might be quite different given the extent of missing data. Given the limitations of the available data, it was determined inappropriate to analyse the data further, as there would be a substantial risk of making inappropriate inferences. Therefore, conclusions cannot be drawn on the extent to which PEDS is consistently delivered by WCTO providers in the core contacts three to seven.

3.5.4 PEDS completion rates in WCTO core contact eight (B4SC)

The B4SC data is more complete. The B4SC data shows that if children are receiving a B4SC, the PEDS assessment is being completed.

- PEDS was delivered in the B4SC for 69% of children born from July 2005 to February 2007⁵⁸.
- The B4SC was complete for 68%⁵⁹ of children born from July 2005 to February 2007.
- There has been a steady increase in the completion of PEDS, with completion rates reaching 77% for the most recent birth cohort (Figure 1). This pattern is consistent with the steady increase in completion of the B4SC.
- There was only a small proportion of cases (1.4%) where parents declined to participate in PEDS when it was offered.

The B4SC data shows that approximately 32% of children have not completed the B4SC, and therefore are not receiving the PEDS assessment. This means that developmental issues are not being identified in a systematic fashion, and children may not receive interventions as early as possible. However, this issue is not with the delivery of the PEDS assessment itself. It is with the coverage and reach of the B4SC more generally.

⁵⁸ The denominators for the completion rates are taken from the PHO enrolment demographics database for 2011 quarter 3 (this is the most recent database covering this time period).

⁵⁹ There are more PED completions than B4SC completions, as some people may start, but not complete the B4SC.

Figure 1: Completion of PEDS at the WCTO B4SC for children born from July 2005 to February 2006



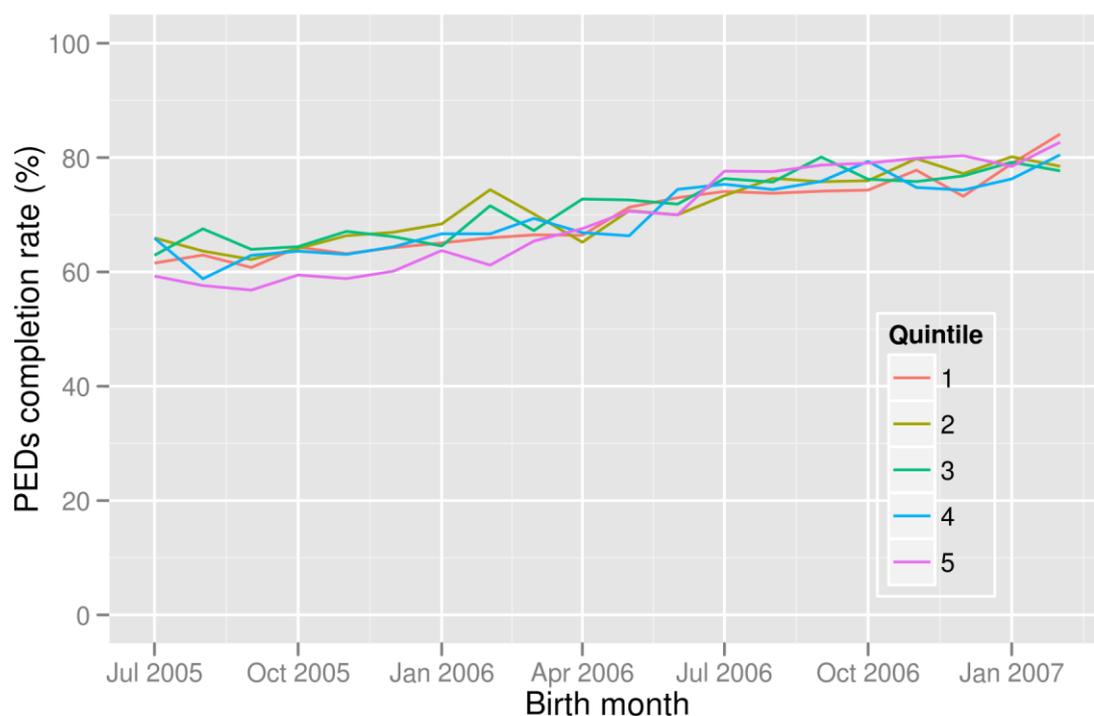
Base: The denominators for the completion rates are taken from the PHO enrolment demographics database for 2011 quarter 3. (This is the most recent database covering these birth cohorts.)

Completion of PEDS for children living in the most deprived areas

The completion of PEDS for children living in the most deprived areas has improved over time. Again, the pattern of completion for PEDS reflects the completion of the B4SC more generally. There was previously a gap between completion rates, where children living in the most deprived areas were not receiving the B4SC, and therefore PEDS, at the same rates as those in the least deprived areas. That has now changed and there are slightly higher delivery rates for children from the most deprived areas born in the second half of 2006 (Figure 2). This change reflects the targets that were introduced to the delivery of the B4SC.

⁶⁰ The denominators for the completion rates are taken from the PHO enrolment demographics database for 2011 quarter 3 (this is the most recent database covering this time period).

Figure 2: Completion of PEDS at WCTO B4SC by level of deprivation, for children born from July 2005 to February 2007



Base: The denominator for the completion rate are taken from the PHO enrolment demographics database for 2011 quarter 3. (This is the most recent database covering these birth cohorts).

3.5.5 Reaching Māori and Pacific families

There are differences in PEDS completion rates between ethnicities; these differences reflect the completion of the B4SC more generally, and not the specific delivery of PEDS (Table 2):

- Pacific children are least likely to have PEDS completed, with just over half (51%) of Pacific children with PEDS completed.
- There are low completion rates for Māori (62%) and Asian (59%) children.
- European children are most likely to have PEDS completed (76%).

This means that where the B4SC is being received, PEDS is being delivered by WCTO providers consistently across ethnicity. However, large proportions of Māori and Pacific children are not receiving the PEDS assessment, which is reflective of delivery issues with B4SC (Litmus 2012g).

Table 2: Completion of PEDS and the B4SC, by ethnicity

Ethnic group	Children who have completed the B4SC (%)*	Children who had PEDS completed at the B4SC (%)
Māori	61%	62%
Pacific	50%	51%
European/Other	75%	76%
Asian	58%	59%

Base: The denominators for the completion rates are taken from the PHO enrolment demographics database for 2011 quarter 3. (This is the most recent database covering these birth cohorts).

* Completing the B4SC means all the components of the B4SC have been completed (and may or may not be closed). This does not include children who have partially completed the B4SC. See Annex 5, and the quality review of the B4SC report (Litmus 2012g) for more details on the B4SC completion rates.

3.5.6 Perceived effectiveness

There are mixed perceptions on the effectiveness of the service delivery for developmental issues in the WCTO programme. The survey results found that Tamariki Ora providers perceive the WCTO service delivery for developmental issues to be effective in the WCTO programme (Litmus 2012f). Twenty one out of 22 Tamariki Ora providers rated their organisation's service delivery for developmental issues as 'excellent' or 'good' across the relevant WCTO programme core contacts (Litmus 2012f). However, DHB ratings were less favourable. Only 13 out of 20 DHB respondents rated the service delivery for developmental issues in the B4SC as 'good' or 'excellent', the other respondents rating the service as 'adequate' or 'poor'. This variation in ratings may be reflective of the Tamariki Ora providers rating their own service delivery positively, whereas the DHB survey respondents are rating their perception of service delivery across a range of WCTO providers in their DHB. The DHB responses may also be reflective of the referral process for the developmental assessment (refer 3.5.8).

3.5.7 Variation of delivery

While PEDS is delivered comprehensively when the B4SC is delivered, findings from the review demonstrate variability in how PEDS is delivered. Some variability in the delivery of PEDS is acceptable and relies on the clinical judgement and competence of the WCTO provider. In this instance, variability is used to make the tool work in a given context (e.g. to ensure parental understanding of the tool and the PEDS questionnaire). However, in other situations, there may be variability in the use of the tool as a way to 'work around' the formality of using the PEDS forms in favour of a more informal discussion with parents. There are concerns that such 'work arounds' may affect the validity of the tool.

Variation in method for delivery

There is variation in the method for delivering PEDS with parents. Some WCTO providers ask parents to complete the questionnaire before coming to the core contact. Other WCTO providers frequently use face-to-face interviews, due to parents' literacy skills or inability to read English. Such variation in delivering PEDS is consistent with the B4SC guidelines, and is required to ensure parental understanding. However, caution is required with providers varying the questionnaire. When PEDS is used as a screening tool, variation in the wording of the parent questionnaire and responses impacts on the validity of the tool. A balance is needed allowing sufficient flexibility to ensure parental understanding of the questions,

while retaining the validity of the tool. Where flexibility can and cannot be integrated into the delivery of PEDS, needs to be made explicit to WCTO providers.

Variation in incorporating PED into WCTO core contact

Some providers cover developmental issues in the core contact through conversations with parents before using PEDS. From this perspective PEDS is included as an add-on to the contact, replicating content already covered. Other providers seem to be incorporating PEDS into their core contacts and using the tool to start conversations with parents about their concerns. Using the tool in this manner means PEDS is integrated into the core contact and avoids duplication.

The variation on how PEDS is included in the core contacts is consistent with parents' experiences. Some parents reported completing the form and having discussions with providers about their questionnaire responses, while others did not recall any discussion.

"They did come back to me and say, 'well you have checked this', and then they would ask me about that and look into it." (Parent).

The placement of PEDS within a check can be varied by providers. However, the conversation is a key component of using the tool. Such conversations are key to reassuring parents of appropriate developmental milestones and can provide valuable information for providers across a broad range of matters.

Translations and explanations for parents with English as an additional language

There are quality concerns regarding the ability of the questions to be understood by parents who are using English as an additional language. This is an important issue that WCTO providers identified as being significant for many Pacific people. Some WCTO providers translate the PEDS questions, but the meaning of some concepts (such as 'concern') is difficult to translate for some cultures, requiring conversations with parents to explain the intent of the questions. This raises concerns on the degree to which the questions and responses are being discussed while the PEDS parent questionnaire is being completed, and not after completion as per the PEDS guidelines. Further, it is unknown if the translated questions retain the sensitivity of the tool.

3.5.8 Referral process

The case studies and focus groups with parents identified the following quality issues for the PEDS referral process in the WCTO programme:

- insufficient secondary services to refer to
- quality of referral information received
- parent expectations and ability to get specialist services following a referral.

Rates of referral, based on B4SC and WCTO data, is detailed in Section 3.9.

Insufficient referral capacity in secondary services

There are some concerns regarding the sufficiency of secondary services to respond to WCTO referrals for developmental issues. Compared to other domains, DHB managers and Tamariki Ora providers gave more negative ratings for the capacity of specialist services to promptly service referrals, and there were very few ratings of 'excellent' (Litmus 2012f). It is unknown if this finding reflects a real or perceived gap in services available. Either way, there may be a reduced likelihood of WCTO providers to make referrals to secondary services if there is a view that there are insufficient services to respond to the referrals they make.

Quality of referral information received

Quality issues have been identified with the referral process for developmental issues. Findings from the DHB and Tamariki Ora provider surveys indicate there is some dissatisfaction in the referral process (Litmus 2012f). Compared to other WCTO programme domains, there is a high number of respondents rating the referral process as 'adequate'.

Issues have been identified with the quality of the information recorded for referrals to secondary services for developmental issues. PEDS forms have been submitted for referral with no or insufficient written comments or contextual information about the concerns identified, despite the parent questionnaire and score form indicating a pathway for referral. In areas where PEDS forms are clinically reviewed before the referral is made to secondary services, clinical reviewers require more information on the forms to assess whether and what referral is required. In areas where there is no clinical review process, reviewers only monitor the process, not the clinical quality of the information. Some secondary services are reluctant to accept referrals directly from PEDS without sufficient information about the concerns identified. This may have implications for the timeliness of referrals, if further information is required.

Secondary assessments are an important part of the referral pathway to ensure that children are not referred for interventions unnecessarily (Glascoe, as cited in Hall, Williams and Elliman 2006). The B4SC Handbook for Practitioners (Ministry of Health 2008a) does not recommend a type of secondary assessment, however, referrals for interventions and/or secondary assessments are part of PEDS pathways when a significant concern is identified. Further investigation is required to assess whether the clinical review process makes a difference to the timeliness and uptake of referrals by secondary services.

Parent expectations and ability to get specialist services following a referral

Quality concerns have been identified regarding access to secondary services after a referral is made, specifically:

- children and families receiving secondary services referred to
- accountability for ensuring children and families receive secondary services
- families understanding that further assessment may be required when attending a WCTO core contact.

Indications from WCTO providers suggest that families are not always receiving the secondary services they are referred to. Providers are referring families during a core contact for the same issues identified and referred in a previous core contact. The current WCTO programme referral process ends once the referral is accepted by the secondary service. There is no standardised feedback from secondary service back to the WCTO provider to say the referral has been acted on or to share any follow-up plans for the child and family. There is no process requirement for ensuring families receive the services they

are referred for, and there is no system currently in place for WCTO providers to identify families who have been referred and dropped off a secondary service list from non-attendance at appointments.

Families' expectations and ability to get to secondary services is a key quality concern. While parents may agree to attend a WCTO core contact, they may not anticipate the possibility that further investment may be required as a result of the WCTO check, and they may not be consenting to this end of the process. Other barriers to accessing secondary services include:

- secondary services sending letters to make appointments⁶¹
- requiring parents to telephone services to make appointments
- unpaid bills at general practices
- being dropped off the secondary service list after two missed appointments.

In Counties/Manukau DHB (CMDHB) families are required to show proof of eligibility to receive secondary services. Proof of eligibility is not a one-off requirement. Rather, families are required to demonstrate their eligibility for services every time a service is sought. This is thought to be a significant barrier to accessing secondary services.

3.6 New Zealand delivery of PEDS: Workforce and training

3.6.1 Training and professional development

The WCTO programme is delivered by a range of health experts and in a range of settings. Providers include: Plunket, Māori and Pacific Tamariki Ora providers, primary care, and Public Health Nurses (PHN). Settings include: homes, Plunket rooms, community centres, hospitals and general practice clinics.

PEDS Train the Trainer sessions were held in New Zealand in 2008 (when PEDS was first rolled out in the B4SC) and in 2010 (when PEDS was introduced into the WCTO programme core contacts three to seven), led by the Centre for Community and Child Health.

The comprehensiveness of the PEDS training and the coverage across WCTO providers is unclear. Provider training on the use of PEDS is included within the general training for the WCTO programme, for example, the B4SC training. Outside the general WCTO training, it seems there is limited training specifically on PEDS (Litmus 2012e).

There are some opportunities for training updates and professional development (e.g. workforce development hui for Māori providers, PHN seminars, DHB-run PHN in-service training, and Plunket professional development). The extent to which these cover PEDS is unknown. Some WCTO providers interviewed had attended regional training updates on PEDS and offers of PEDS training updates have been made in some DHBs. However, it is not known the extent to which all WCTO nurses receive such PEDS training. There are barriers to the uptake of training updates, including the fee for service funding model, as providers are not enabled to release staff from delivering core contacts to attend training opportunities, particularly for small WCTO providers.

⁶¹ This is considered a barrier for highly mobile people, as they may not receive the letter, and also for people with poor literacy or with English as an additional language, as they may be unable to read the letter.

One DHB attempted to link professional development to the clinical review of cases, encouraging nurses to present cases and be part of the clinical discussion about referrals. This was particularly relevant for smaller providers where there may be limited internal clinical support and review. However, similar challenges were apparent for this approach with nurses' heavily booked-up diaries and inability to spend time away from delivering core contacts.

3.7 New Zealand delivery of PEDS: Appropriateness for Māori and Pacific

The review of literature has identified a number of challenges that may impact on the appropriateness of PEDS including: fundamental cultural differences in parenting approaches between groups; parents with low education levels experiencing difficulty in completing PEDS (Coghlan, Kiing and Wake 2003); parents and caregivers who either do not speak English or have English as an additional language have difficulty reading, understanding and correctly interpreting the PEDS questionnaire (CBG Health Research Limited 2007).

Engagement with providers and parents during the case studies identified some challenges particularly for Māori and Pacific whānau around the use of the PEDS. Firstly, WCTO providers reported issues around the validity of the response provided by Pacific parents and caregivers to PEDS. For example, WCTO providers reported that Pacific parents often responded 'yes' to all the PEDS questions when they may not have had a concern about that particular development area. WCTO providers reported that parents appeared to be perceiving 'yes' as the correct answer, or the answer that would please the WCTO provider.

"Pacific whānau have difficulty with ESOL and PEDS and their interpretation of it. You would normally go knowing their culture to start with. I ask if they are ok writing in English. They will circle yes, yes, yes and there are actually no concerns. Yes means they have a concern. They are circling yes because they want to be seen to give the right answer ... [It's] difficult 'cause we are not allowed to influence." (WCTO provider)

Some Pacific and Māori parents were uncomfortable with and anxious or whakamā about potential developmental problems with their child. These parents were worried they may be viewed as a bad parent if their child had a developmental issue, and therefore, were frightened that about the identifying something wrong with their child.

"I know there's no wrong or right – I don't want to answer cause I think with some of the questions – is he retarded? I know he has a bad temper – is that ok?" (Parent)

"I think the [PEDS] questions are very good ... Some of us ... don't seek medical help in such situations. Whether your child is autistic you have the signs but you're too proud. You think 'oh no, they'll grow out of it'. With these questions it's good that we put it out there. It is really important to be honest as you can instead of having your pride get in the way. It opens the door to seek help." (Parent)

Some parents also indicated that questionnaires were not the preferred form of engagement and there was a mix of responses as to whether parents found the process to be useful.

“Nah it wasn’t really useful. I don’t think you need forms to talk about concerns.”
(Parent)

“I think it was good because it gave you an idea as to whether your kid was normal.” (Parent)

The evaluation of the B4SC pilot recommended that PEDS is done face-to-face with whānau where English is an additional language, to address issues with parents’ ability to read, understand and correctly interpret the PEDS questionnaire. This review did not audit the delivery of PEDS in practice. However, parents that recognised the PEDS form when shown it, recalled that they had had support from someone to fill it out (e.g. the WCTO provider).

While this project did not extensively test the use of the PEDS with Māori and Pacific whānau, the preliminary feedback on the tool suggests that there may be some issues around the appropriateness and the effectiveness of the tool for Māori and Pacific whānau. It also seems likely that the issues identified in the literature regarding indigenous views of parenting, low education levels and language barriers may also present challenges within the New Zealand context. If the PEDS is not effective for these whānau, then the standard use of it in the WCTO programme has the potential to accentuate existing health inequities.

3.8 Delivery of PEDS: Parent experience

Parents had mixed experiences with PEDS in the WCTO programme. Some parents found PEDS a useful tool to reflect on their child’s development. These parents wanted time to consider their responses to the questionnaire outside the core contact. Writing down their responses and comments formalised the processes and prompted greater consideration on their child’s development. Other parents were indifferent to the process, and did not consider PEDS to be either useful or challenging. Some parents experienced difficulty using the tool because English was not their first language or because they had no frame of reference to assess concern.

“It’s hard to know if my child is normal, I only know my kids.” (Parent)

The variation in parent experiences may reflect the variation in the delivery of PEDS by providers. If providers are delivering PEDS as an add-on with little discussion other than a ‘tick-the-box’ exercise, it is likely that parents will not consider PEDS a valuable tool.

3.9 New Zealand delivery of PEDS: Outputs and outcomes

3.9.1 Assessment of PEDS scores and referral rates for WCTO core contacts three to seven

Analysis of the WCTO data provides some insight into the distribution of PEDS Pathways for core contacts three to seven (Table 3). PEDS is delivered in the WCTO programme from core contact three. However, WCTO data for core contacts one to seven shows a relatively large number of PEDS pathways recorded for core contacts one and two. It is not clear why WCTO providers are delivering PEDS at these earlier contacts. However, it demonstrates WCTO providers’ lack of fidelity in delivering PEDS to the guidelines.

In considering the core contacts where PEDS is intended to be delivered (three to seven), the proportions of children identified as Pathways A, B and C were highest at core contact seven (the two to three year old check). However, even there, they remain substantially lower than the corresponding proportions at the B4SC (Table 4).

The PEDS results for the WCTO core contacts one to seven should be interpreted with great caution, as very few of these core contacts have recorded data for PEDS, as described in Section 3.5.2. Further analysis of the data to assess the demographic characteristics of who is being identified in the PEDS Pathways has not been undertaken because of the limited data available.

Table 3: Proportion of children in each PEDS Pathway for WCTO core contacts one to seven*

Core contact	Number of children	Pathway				
		A	B	C	D	E
1 (4-6 weeks)	47	0.0%	2.1%	4.3%	0.0%	93.6%
2 (8-10 weeks)	113	0.9%	3.5%	0.9%	1.8%	92.9%
3 (3-4 months)	544	2.2%	1.5%	2.0%	0.4%	93.9%
4 (5-7 months)	612	1.0%	1.0%	2.3%	0.3%	95.4%
5 (9-12 months)	513	0.8%	2.5%	2.3%	1.2%	93.2%
6 (15-18 months)	454	1.8%	3.3%	2.9%	1.1%	91.0%
7 (2-3 years)	593	3.7%	5.6%	4.2%	1.3%	85.2%
Total						

Source: WCTO data on PEDS tests at core contacts 1 to 7

Base: All core contacts 1-7 where the child was given a PEDS Pathway score.

* Covers contacts conducted between July and December 2011.

Referral Rates

Referrals data was missing for 80% of WCTO core contacts three to seven, even when Pathway data was available. Assuming no referrals took place where this data was missing, the referral rates for these contacts in Pathways A and B were 19% and 8% respectively. This is fairly similar to the rates for the B4SC. Referrals were most often to a child development team, speech and language therapists, physiotherapists, or for hearing tests.

3.9.2 Assessment of PEDS scores and referral rates for WCTO core contact eight (B4SC)

Analysis of the B4SC data provides information on the distribution of PEDS pathways and referral rates by different demographic variables. In the B4SC, 6% of children with PEDS scores were classed as Pathway A (at high risk of developmental delay), and another 15% were classed as Pathway B (Table 4).

Table 4: Proportion of children in each PEDS Pathway for WCTO core contact eight (B4SC)

Number of children who were given a PEDS Pathway score at the B4SC (n)	PEDS Pathway				
	A	B	C	D	E
196224	6.4%	15.2%	12.0%	0.7%	65.7%

Source: B4SC data exported 23 March 2012.

Base: Children who completed the PEDS test during the B4SC contact (excluding refusals and 12 children with no Pathway recorded).

The identification of children with developmental issues (Pathway A and B) is notably higher at core contact eight, than at core contact seven. It is not known what is driving this increase in identification of developmental issues. It may reflect the extent to which developmental issues are identifiable to parents as the child gets older. Comparisons of these scores to other international studies are provided in Section 3.9.4.

Assessment of PEDS referral rates for WCTO core contact eight (B4SC)

In the B4SC, referrals were recorded for less than a quarter (23%) of Pathway A cases, and 10% of Pathway B cases (refer Table 5). This referral rate is low. A figure close to 100% is expected for Pathway A, as Pathway A demonstrates a 'high risk' of developmental delay. It is expected that there will be fewer referrals for Pathway B, 'medium risk' of developmental delay, and very minimal referrals for Pathway E. This pattern of decreasing referrals is demonstrated in the B4SC data. Pathway D (3%) is a referral where there are communication difficulties with the parent, such as language barriers.

The case studies have identified some possible explanations for the low referral rates from Pathway A. These include the possibility that children are already receiving services, or that the WCTO provider's clinical assessment suggests a referral is not needed. Refer to Section 3.10 for details.

Table 5: Proportion of children referred for each PEDS Pathway, for WCTO core contact eight (B4SC)

B4SC	Pathway				
	A	B	C	D	E
Number of children with Pathway A–E.	12583	29778	23569	1302	128987
% referred per Pathway	23.0%	10.2%	2.9%	3.1%	0.1%

Source: B4SC data exported 23 March 2012.

Base: All children who completed the PEDS test during the B4SC contact (excluding refusals and 17 children with missing Pathway or outcome data).

The B4SC data on Pathways and referrals from Pathway A, is analysed by the following demographic variables: gender, ethnicity, deprivation level, and DHB region, to describe any differences in the rates of identification of children as Pathway A, and any difference in the referrals.

The B4SC data identified some differences in the identification of children with Pathway A scores by ethnicity. Māori are the most likely to be classed in Pathways A, and Asian

children are the least likely. Of those identified as Pathway A, Māori are also the most likely to be referred, and Asian children identified as Pathway A are the least likely to be referred.

Table 6: Proportion of children identified as a PEDS Pathway A for WCTO core contact eight (B4SC) and the proportion of children with a Pathway A score who were referred, by ethnicity

Ethnic group	Children with a PEDS Pathway score recorded at the B4SC (n)	Children with a Pathway A score at the B4SC (n)	Proportion with a Pathway A score at the B4SC (%)	Proportion with a Pathway A score who were referred (%)
Māori	35794	3063	8.6%	29.0%
Pacific	13901	827	6.0%	21.3%
European/other	131762	8028	6.1%	21.5%
Asian	14762	665	4.5%	14.7%

Source: B4SC data exported 23 March 2012.

Base: Children who completed the PEDS test during the B4SC contact.

There is also a notable gender difference in the identification of children as Pathway A and B. Males are substantially more likely to be classed in Pathways A and B than females, and are also more likely to be referred from a Pathway A (Table 7).

Table 7: Proportion of children identified as a PEDS Pathway A for WCTO core contact eight (B4SC) and the proportion of children with a Pathway A score who were referred, by gender

Gender	Children who had a PEDS Pathway score recorded at the B4SC (n)	Children with a Pathway A score at the B4SC (n)	Proportion with a Pathway A score at the B4SC (%)	Proportion with a Pathway A score who were referred (%)
Female	95560	4333	4.5%	20.2%
Male	100553	8241	8.2%	24.5%

Source: B4SC data exported 23 March 2012.

Base: Children who completed the PEDS test during the B4SC contact (excluding nine children with gender recorded as 'Unknown').

In the B4SC, children from more deprived areas are more likely to be identified as Pathway A (8% in quintile 5 versus 5% in quintile 1). Among children classed as Pathway A, referral rates tend to be somewhat higher in more deprived areas (Table 8).

Table 8: Children identified as a PEDS Pathway A for WCTO core contact eight (B4SC) and the proportion of children with a Pathway A score who were referred, by deprivation level

Deprivation quintile	Children who had a PEDS Pathway score recorded at the B4SC (n)	Children with a Pathway A score at the B4SC (n)	Proportion with a Pathway A score at the B4SC (%)	Proportion with a Pathway A score who were referred (%)
1	38339	1955	5.1%	18.6%
2	35412	1835	5.2%	24.5%
3	35666	2319	6.5%	19.1%
4	36510	2606	7.1%	24.6%
5	42725	3379	7.9%	26.8%

Source: B4SC data exported 23 March 2012.

Base: Children who completed the PEDS test during the B4SC contact (excluding 10115 children with deprivation quintile missing or zero).

There is moderately wide variation in Pathway status between DHBs, with Pathway A accounting for 4% of Auckland children versus 11% in Tairāwhiti (Table 9). Referrals rates in Pathway A are even more variable, ranging from 5% in Wairarapa and 9% in Counties Manukau, up to 50% on the West Coast. The regional variation for referrals may be reflective of the availability, or perceived availability of secondary services to respond to issues identified (refer Section 3.5.8).

Table 9: Proportion of children identified as a PEDS Pathway A for WCTO core contact eight (B4SC) and the proportion of children with a Pathway A score who were referred, by DHB

DHB	Children who had a PEDS Pathway score recorded at the B4SC (n)	Children with a Pathway A score at the B4SC (n)	Proportion with a Pathway A score at the B4SC (%)	Proportion with a Pathway A score who were referred (%)
Auckland	14015	590	4.2%	17.8%
Bay of Plenty	9728	714	7.3%	32.5%
Canterbury	22274	1920	8.6%	22.8%
Capital and Coast	12074	765	6.3%	20.9%
Counties Manukau	13409	697	5.2%	8.8%
Hawkes Bay	10579	1045	9.9%	42.8%
Hutt	9679	730	7.5%	14.5%
Lakes	5769	392	6.8%	12.5%
Midcentral	9391	478	5.1%	19.2%
Nelson Marlborough	4912	284	5.8%	23.2%
Northland	7394	441	6.0%	24.0%
Otago	6141	431	7.0%	25.5%
South Canterbury	2780	242	8.7%	19.0%
Southland	10460	539	5.2%	10.6%
Tairāwhiti	2618	290	11.1%	26.2%
Taranaki	6596	465	7.0%	25.2%
Waikato	20169	1055	5.2%	20.2%
Wairarapa	2949	124	4.2%	4.8%
Waitemata	19701	1031	5.2%	27.3%
West Coast	1547	152	9.8%	50.0%
Whanganui	4034	198	4.9%	24.2%

Source: B4SC data exported 23 March 2012.

Base: Children who completed the PEDS test during the B4SC contact.

3.9.3 Summary of outputs and outcomes findings

Based on the WCTO B4SC data, we can conclude that:

- Most children are identified as having no issues (Pathway E).

- Children more likely to be identified as Pathway A are Māori, male, and children living in highly deprived areas.
- There are low referral rates for children identified as PEDS Pathway A.
- Of those identified as Pathway A, those most likely to be referred are Māori and children living in highly deprived areas.
- There is substantial variation in the referral rates across DHBs.

The reasons for the low referral rate are not known. However, some possible explanations include:

- The child is already receiving treatment.
- The WCTO provider uses their clinical judgement to decide a referral is not required.
- The decision for a referral was rejected by the clinical reviewer, where such roles/groups are operating.
- The referral is rejected by the family.
- There are no services available to refer to, or a perception of no services available to refer to.

3.9.4 Comparison of B4SC PEDS assessment scores and referral rates against international data

Some caution is required in comparing the identification rates across studies, as they are drawn from different populations. The findings from both the Australian studies involve children from under 18 months to over 4.5 years, and the UK study only involves children at 2 years. This difference in the population investigated may impact on the identification of developmental issues, and may account for some of the differences in identification rates across the studies. However, tentative comparisons on the patterns of identification rates for children with Pathway A and B scores can be drawn.

The overall identification of children with a PEDS Pathway of A or B in the B4SC, is broadly similar to the rates identified in an Australian (Coghlan, Kiing and Wake 2003) and a UK study (Davies and Feeney 2009) (Table 10). In Coghlan, Kiing and Wake's (2003) study of PEDS in an Australian day-care setting, 9% of children were identified as high-risk (Pathway A), compared to 6% in the New Zealand B4SC. In the UK study this rate was slightly lower, at 3%, but this is still relatively similar to the B4SC data (Table 10). The second Australian study (Armstrong and Goldfeld 2004) seems to provide slightly higher identification rates of children in Pathway A (11%).

Rates of Pathway B identification are relatively similar across the four studies (Table 10). The B4SC data identified 15% of children as Pathway B, compared to 19% in Coghlan, Kiing and Wake's (2003) Australian study, 22% in Armstrong and Goldfeld's (2004) study and 13% in the UK study.

Table 10: Comparing B4SC Pathway A and B identification rates to international studies

Pathway	WCTO B4SC	Australian study (Coghlan et al, 2003)	Australian study (Armstrong & Goldfeld, 2004)	UK study (Davies & Feeney, 2009)
A	6.4%	9.2%	11.4%	2.6%
B	15.2%	18.7%	22%	13%

Both the Australian studies identified a gender difference in the identification of developmental issues. Coghlan, Kiing, and Wake (2003) and Armstrong and Goldfeld

(2004) both found that boys are more likely than girls to be identified as having high risk and medium risk of developmental delay. This is consistent with the WCTO B4SC data, which shows more boys (8%) than girls (5%) with high risk of developmental delay.

Comparison of referral rates

Armstrong and Goldfeld's (2004) study also provides details on the referral rates for children identified as Pathway A. These findings are compared against the referral rates from the WCTO B4SC (Table 11). The table demonstrates a clear difference in referral rates across the two studies, with substantially more referrals being made in the Australian study for Pathway A (61% compared to 23% in B4SC) and Pathway B (48% compared to 10% in B4SC). Interestingly, the Australian study differentiates between children referred, children not referred and children who have previously been referred to services. They found that over a quarter (29%) of children identified as Pathway A have already been referred. Of the 11% who were not referred, a referral was not made because the secondary test result (using the Brigance test) showed that a referral was not required, or because of the provider felt the parent's expectations were unrealistic for the child's age and level of the child's development was age appropriate.

Table 11: Comparing B4SC Pathway referral rates to an international study

Pathway	WCTO B4SC	Australian study (Armstrong & Goldfeld, 2004)		
	% referred	% referred	% not referred	% previously referred
A	23.0%	60.7%	10.7%	28.6%
B	10.2%	48.1%	40.7%	11.1%
C	2.9%	7.7%	89.7%	2.6%
D	3.1%	0%	0%	0%
E	0.1%	0.8%	99.2%	0%

3.10 New Zealand delivery of PEDS: Information management

Two quality issues have been identified from discussion with stakeholders regarding the information management for PEDS in the WCTO programme:

1. access to PEDS questionnaires and scoring forms from previous core contacts
2. clarity in how to record WCTO providers' clinical judgement.

Access to previous PEDS questionnaires and scoring forms

There is no central point across WCTO providers to access the information recorded on the PEDS questionnaire and scoring form. This limits WCTO providers' ability to use PEDS in a surveillance model when core contacts are delivered by different providers (e.g. when parents change WCTO providers, move into a new DHB, or when the B4SC is delivered by a different provider from WCTO core contacts one to seven).

Recording of WCTO provider's clinical judgement in referral records

The Ministry's expectation for referrals is that close to 100% of Pathway A cases will be referred. Analysis of the B4SC data shows that only 23% of Pathway A cases were referred. There are two possible explanations for this discrepancy. First there is no capacity in the data collection to record people identified as being a Pathway A who are already

receiving care, and therefore do not require an intervention. This would show in the data as an un-referred Pathway A. Second, there is confusion by providers over when to record their clinical judgement. Parents may record concerns that equate to two significant predictive concerns and a Pathway A. The WCTO provider may determine, using their clinical judgement, that the parent's concerns do not equate to a Pathway A. For providers who record the PEDS score and Pathway based solely on the parent questionnaire, with no modification to accommodate their professional judgement, this will show in the data as an un-referred Pathway A. WCTO providers require clarification on where and how to record changes as a result of their clinical judgement.

Summary

Evidence-base

- PEDS is as accurate and effective as other, professionally administered, developmental assessment tools, and meets the gold standard for sensitivity and specificity (PEDS sensitivity ranges from 74-80%, and specificity ranges from 70-80%).
- Further research is required to assess whether identification rates from the implementation of PEDS will equate to improved child health outcomes.
- There is some evidence demonstrating challenges to the use of PEDS including: fundamental differences in parenting approaches between indigenous and other population groups, and parents with low education and literacy levels experiencing difficulty in completing PEDS.

Completion rates

- The B4SC data shows that if children are receiving a B4SC, the PEDS assessment is being completed. However, Māori and Pacific children are less likely to have the B4SC completed (61% and 50% respectively) than European children (75%), and therefore are less likely to be assessed for developmental delay using PEDS.

WCTO providers' delivery of PEDS

- There is a lack of understanding of the value of PEDS as a standardised tool among WCTO providers.
- There is variation in whether WCTO providers are embedding PEDS in the core contacts and using it as a starting point for a conversation with parents. Some WCTO providers are using PEDS as a check list at the end of the contact, duplicating conversations they have had about parents' developmental concerns.

Parents' perceptions of PEDS

- Parents had mixed experiences with PEDS in the WCTO programme with some liking the opportunity to reflect on, and write down, their concerns about their child's development. However, some parents experienced difficulty using the tool because English was not their first language or because they had no frame of reference to assess concern.
- Some Māori and Pacific parents were uncomfortable with and anxious about identifying potential developmental problems with their child, and worried they may be viewed as a bad parent if a problem was identified.

Appropriateness for Māori and Pacific

- While this project did not extensively test the use of PEDS with Māori and Pacific whānau, preliminary feedback suggests there may be some issues around the appropriateness and the effectiveness of the tool for Māori and Pacific whānau. Further research is needed into the use of the PEDS with Māori and Pacific, to ensure the use of PEDS does not increase health inequalities in New Zealand. If the PEDS tool is not effective for these whānau, then the standard use of it in the WCTO programme has the potential to accentuate existing health inequities.

PEDS outcomes and referrals

- In the B4SC, most children are identified as having no issues. Six percent of children were identified as a high risk of developmental delay (Pathway A).
 - There is a gender difference, with male children more likely (8%) to be identified as high risk, than female children (5%).
- Referral rates from Pathway A are low, with only 23% of Pathway A cases referred (close to 100% is expected), and substantial variation across DHBs. Possible explanations for the low referral rate include:
 - The child is already receiving treatment.
 - The WCTO provider uses their clinical judgement to decide a referral is not required.
 - The need for a referral was rejected by a clinical reviewer, where such roles/groups are operating.
 - The referral is rejected by the family.
 - There are insufficient services, or a perception of insufficient services, available to refer to.
- Challenges have been identified with the referral pathways from PEDS that may have implications for the likelihood of children receiving interventions they are referred for:
 - Insufficient secondary services to refer to.
 - WCTO providers confusion over where and how to record their clinical judgement in the PEDS assessment.
 - The quality of referral information from WCTO providers, particularly the lack of information provided.
 - Lack of processes for ensuring families receive the services they are referred for.
 - Parents lack understanding that further assessments may result from attending a WCTO core contact.

4. Lift the Lip Oral Health Screen

4.1 Brief overview of Lift the Lip

The WCTO programme supports a broad understanding of oral health, beyond the absence of dental disease. There is a focus on early identification and intervention for oral health care, promoting good oral health practices with parents, and parental involvement in child oral health care.

Lift the Lip is an oral health screen to identify early signs of visible decay in children's teeth. Lift the Lip involves placement of infants and toddlers so their lip can be raised by the WCTO providers to expose the teeth underneath. Providers are trained to look at the teeth to identify very early signs of, as well as more developed, dental caries (tooth decay). Lift the Lip is a tool for WCTO providers and does not require an oral health expert. It is not a full clinical examination or a diagnostic test. Any signs of dental caries are to be referred to a dental specialist.

In the WCTO programme, Lift the Lip is delivered in conjunction with oral health promotion to parents, and encouraging enrolment with the Community Oral Health Service. Enrolment with a dental service is important because Lift the Lip identifies visible decay and does not mean that there is no tooth decay. Lift the Lip is included in the WCTO programme, because not all children under five years are receiving oral health care from enrolment and regular attendance at the community dental service, resulting in substantial oral health inequalities.

Lift the Lip is used in Australia, the United States and Canada as part of public health programmes. Some areas that do not use oral health screening, such as Lift the Lip, include oral health promotion in child health programmes. For example, routine dental screening is not recommended in the UK. However, UK Health visitors do provide advice about oral health, the use of toothpaste and healthy diet, and enrolment with a dental service. Similarly, Victoria Australia focuses on prevention through health promotion with their Tooth Tips programme starting at eight months.

4.2 Rationale for using Lift the Lip in the WCTO Programme

Improving oral health is a priority area in DHB performance indicator documents, one of the 13 health priorities in the New Zealand Health Strategy (Ministry of Health 2000), and one of the 12 health priorities in the Māori Health Strategy (Ministry of Health 2002c). The Ministry's vision for oral health has a clear focus on improving oral health status, and eliminating oral health inequalities for those disadvantaged (particularly for Māori and Pacific children, and children living in high deprivation areas). The vision also emphasises strong links with primary care providers with the provision of health promotion and education on good oral health practices to parents and whānau in primary care (Ministry of Health 2006b).

Lift the Lip and oral health promotion is included in the WCTO programme based on evidence that:

- There is a high prevalence of dental disease in New Zealand children.

- Inequalities in dental health in New Zealand exist; Māori and Pacific children and children from low-income areas experience poorer oral health outcomes.
- Oral health promotion plays an important role in early intervention and prevention of oral health disease long-term.
- Improving the oral health of children will positively influence the oral health of children and adults long-term.

“Improving and maintaining oral health through prevention and promotion is regarded as one of the most effective ways to achieve oral health over the long term. Promoting oral health, particularly in childhood, is likely to have benefits across the life course as healthy environments and behaviours early in life have been shown to decrease the risk of oral disease in later years.” (Ministry of Health 2008c).

High prevalence of dental decay in New Zealand children

Dental decay is the main source of dental disease affecting children (Hall and Elliman, 2006). Recent data shows there are high levels of dental decay in New Zealand children (New Zealand Guidelines Group 2009). Four out of five children aged two to four years (80%) are decay free, and 15% of children aged two to four years have untreated decay (Ministry of Health 2010d). By the time children reach five years of age just over half (57%) are decay free (Community Dental Statistics 2010).

The Ministry of Health recommend brushing teeth twice a day with fluoride toothpaste. The 2009 NZ Oral Health Survey found that 66% of two to four year old children brushed their teeth at least twice a day, and only 15% used fluoride toothpaste.

Inequities in oral health outcomes and access to services

There are clear inequities in dental health outcomes and access to dental health services for New Zealand children, with Māori and Pacific children and children living in the most deprived areas experiencing oral health inequalities. Māori and Pacific children are (Ministry of Health 2010d; Community Dental Statistics 2010):

- less likely to have decay free primary teeth:
 - 57% of all five year olds are decay free
 - 38% of Māori five year olds are decay free
 - 33% of Pacific five year olds are decay free
- less likely to be brushing at least twice a day with fluoride toothpaste
- less likely to access oral health care
- more likely to experience dental pain
- more likely to have untreated dental needs
- more likely to have greater dental treatment needs (e.g. tooth removal).

Children living in the most deprived areas are also less likely to be brushing at least twice a day with fluoride toothpaste and have more missing primary teeth due to decay, compared to those in the least deprived areas (Ministry of Health 2010d).

Children at the highest risk of dental disease are often not frequent users of primary health care services (Ministry of Health 2008b). While primary health care providers are well positioned to perform Lift the Lip on children and provide oral health promotion to parents/ family/ whānau, the WCTO programme provides an alternative model to ensure access to those at highest risk.

“It is important to appreciate that infants and whānau with the highest risk of dental disease, and particularly for ECC [early childhood caries], are frequently intermittent and episodic users of primary health services. Therefore, a broader approach is required to maximise prevention of oral disease for children/ tamakiri from this group.” (Ministry of Health 2008b).

Oral health prevention

Dental caries can be prevented, and even reversed when identified at a very early stage (Ministry of Health 2010d; New Zealand Dental Association 2008). Prevention is dependent on reducing plaque, reducing sugar exposure and using protective modifiers such as fluoride (Ministry of Health 2010d). If dental caries are not identified, they become irreversible and if left untreated, will result in a tooth cavity or a softening of the root surface (Ministry of Health 2010d).

Oral health links to general health

Oral health is linked to social, behavioural, cultural and economic factors (Ministry of Health 2006b). Many of the risk-factors for oral health, are also risk-factors for other non-communicable diseases, such as diabetes and cardiovascular disease. Promotion of good oral health behaviours therefore reduces the risk of dental caries, as well as improving the overall health of the individual, family and community (Ministry of Health 2006b).

“Oral health is integral to general health, primarily because oral diseases have risk factors in common with other chronic diseases and because, in the case of periodontal diseases, of their inflammatory and infectious nature.” (Petersen et al 2005; Seymour 2007; Williams et al 2008 as cited in Ministry of Health 2010b).

4.3 Effectiveness of oral health promotion and Lift the Lip

4.3.1 Assessing effectiveness

Effectiveness in the delivery of oral health services in the WCTO programme, is referred to in this review as:

- identification of dental decay
- implementation of self-care dental practices such as tooth brushing
- enrolment in a Community Dental Service
- reduced oral health inequalities
- improved oral health.

In assessing documented evidence on the effectiveness of Lift the Lip consideration was given to identifying:

- evidence demonstrating value in the use of Lift the Lip
- evidence demonstrating a lack of value in the use of Lift the Lip
- gaps in the current evidence base, where there is no evidence for or against using Lift the Lip, and further research is required.

The review of documents largely identified significant gaps in an evidence-base for the use of Lift the Lip. Few judgements can be made on the value of Lift the Lip in a child health programme, and its impact on child oral health outcomes. However, this does not mean such an initiative is ineffective, rather, that there is little evidence one way or the other.

In reviewing the evidence on the effectiveness of Lift the Lip, the following aspects were considered:

- the effectiveness of prevention and early intervention in oral health care
- health equity implications
- the effectiveness of Lift the Lip and oral health promotion in improving child oral health outputs (e.g. reduced dental caries and facilitating access to dental care) and outcomes.

Evidence base

The evidence identified in this section is restricted by the literature review parameters and search criteria outlined in the Appendices Report (Litmus 2012d). The evidence base drawn from includes findings from two systematic reviews on child and maternal health (Kilpatrick, Gussy and Mahoney 2008), and oral health promotion (Satur, Gussy, Morgan, Calache and Wright 2010). Information is also drawn from evaluations of international child oral health programmes, and individual papers and research projects into Lift the Lip and child oral health care more generally.

4.3.2 Prevention and early intervention (a life-course approach)

High levels of dental caries in childhood predict greater oral health disease levels in adulthood (Ministry of Health 2006b; Centre for Oral Health Strategy 2010). Improving child oral health will positively influence the oral health status of adults long-term. This is a life-course approach to oral health care, and is fundamental to the WCTO programme.

There is evidence on the effectiveness of the following interventions to prevent dental disease (Hall, Williams, Elliman 2009; Satur et al 2010):

- reducing the consumption and frequency of intake of sugary food and drink
- cleaning the teeth thoroughly twice every day with fluoride toothpaste
- attending a dentist every year for an oral examination.

There is also evidence demonstrating that the earlier preventative interventions are introduced, the more likely they are to establish good oral health practice in children (Savage, Lee, Kotch, Vann 2004 as cited in Olley, Hosey, Renton 2011). Poor oral health and dietary habits are very difficult to change (Hamilton et al 1999 as cited in Rothe 2009).

“The Life-course approach is particularly relevant as we consider approaches to reduce inequalities. Research has shown that social differences in access to and uptake of oral health care in children under age five are associated with

differences in caries levels in adulthood. Hence, by addressing inequalities in access to services for young children, we can positively influence their oral health status in later life.” (Ministry of Health 2006b).

An evaluation of a Manitoba oral health programme has identified the following features that providers and parents consider to be important for delivering an effective oral health programme (Sarson and Wilson 2008):

- personal interaction
- vision tools, such as pictures or DVDs
- practical and doable activities
- focusing on a small number of key messages
- retaining a positive and encouraging attitude, not shaming parents and families about their child’s oral health.

These features align well to the intended delivery of Lift the Lip in the WCTO programme. However, it is unknown whether these features contribute to achieving desirable oral health outcomes.

4.3.3 Health equity

The lack of attendance at community dental care emphasises the relevance of including oral health in the broader context of a universal child health programme, as health professionals are more likely to see infants and children (Centre for Oral Health Strategy 2010). Ministry of Health recommend that children are enrolled with the Community Dental Service by 12 months, but evidence suggests little over half (60%) of children aged two to four years old have visited a dental professional in the last year (Ministry of Health 2010d). Therefore, including oral health in general WCTO checks allows for oral health prevention and early identification of poor oral health.

Programmes with community-based participatory strategies have shown some success in improving oral health literacy, increased engagement with groups at high risk of poor oral health, and some evidence of reduction in dental caries (Satur et al 2010). The evidence suggests the effectiveness of community-based participatory strategies is the cultural context of the oral health programmes, and the ability to suit local needs (Satur et al 2010).

“The successes appear to lie in their cultural location (own language and working from within existing networks and local care providers) and their ability to incorporate participative approaches and flexible delivery mechanisms to suit local needs.” (Satur et al 2010, p262).

Financial barriers restrict access to toothbrushes and fluoride toothpaste. Such barriers result in reduced capacity for oral health self-care and inequalities in oral health outcomes. There is some evidence that delivery of toothpaste and brushes is an effective tool to combine with oral health promotion, as this alleviates financial barriers for parents accessing oral health care, and reduces oral health inequalities (Buglar 2010).

4.3.4 Oral health anticipatory guidance

Health promotion and education is commonly used to deliver messages to parents about prevention methods to encourage good oral health of their children. However, there is little evidence that information on dental oral health improves oral health outputs and outcomes.

Sarson and Wilson's (2008) study found significant similarity in how providers and parents perceive oral health, define healthy teeth and good child oral health, and the causes of early childhood caries, suggesting the messages from providers were understood by parents. However, this study did not look at whether improved knowledge resulted in behaviour changes in parents and families.

Studies have found even when parents hold adequate knowledge of good oral health practises, there are challenges to the actual delivery of such practices. Barriers to parents actioning good oral health practices with children include: parental tiredness, lack of confidence in parenting skills, confusion over information provided, high accessibility of sugary foods and drinks, and a lack of child friendly dentists (Daly, Clarke, McEvoy, Periam, & Zoitopoulos 2010). Parents' perceptions on their ability to control factors such as tooth brushing and sugar intake impacts on the establishment of positive oral health behaviour (Pine et al 2004; Wong et al 2005 as cited in Olley et al 2011).

Some authors argue that creating a change in attitude towards oral health practices is linked to the provision of information that is relevant and specific to individual parents (Trepka et al 2001 and Nelson et al 2003, as cited in Rothe et al 2009). This approach emphasises the value of a tailored approach to information provision.

“Not all parents' value information on the same topics and the areas of greatest improvement and attitude change are usually topics which the parent already had questions on.” (Rothe 2009).

While the evidence is not overwhelming, some studies provide insights into oral health programmes that are impacting on oral health outputs. Interventions targeting maternal oral health and child oral health through mothers may be effective at reducing early childhood caries (Kilpatrick 2008). Repeated anticipatory guidance with mothers starting in pregnancy has also been found to be successful at reducing the incidence of early childhood caries in young children (Plutzer and Spencer 2008).

An Australian systematic review found no evidence that information on dental oral health, on its own, is sufficient to impact on dental behaviour. According to this systematic review, information on oral health needs to be delivered in conjunction with something else to improve oral health outcomes.

“A number of programmes used ‘information giving’ approaches in schools and clinical settings, often producing changes in knowledge but with little or no effect on plaque scores and caries levels. While it is acknowledged that information is important to oral health literacy, the findings of this review reinforce the notion that information giving alone is not an effective approach to improving oral health status.” (Satur et al 2010, p261).

4.3.5 Lift the Lip

There is very limited information available on the effectiveness of Lift the Lip on child oral health outputs (such as the correct identification of caries and dental referrals), and improved oral health outcomes. However, Lift the Lip may be a useful interactive tool to couple with oral health promotion.

An evaluation of the NSW Early Childhood Oral Health Programme, which includes Lift the Lip and oral health promotion, found that referrals to dental services for children under five years significantly increased since the implementation of the programme (Centre of Oral

Health Strategy 2010). There are also suggestions that parents who screen their children using Lift the Lip once a month are more receptive to oral health education and to seeking oral health care (Brown 2005).

Further research is needed to assess whether greater referrals equates to greater attendance at a dental service and improved oral health outcomes, and whether Lift the Lip is an effective screening tool for identifying dental caries. The Ministry is currently undertaking analysis into the impact of the identification of dental caries from Lift the Lip, by investigating any changes in the rates of identification of dental caries of children at school age. Such analysis will be a valuable addition to the current gap in the knowledge base on the impact of Lift the Lip and oral health promotion on childhood caries and oral health.

4.4 Intended delivery of Lift the Lip in New Zealand

4.4.1 Timing

Lift the Lip is used at four of the eight WCTO core contacts: core contacts five (9-12 months) six (15-18 months), seven (two to three years) and eight (B4SC, four to four and a half years). It was first implemented with the roll out of the B4SC in 2008. In 2010, it was introduced into the WCTO core contacts five, six and seven. Lift the Lip is delivered in conjunction with oral health anticipatory guidance and enrolment with the Community Dental Service. It is intended to take two to three minutes to complete. WCTO providers are also expected to encourage parents to Lift the Lip of their child regularly to check their teeth.

4.4.2 Delivery process

The Oral Health Guide for WCTO Providers: Healthy Smile, Healthy Child (New Zealand Dental Association 2008) is freely available to all WCTO providers from the Dental Association New Zealand website. The oral health guide details the following specifications for the delivery of Lift the Lip:

- wear gloves
- use a tongue depressor or toothbrush, flashlight and dental mirror if available
- look around the front and back of the upper front teeth (near the gum line) then around all the teeth
- look for chalky white spots or patches, yellow or brownish discoloration, and clearly visible decay
- check for visible plaque and food debris
- check if the tooth eruption is proceeding as per schedule.

Two different positions are recommended for performing Lift the Lip:

- *For infants and toddlers:* the knee-to-knee position is recommended. The parent and the health professional sit face-to-face. The child sits on the parent's lap facing the parent and is lowered until the child's head is resting on the health professional's lap.
- *For preschool children:* they can either lie flat on an examination table or sit in front of the parent, with both the child and the parent facing the provider.

Visual aids

Visual aids are provided to assist WCTO providers to identify early signs of tooth decay during a Lift the Lip assessment, including visual displays of the decay process. Visual aids, including pamphlets and posters are also available for WCTO providers to use with parents.

Protocols and guidelines

A review of documents suggests there are sufficient guidelines and protocol documents for WCTO providers to deliver Lift the Lip. Unlike the PEDS documentation, information is available to all WCTO providers. This is largely through the information provided by the Dental Association New Zealand, in conjunction with the Ministry of Health.

The most commonly used sources of protocols and guidelines for the oral health assessment are the Healthy Smile Healthy Child guidelines (New Zealand Dental Association 2008), and the B4SC Providers Handbook (Ministry of Health 2008a). The Dental Association New Zealand also provide oral health resources for WCTO Providers, and an online DVD demonstrating the positions for administering Lift the Lip. WCTO providers found the oral health resources helpful for delivering oral health messages to parents in the WCTO programme, particularly the progression of decay pictures, which WCTO providers thought were an effective tool that had an impact on parents.

Other sources of protocols and guidelines identified for the oral health assessment are:

- Health Pathways (In Canterbury only, Health Pathways is a website that provides assessment, management and referral pathway information to health providers)
- regional dental health documents, including regional pathway tools
- WCTO Health Book.

Referral to community dental services

A referral to a community dental service should occur when decay is observed during the Lift the Lip check, or when providers have any doubt. The referral process (including the information requirements on referral forms), and the community services available vary by DHB.

Providers should also inform parents of the need for regular attendance at a Community Oral Health Service for a full clinical examination by a dental professional. While the exact age of enrolment varies between District Health Boards, the Ministry recommends that enrolment is undertaken between nine and 12 months.

Delivery of oral health promotion

The guide provides information across a range of modules that can be used to develop “*age-specific, consistent and appropriate anticipatory guidance*” (New Zealand Dental Association 2008, p28). The intention is that the information will assist parents to prevent dental decay in their children. WCTO providers are able to modify the guidance based on the caries’ risk assessment and in response to the needs of the family.

The Healthy Smile, Health Child guideline documents risk factors for dental decay, as not all children are equally likely to develop dental decay. The risk factors are intended to be used for modifying the anticipatory guidance provided to parents to meet the needs of the

family. However, there is no standard risk assessment tool, and no pathways should the risk factors be identified.

4.5 New Zealand delivery of Lift the Lip: Clinical quality

4.5.1 Information sources

Findings in this section are based on the analysis of the B4SC and WCTO data, three DHB case studies sites, focus groups with parents, survey of Tamariki Ora providers, and a stocktake and survey of DHB planning and funding managers. The findings are discussed in the context of the information drawn from the literature search and from discussions with international and national experts.

4.5.2 Purpose

WCTO providers have a broad understanding of oral health, and understand the focus on early identification and intervention for oral health care, and promoting good oral health practices with parents.

WCTO providers generally liked Lift the Lip, and understand and appreciate the need for using the Lift the Lip oral health screen. With the introduction of Lift the Lip, WCTO providers were surprised at the number of children identified with obvious dental caries by four years of age, which reinforced the importance of the tool to providers. Some providers consider the tool particularly important for children living in high deprivation areas.

4.5.3 Lift the Lip delivery rates

Delivery of Lift the Lip in the WCTO core contacts five to seven

Data on the WCTO core contacts five to seven show a very high completion rate for Lift the Lip by all WCTO providers. This is particularly evident for the Tamariki Ora and Pacific WCTO providers, as the completion rate is nearly 100% across core contacts five, six and seven. Table 12 shows the delivery of Lift the Lip by WCTO core contacts one to seven. Lift the Lip data was provided in 94% of the earlier WCTO core contacts. This percentage was lower for Plunket than for Tamariki Ora providers for which data was available.

The data also highlights some issues in the delivery of Lift the Lip. It seems Lift the Lip is being delivered in core contacts one to four, which is inconsistent with the WCTO guidelines. Lift the Lip is intended to be delivered at core contacts five to eight. The delivery of Lift the Lip outside these contacts is particularly prevalent for the Tamariki Ora providers in core contacts one to four, and for Plunket at core contact four, although this requires further investigation to determine whether the Lift the Lip screen is happening, or whether this represents anticipatory guidance being coded as Lift the Lip.

Table 12: Completion of Lift the Lip in WCTO core contacts one to seven

WCTO core contact*	Provider	
	Plunket	Tamariki Ora
1 (4-6 weeks)	8.9%	79.6%
2 (8-10 weeks)	9.2%	77.8%
3 (3-4 months)	16.4%	83.9%
4 (5-7 months)	69.5%	96.0%
5 (9-12 months)	89.5%	99.8%
6 (15-18 months)	95.1%	99.7%
7 (2-3 years)	96.4%	99.9%

Source: WCTO database

Base: Core contacts one to seven excluding 2.7% for which no Lift the Lip data was recorded.

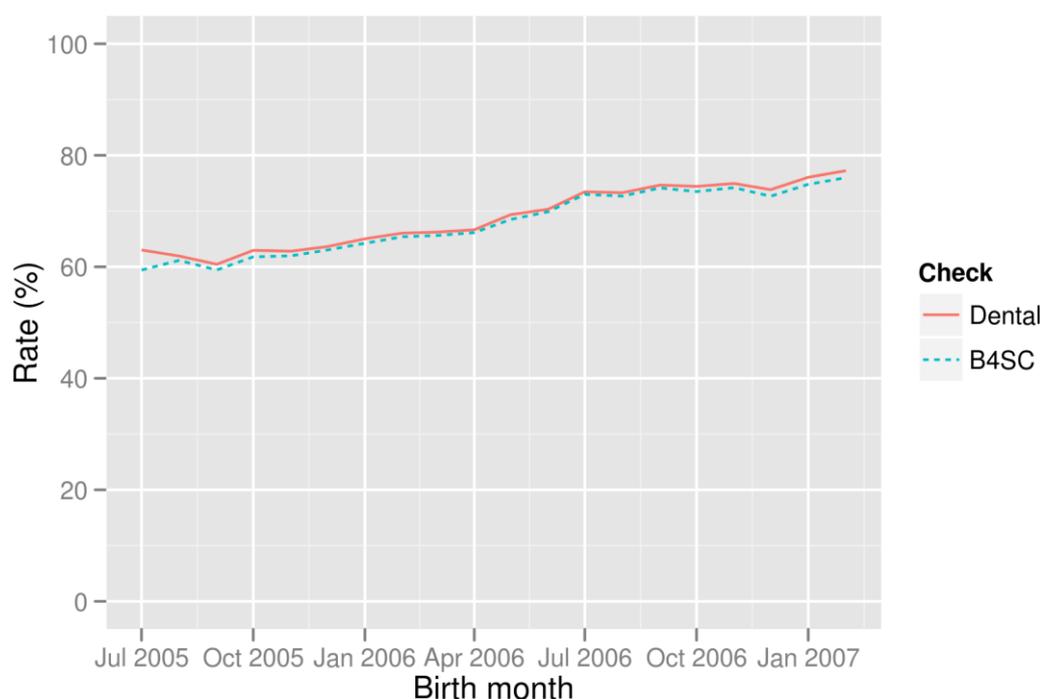
* Covering contacts conducted between July and December 2011.

Delivery of Lift the Lip in the WCTO core contact eight (B4SC)

Where the B4SC is being completed, WCTO providers are delivering Lift the Lip.

- Lift the Lip was completed as part of the B4SC with 69% of children born between July 2005 and February 2007 (and the B4SC was complete for 68%⁶² of children born from July 2005 to February 2007).
- The completion rate has steadily increased in more recent birth cohorts (Figure 3), which is in line with the increase in completion rates for the B4SC (Litmus 2012g).
- In a small proportion of checks (1.7%), the Lift the Lip was offered but declined.

Figure 3: Completion of Lift the Lip at the WCTO B4SC for children born from July 2005 to February 2007



Numerator: B4SC data exported 23 March 2012.

⁶² There are more Lift the Lip completions than B4SC completions, as some people may have started, but not completed the B4SC.

Denominator: PHO enrolment demographics database, quarter 3 2011

Delivery of Oral Health promotion across the WCTO programme

There is also evidence from the case studies that WCTO providers are delivering Lift the Lip with anticipatory guidance on good oral health practices to parents. Parents have a high recall of oral health messages delivered in the WCTO core contacts. Parents could recite, unprompted, key messages about teeth cleaning, reducing the intake of sugary drinks and enrolment at dental services. While this is a very positive finding, it is unknown whether good parental recall of oral health messages will result in good oral health behaviours.

5.5.4 Reaching Māori and Pacific families

There are differences in Lift the Lip completion rates between ethnicities (Table 13). However, these differences reflect differences in the uptake of the B4SC more generally, and not the use of Lift the Lip within the core contact.

- Pacific children are least likely to have Lift the Lip completed, with only just over half (51%) of Pacific children with Lift the Lip completed.
- There are low completion rates for Māori (62%) and Asian (59%) children.
- European children were the most likely to have Lift the Lip completed (76%).

This suggests that where the B4SC is completed, WCTO providers are delivering Lift the Lip consistently across ethnicity. However, it remains that Lift the Lip is not being delivered to large proportions of Māori, Pacific, and Asian children, which is reflective of delivery issues with B4SC (Litmus 2012g).

Table 13: Completion of Lift the Lip in WCTO B4SC by ethnicity

Ethnic Group	Proportion of children with B4SC completed* (%)	Proportion of children with Lift the Lip completed at the B4SC (%)
Māori	61%	62%
Pacific	50%	51%
European/Other	75%	76%
Asian	58%	59%

Source: B4SC data exported 23 March 2012.

Denominator: PHO enrolment demographics database, quarter 3 2011.

* Completing the B4SC means all the components of the B4SC have been completed (and may or may not be closed). This does not include children who have partially completed the B4SC. See Annex 5, and the quality review of the B4SC report (Litmus 2012g) for more details on the B4SC completion rates.

4.5.5 Actual delivery of Lift the Lip

WCTO providers generally find Lift the Lip an easy tool to implement, and find the visual aids useful for conversations about oral health care with parents. However, there are mixed perceptions on the effectiveness of the service delivery for oral health issues in the WCTO programme. Survey results found that all Tamariki Ora providers perceive the WCTO service delivery for oral health issues to be very effective in the WCTO programme (Litmus 2012f). However, DHB ratings are less favourable. Only 11 out of 20 DHB respondents rated the service delivery for oral health issues in the B4SC as 'good' or 'excellent'. Just under half of the DHB respondents rated the oral health service as 'adequate'. The

reasons for the ratings may be related to concerns in the quality and fidelity of the check being done, discussed below.

Some WCTO providers were also giving free toothpaste and brushes to parents when delivering messages about good oral health. These appeared to be local initiatives, and not a component of the WCTO Lift the Lip assessment.

4.5.6 Fidelity to delivery protocols

The WCTO data and comments from WCTO providers demonstrate that Lift the Lip is generally being done at the core contacts. However, interviews with WCTO providers and parents indicate that the delivery of Lift the Lip is not consistently inline with guidelines in relation to:

- consistently lifting the child's lip to inspect the teeth
- using tongue depressor, mirror, flashlight and looking around the back of teeth
- using the recommended positions for sitting the child when inspecting the teeth
- showing parents how to Lift the Lip at home.

The Healthy Smile, Healthy Child guidelines for WCTO providers clearly identify the need for providers to physically lift the child's lip to check their teeth. It is not acceptable to ask the child to smile, as this does not reveal the teeth sufficiently to enable a check for decay. In checking for decay, all the teeth, including the back and tops of teeth under the gums, need to be viewed. The provider guidelines also demonstrate positions for the infant/child to enable Lift the Lip to be carried out effectively. There are indications that WCTO providers are not consistently following these guidelines, with some WCTO providers suggesting they simply ask the child to 'smile' to check their teeth. This approach to checking teeth was also identified by parents:

"Yes it [Lift the Lip] was done. Smile, done. Open your mouth – smile". (Parent).

There is also an expectation in the guidelines that WCTO providers encourage parents to Lift the Lip themselves, to check their child's teeth in between dental checks. This assumes therefore, the parents are shown how and what to look for. When prompted, no parents from the parent groups recalled being shown how to Lift the Lip of their children. However, in the guidelines there is only very brief mention of the requirement for WCTO providers to encourage parents to Lift the Lip at home, suggesting this is not a priority for WCTO providers. If this is an important requirement, further work is needed to ensure this is being done by WCTO providers.

The Dental Association New Zealand conceptualise the introduction of Lift the Lip in the WCTO programme in two phases. First, the inclusion of Lift the Lip and oral health care in the WCTO programme is accepted and used by WCTO providers. Evidence from this review suggests this phase has been achieved. The second phase is ensuring consistent quality in the delivery of Lift the Lip and adherence to the WCTO provider guidelines. Evidence from this review suggests the second phase has not yet been achieved.

4.6 New Zealand delivery of Lift the Lip: Workforce and training

4.6.1 Training and professional development

Online resources are available on the Dental Association New Zealand website for WCTO providers, including the DVD demonstrating the positions for administering Lift the Lip. WCTO provider training on oral health is included in the general training for the WCTO programme, for example, Plunket-run B4SC training.

Outside the general WCTO training, it seems there is limited training specifically on Lift the Lip. Some DHBs have also used local dental services for specific oral health training. However, this does not seem to be common. The Dental Association New Zealand has offered refresher training opportunities to WCTO providers. To date, their training offers have not been used by WCTO providers.

4.6.2 Clinical supervision

The intention of Lift the Lip is that it is an easy tool to use requiring little training for WCTO providers. However, quality of checks are important to ensure WCTO providers are performing the assessment correctly. Quality concerns identified in Section 4.5.6, suggest more clinical supervision may be required to assess the consistency of providers performing the assessment correctly. Clinical supervision is also required to assess whether WCTO providers are identifying the early signs of decay (Ministry analysis into this is underway).

4.7 New Zealand delivery of Lift the Lip: Appropriateness for Māori and Pacific

Evidence from the literature review demonstrates inequalities in dental health outcomes and access to dental health services for New Zealand children (Ministry of Health 2010d; Community Oral Health Services 2010). Māori and Pacific children are more likely to have decayed primary teeth and untreated dental needs, and less likely to access oral health care services (Ministry of Health 2010d; Community Oral Health Services 2010).

WCTO providers delivering Lift the Lip with Māori families should be appropriately skilled in delivering the check in an appropriate way. Māori families may have an issue with the Lift the Lip delivery method, which requires the child's head to be rested on the WCTO provider's lap. While such delivery issues were not identified from the parent groups, WCTO providers should be trained and aware of how to deliver Lift the Lip appropriately with Māori.

Evidence from the WCTO data shows that where children are receiving the B4SC, WCTO providers are delivering Lift the Lip across all ethnicities. However, a large proportion of Māori and Pacific children are not receiving the B4SC check, and therefore are missing out on the Lift the Lip assessment and the early identification of decay.

Feedback from parents in the case studies suggest that there are no substantive differences in how Māori, Pacific, and European parents experience Lift the Lip and the oral health promotion in the WCTO programme. Māori and Pacific parents could recall oral health messages and the WCTO provider checking enrolment with the Community Dental

Service. However, few Māori and Pacific parents recalled WCTO providers delivering Lift the Lip, and no parents recalled being shown how to Lift the Lip.

Māori and Pacific parents were more likely to report receiving a free toothbrush and paste from WCTO providers, which were very positively received. Providing a free toothbrush and paste may be a useful approach as there is some evidence that delivery of toothpaste and brushes is an effective tool to combine with oral health promotion to alleviate financial barriers for parents accessing oral health care, and reduces oral health inequalities (Buglar 2010).

4.8 New Zealand delivery of Lift the Lip: Parent and child experience

For many parents, the oral health assessment was a significant part of the WCTO core contact. However their experiences were different. Some parents recalled the WCTO provider looking at the child's teeth, showing them how to brush their child's teeth, and receiving advice on food choices for healthy teeth.

"They did lift his lip and look at his teeth. How to help with the brushing and not to give them juice." (Parent).

"They tell you what to feed them and what not to. She taught me that a little bit of toothpaste is ok to use with the small kids." (Parent).

However, most parents' recall of the oral health component of the WCTO core contact was the enrolment with a community dental service, receiving free toothpaste and brush and messages on good oral health practices, not on the WCTO provider checking the teeth. No parents recalled being shown how to check their child's teeth.

"They didn't tell me how to check the teeth, but she did ask me if she was enrolled in the dentist." (Parent).

"I just sat in the corner, they don't teach you how to do it." (Parent)

4.9 New Zealand delivery of Lift the Lip: Outputs and outcomes

4.9.1 Assessment of Lift the Lip scores

Analysis of the B4SC data provides information on the distribution of decay and the rate of referrals by different demographic variables. In the B4SC, 16% of children who received the Lift the Lip check were found to have decay levels of two or more (Table 14).

Table 14: Proportion of children with decay levels 1 to 6 at the WCTO core contact eight (B4SC)

Children who completed Lift the Lip (n)	Decay level					
	1	2	3	4	5	6
196363	83.7%	10.7%	2.8%	0.9%	0.5%	1.4%

Source: B4SC data exported 23 March 2012.

Base: Children who had a decay level recorded during the B4SC contact.

4.9.2 Assessment of Lift the Lip referral rates

Analysis of the B4SC data shows that among children with decay levels of two to six, 18% were given a referral. The referral rate is twice as high among children with more severe levels of decay (decay levels of four to six) (Table 15). The rates of referral to secondary services are lower than expected. It is not clear why the referral rates are so low. Indications from the case sites suggest there may be reporting issues that are influencing the data. That is, the records do not permit an entry to record people who are already enrolled with a Community Dental Service (see Section 4.10). However, there may be other contributing factors that result in low referral rates.

Table 15: Referral rate for different levels of decay at the WCTO core contact eight (B4SC)

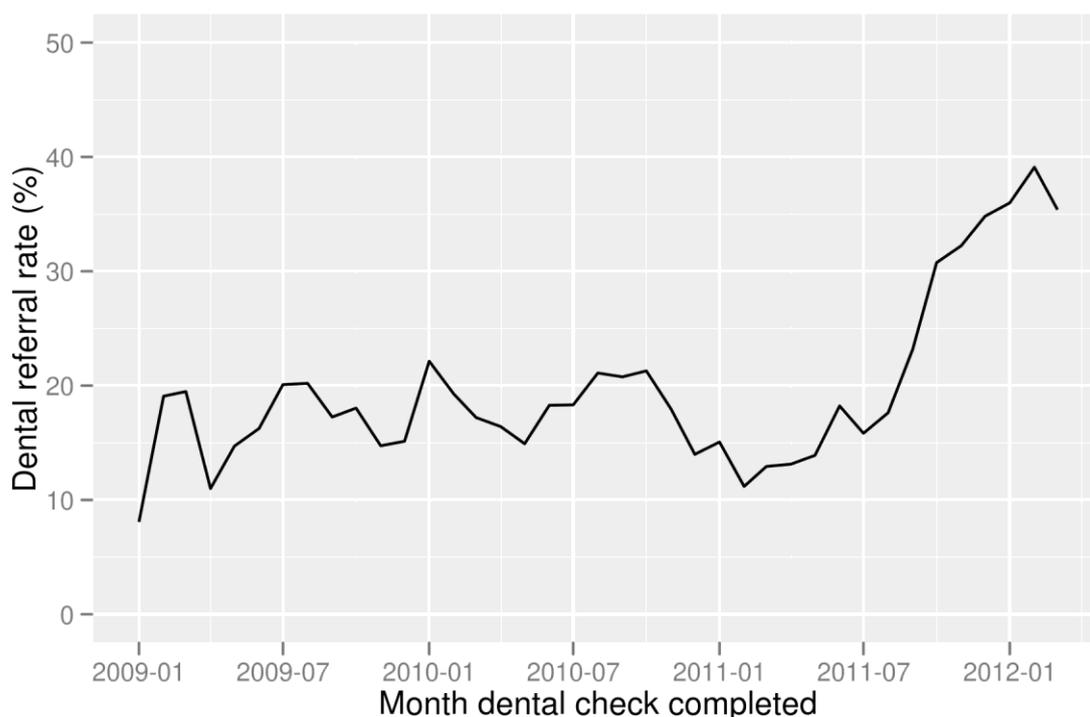
	Decay level					
	1	2	3	4	5	6
Referral rate	1.6%	10.4%	27.2%	36.9%	33.3%	39.4%

Source: B4SC data exported 23 March 2012.

Base: Children who had a decay level recorded during the B4SC contact.

The referral rate among children with decay levels of two to six remained fairly stable from 2009 until mid 2011, ranging between 10% and 20%, then rose sharply to over 30% in late 2011 and early 2012 (Figure 4). It is not clear what was driving this sharp increase. The Ministry of Health released a quality letter on the B4SC data in August 2011, which may be related to this increase.

Figure 4: Referral rates for Lift the Lip at WCTO B4SC



Source: B4SC data exported 23 March 2012.

Base: Children with a decay level of two to six.

Analysis of B4SC data shows there are minimal gender differences in both the identification of decay levels two to six, and referrals to specialist dental services (Table 16).

Table 16: Levels of decay and referral rates for children in the B4SC by gender

Gender	Children who had a dental check completed in the B4SC (n)	Number of children with decay level 2-6 (n)	Proportion with decay level 2-6 (%)	Proportion with decay level 2-6, who were referred (%)
Female	95277	15118	15.9%	17.7%
Male	100307	16787	16.7%	18.4%

Source: B4SC data exported 23 March 2012.

Base: Children who had a decay level recorded during the B4SC contact and whose gender was known.

Analysis of the B4SC data by ethnicity (Table 17) shows that Māori and Pacific children have higher rates of decay at levels two to six, compared to European children. This is consistent with previous research that shows low levels of decay free teeth for Māori and Pacific children (Ministry of Health 2010d; Community Oral Health Services 2010). The B4SC analysis shows Pacific children in particular as having high rates of decay (35%). Māori and Asian children also have high rates of decay compared to European children. Again, there are issues with low referral rates to dental services across all ethnic groups. Pacific and Asian children are most likely to be referred, and European least likely. This may be reflective of whether the child has is already accessing dental services, as previous research has shown that Pacific and Māori children are less likely to be enrolled in a dental service. If European children are already accessing dental services, this may account for a low referral rate.

Table 17: Levels of decay and referral rates for children in the B4SC by ethnicity

Ethnic Group	Children who had a dental check completed in the B4SC (n)	Number of children with decay level 2-6 (n)	Proportion with decay level 2-6 (%)	Proportion with decay level 2-6, who were referred (%)
Māori	35713	10025	28.1%	20.0%
Pacific	13861	4831	34.9%	27.8%
European/Other	131412	13745	10.5%	11.6%
Asian	14704	3322	22.6%	24.9%

Source: B4SC data exported 23 March 2012.

Base: Children who had a decay level recorded during the B4SC contact.

Consistent with previous dental research, the analysis of the B4SC data shows clear variation in the rates of dental decay by deprivation level (Table 18). Children from more deprived areas have much higher rates of decay. For those who have decay, the rates of referral are also higher for children in more deprived areas. Again this may be reflective of whether or not the child is already accessing dental services, as children in least deprived areas have lower referral rates.

Table 18: Levels of decay and referral rates for children in the B4SC by deprivation

Deprivation level	Children who had a dental check completed in the B4SC (n)	Number of children with decay level 2-6 (n)	Proportion with decay level 2-6 (%)	Proportion with decay level 2-6, who were referred (%)
1	38252	3349	8.8%	12.3%
2	35338	3688	10.4%	13.8%
3	35555	4792	13.5%	17.1%
4	36467	7126	19.5%	15.3%
5	42577	11753	27.6%	22.8%

Source: B4SC data exported 23 March 2012.

Base: Children who had a decay level recorded during the B4SC contact, and whose deprivation quintile was known.

DHBs have varied rates of decay, ranging from 3% in South Canterbury to 26% in Counties Manukau (Table 19). Referral rates are even more varied, ranging from 2% in Southland to 56% in Capital and Coast. The level of variation in identifying decay may reflect deprivation in the DHBs, and may also reflect variation in WCTO providers' practice of Lift the Lip. That is, inconsistent ability of WCTO providers to identify dental decay.

Table 19: Levels of decay and referral rates for children in the B4SC by DHB

DHB	Children who had a dental check completed in the B4SC (n)	Number of children with decay level 2-6 (n)	Proportion with decay level 2-6 (%)	Proportion with decay level 2-6, who were referred (%)
Auckland	13979	2228	15.9%	24.8%
Bay of Plenty	9631	1343	13.9%	26.9%
Canterbury	22217	2391	10.8%	26.9%
Capital and Coast	11890	1750	14.7%	55.7%
Counties Manukau	13375	3411	25.5%	16.3%
Hawkes Bay	10616	1792	16.9%	16.3%
Hutt	9639	1274	13.2%	18.8%
Lakes	5734	1159	20.2%	20.0%
Midcentral	9503	854	9.0%	8.8%
Nelson Marlborough	4900	461	9.4%	11.3%
Northland	7371	1867	25.3%	19.1%
Otago	6107	678	11.1%	22.4%
South Canterbury	2737	77	2.8%	28.6%
Southland	10437	2029	19.4%	1.6%
Tairāwhiti	2617	464	17.7%	10.3%
Taranaki	6565	798	12.2%	2.6%
Waikato	20202	4707	23.3%	9.5%
Wairarapa	2948	672	22.8%	7.1%
Waitemata	19737	2940	14.9%	18.6%
West Coast	1552	196	12.6%	6.6%
Whanganui	3933	832	21.2%	11.7%

Source: B4SC data exported 23 March 2012.

Base: Children who had a decay level recorded during the B4SC contact.

The survey of Tamariki Ora providers and DHB planning and funding managers identified some inadequacies with the referral process for oral health issues in the WCTO programme. Compared to some other domains, there was a relatively high number of respondents who rated the referral process as 'adequate' or 'poor'. Because of the regional approach to Community Dental Services, the ratings may reflect local level challenges. For example, there are different referral forms by DHBs. Comments from some stakeholders have suggested that some referral forms seem unnecessarily complicated, with varying information requirements.

4.9.3 Assessment of outcomes against current literature, NZ and international data trends

Findings from this quality review provide further evidence of the inequality in oral health, as identified in previous research (Ministry of Health 2010d; Community Dental Statistics 2010). The results show that Māori and children Pacific, and children living in high

deprivation areas experience more dental caries. The intention of Lift the Lip and oral health promotion in the WCTO programme is to reduce oral health inequalities and improve oral health status. Further research is needed to assess the long-term impact of the oral health component in the WCTO programme on the prevention of dental health issues. Over time, fewer cases of severe decay should be identified at the B4SC, as oral health promotion and early identification of low levels of decay at earlier WCTO contacts is intended to result in decay treatment and prevention of more severe decay.

4.10 New Zealand delivery of Lift the Lip: Information management

Only one issue was identified with information and data requirements. As identified in the PEDS section, there is no field for recording children that are already under care and therefore do not need referral despite the Lift the Lip score in the data.

Summary

Evidence-base

- There is clear evidence of substantial inequalities in oral health outcomes and access to dental health services for children in New Zealand.
- There is some evidence that the earlier preventative interventions are introduced, the more likely they are to establish good oral health practice in children.
- There is little evidence that providing information on dental oral health improves oral health outcomes.
- There are significant gaps in an evidence-base for the use of Lift the Lip, and few judgements can be made on the value of Lift the Lip in a child health programme, and its impact on oral health outcomes.

Completion rates

- The B4SC data shows that if children are receiving a B4SC, the Lift the Lip assessment is being delivered. Lift the Lip was completed as part of the B4SC with 69% of children.
- Māori and Pacific children are less likely to have the B4SC completed (61% and 50% respectively) than European children (75%), and therefore are less likely to be assessed for dental decay using Lift the Lip.

WCTO providers' delivery of Lift the Lip

- Findings from the review suggest the delivery of Lift the Lip is not consistently delivered to the guidelines in relation to:
 - lifting the child's lip to inspect the teeth (not simply asking the child to smile)
 - using appropriate tools and positions for sitting the child when inspecting their teeth
 - showing parents how to Lift the Lip at home.

Training

- Quality checks and clinical supervision may be required to ensure WCTO providers are performing the assessment correctly, and to assess whether WCTO providers are identifying the early signs of decay.

Parents' experiences of Lift the Lip

- Parents could recall oral health messages delivered in the WCTO core contacts, e.g. teeth cleaning and reducing the intake of sugary drinks. However, it is unknown whether parental recall of messages will result in good oral health behaviour.
- There are no substantive differences in how Māori, Pacific, and European parents experience Lift the Lip and the oral health promotion in the WCTO programme.
- Only some parents, and very few Māori and Pacific parents, recalled WCTO providers checking their child's teeth.
- No parents recalled being shown how to Lift the Lip at home.

Appropriateness for Māori and Pacific

- Some Māori families may have an issue with the Lift the Lip delivery method that requires the child's head to be rested on the WCTO provider's lap. WCTO providers should be trained and aware of how to deliver Lift the Lip appropriately with Māori.
- Some Māori and Pacific parents received a free toothbrush and paste from WCTO providers, which was very positively received and may be a useful approach to pair with Lift the Lip and oral health promotion to reduce oral health inequalities.

Lift the Lip outcomes and referrals

- In the B4SC, 16% of children who received the Lift the Lip check were found to have decay levels of two or more, and only 18% of these children with tooth decay were referred.
 - Māori and Pacific children have higher rates of decay at levels two to six (28% and 35% respectively), compared to European children (11%).
 - Children from more deprived areas also have much higher rates of decay (28%), compared to those in less deprived areas (9%).
- Further research is needed to assess the long-term impact of the WCTO programme oral health assessment on the prevention of dental health issues. Fewer cases of severe decay should be identified at the B4SC over time, as oral health promotion and early identification of low levels of decay at earlier core contacts should result in decay treatment and prevention of more severe decay.

5. WHO Growth Charts

5.1 Brief overview of WHO Growth Charts

WHO growth charts were developed by WHO from data collected in six countries (USA, Norway, India, Ghana, Brazil and Oman), on the growth patterns of breastfed babies. WHO growth charts are used for assessing child growth development by using measures of length, height, weight and head circumference. WHO growth charts are notable in that they recognise breastfeeding as the norm for optimal growth and development, and they recognise that population differences in growth are avoidable given optimum nutrition and living conditions (Wright, Lakshman and Emmett 2008).

The key feature of these growth charts is that they are based on optimal growth, providing a standard on how children should grow. Previous growth measures use average growth and describe growth norms on how children are growing, which may not reflect ideal growth patterns (Wright et al 2008). Using WHO growth charts allows for an individual child's growth pattern to be assessed over time, and to determine whether they are within a normal growth range by comparing their growth with the normal range for child the same age and gender.

WHO growth charts are recommended for use worldwide. Many countries have adopted them, including Australia, UK, Canada, the US (for children up to two years, after which the CDC measures are used), and various countries in Latin America and Asia.

5.2. WHO growth charts in the WCTO Programme

5.2.1 Purpose of the WHO growth charts in the WCTO programme

The WHO growth charts are implemented as a surveillance and monitoring measure in the WCTO programme. The purpose of growth measurements, as defined in the B4SC handbook for practitioners (Ministry of Health 2008a), is to:

- identify children with unrecognised growth problems and provide an opportunity for referral for advice and treatment if necessary
- monitor changes in the height, weight and Body Mass Index (BMI) of New Zealand children as a group
- inform public health policy and planning.

5.2.2 The rationale for growth monitoring in the WCTO programme

Identification of health problems

The growth of infants and children is recognised as an important indicator of health and wellness (Cole 2003; Garza 2004, as cited in Centre for Disease Control and Prevention, 2010) and an important indicator of whether a child is receiving adequate nutrition. Growth measures are useful in facilitating the identification of a variety of conditions (Barlow 2008).

Hall and Elliman (2009) identified the following disorders that can be detected by growth monitoring:

- hypothyroidism
- growth hormone insufficiency
- Turner's syndrome
- some forms of bone dysplasia
- hydrocephalus.

Growth charts have traditionally been used to assess growth faltering due to a health condition or inadequate nutrition. More recently, there are growing concerns about excessive weight gain in children, and growth charts are being used to identify overweight and obese children (Centre for Disease Control and Prevention 2010).

Monitoring of individual growth patterns

Routine growth monitoring is considered standard practice for the health surveillance of infants (Barlow 2008). Growth charts, such as WHO growth charts, are used as a tool for growth monitoring. Plotting a child's measurements on a growth chart allows providers to see the pattern of the child's growth over time, allowing assessment of whether the growth pattern is normal.

Growth charts are not recommended for use as a one-off screening tool as growth is most accurately measured over time using multiple measures, rather than single measures (Hall and Elliman 2006). Single measures will not, for example, identify children whose height and weight is within the normal range, but whose growth rate is slower than normal (Hall, Williams and Elliman 2009).

Because the WHO standards are based on ideal growth, deviation from the standards can act as a prompt for providers to investigate, identify and address any environmental conditions that might be negatively affecting growth (Center for Disease Control and Prevention 2010).

Population monitoring of obesity

The prevalence of obesity in New Zealand is increasing, and there is evidence to suggest that being obese in childhood increases the risk of being obese in adulthood, which is linked to a number of adverse health outcomes (Craig and Jackson 2006).

Obesity reduction is one of the Ministry's 13 population health objectives (Ministry of Health 2000). Part of the Ministry's strategy to prevent and manage this rise in obesity, and the associated health issues, is population monitoring (Ministry of Health 2008a).

The BMI is used as a measure of overweight and obesity in the WCTO programme. BMI is calculated and recorded as part of the WCTO programme. It is not intended that WCTO providers discuss every child's BMI with parents. The recording of BMI is for longitudinal population monitoring, and initiating a referral pathway for children who are extremely overweight.

"A BMI will be calculated and will be used to monitor the population's progress. The B4 School Check practitioner will not discuss this with the parents, because it is only being collected as a population level indicator." (Ministry of Health 2008a, p42).

5.3 Evidence on the effectiveness of WHO Growth Charts

5.3.1 Assessment of malnutrition

WHO growth standards have important implications for child health regarding breastfeeding, and the adequacy of infant feeding (De Onis 2006). A study into the growth patterns and estimates of malnutrition found that WHO growth standards provide a better tool to monitor the rapid and changing rate of growth in early infancy (De Onis 2006). There is also evidence that WHO standards generally correspond with clinical assessment of malnutrition (Center for Disease Control and Prevention 2010). For example, Onyango, de Onis and Caroli's (2007) study concluded that:

“The overall concordance between clinical assessments and the WHO standards-based indicators attested to the clinical soundness of the standards.” (Onyango et al 2007, p149).

Studies testing the WHO charts have shown there are some differences in population measures compared with other growth charts (Wright et al 2008). A UK study found a significant impact on the interpretation of child weight gain and growth from using WHO growth charts. In particular, using WHO growth standards in the UK means (Wright et al 2008):

- infants appear larger than the average at birth
- children over two to four months are less likely to be classified as underweight
- infants and toddlers are more likely to be classified as obese and overweight.

Wright et al (2008) concluded that these impacts from using WHO growth measures are acceptable. The reduction in identification of underweight children is considered acceptable, as mild weight faltering is unlikely to be linked to major health or social conditions, and the identification of mild weight faltering with parents may cause necessary harm by raising parental anxiety and concern (Wright et al 2008). The increased identification of infants and toddlers as overweight was also considered acceptable given a growing body of evidence of the association between infant growth and risk of obesity in adulthood (Wright et al 2008). WHO growth charts have a slow weight gain in late infancy, which may be beneficial to the long-term health of children if interventions in infancy can impact on obesity later in life (Wright et al 2008).

5.3.2 Equity implications

WHO growth charts are an applicable measure of optimal growth for children worldwide as healthy breastfed babies have very similar growth patterns and rates no matter what ethnicity (World Health Organization and the United Nations Children's Fund 2009). The Ministry of Health reiterate that WHO growth charts are relevant for Māori and Pacific children in New Zealand, stating that while Pacific children are often slightly bigger, they are within the normal range on the WHO growth charts (Ministry of Health 2010e).

“Studies have shown that there may be some ethnic differences among groups, just as there are genetic differences among individuals, but for practical purposes they are not considered large enough to invalidate the general use of the WHO growth standards population as a standard in all populations.” (World Health Organization and the United Nations Children's Fund 2009).

5.3.3 Risk of harm

The main concern in growth monitoring is the risk of causing unnecessary harm (Barlow 2008). A Panpanich and Garner (2009) review of evidence found very little information evaluating the harms of growth monitoring, and conclude that the lack of evidence is possibly because growth monitoring does not intrinsically seem harmful. However, there is potential for harm from growth monitoring (Panpanich and Garner 2009; Barlow 2008; Hall and Elliman 2006).

Growth issues, or the possibility they may be detected, can cause parental anxiety. Unskilled providers can create unnecessary concern and anxiety for parents in plotting growth measures if they are not skilled at interpreting the charts and advising parents appropriately.

“Weighing is easy, but much anxiety is generated by uncertain or inexperienced interpretation of growth charts and only staff with the appropriate expertise should advise parents on concerns arising from weighing or weight charts.” (Hall and Elliman 2006, p176).

Inappropriate delivery of growth messages to parents may have implications for the parents' on-going relationship with the provider, or their willingness to action interventions.

“If the health worker appears to blame the mother, she may be reluctant to return to the clinic, and miss interventions.” (Panpanich and Garner 2009).

Unnecessary referrals for interventions are also a risk due to inaccurate measures taken by providers. The precision of the measures is critical in growth monitoring to ensure growth issues are not incorrectly identified. This requires skilled and trained providers, and repeated, rather than one-off, measures.

“Two or more measurements of high quality, taken on proper equipment by the same competent observer, showing that the child's height line is crossing centile channels, may well justify referral and investigation; however, when serial measure are taken on poor equipment by different untrained observers, such a finding is very common and the chance of it being significant is very much less.” (Hall, Williams and Elliman 2009, p143).

Growth measures are also subject to bias from the person taking the measurements. Particularly if the previous measures are known, or if the provider knows whether or not the child is growing normally. Hall and Elliman (2006) identify the following critical factors for accurate growth monitoring:

- correct and accurate equipment
- suitable charts (such as the WHO growth charts)
- correct measuring techniques
- accurate transfer of measures to charts
- correct interpretation of charts
- time, expertise and resources to explain the measurements to parents
- access to specialist advice.

5.3.4 Identification and referrals for overweight and obesity

Obesity is an excess of body fat mass. It can be measured using skin fold thickness, measures of body circumference, or a weight for height measure. The WCTO programme uses the BMI as a measure of overweight and obesity, which is a weight for height measure. BMI is considered the best measure of obesity for community and public health use (Hall, Williamson and Elliman 2009; Hall and Elliman 2006). It is commonly used internationally as it is considered a reliable, inexpensive and non-intrusive measure (Craig and Jackson 2006). The BMI is recommended by the WHO and the UK Department of Health for determining overweight and obesity.

There is debate on the appropriateness of the BMI for Māori and Pacific children in New Zealand, without the use of age-percentile charts that are specifically designed for New Zealand children (Craig and Jackson 2006). Some argue that for a given BMI, Māori and Pacific children have a lower percentage of body fat. Others argue that while this difference may exist statistically, a common standard can be used as there are no clinically significant ethnicity-based differences in the relationship between BMI and body composition (Craig and Jackson 2006).

To date, there is very limited evidence of effective strategies to reduce or prevent infant and childhood obesity (Barlow et al 2008). Because of the lack of evidence of what works, referrals for responding to childhood obesity in the WCTO programme are only part of the pathway for children who require careful monitoring and management of obesity-related health complications. BMI measures in the WCTO programme are not intended to be discussed with parents. This approach is consistent with the UK Department of Health policy that requires measures of children's BMI for monitoring purposes. They specify that BMI measures are not intended to be sent to parents, as there is no evidence that would be beneficial, and some concern it could cause parental anxiety (Hall and Elliman 2006).

5.4 Intended delivery of WHO growth charts in New Zealand

5.4.1 Introduction into the WCTO programme

WHO growth charts were released in 2006, and introduced into the WCTO programme in 2008. In 2010 the Ministry of Health introduced growth charts based on the UK-WHO growth charts developed by the Royal College of Paediatrics and Child Health in the United Kingdom. Before their introduction, the WCTO programme used the CDC growth measures. In the WCTO programme, the height and weight measures are delivered in conjunction with information and advice on breastfeeding, healthy eating and healthy activity.

5.4.2 Timing

The WHO growth charts are used at every WCTO core contact. Weight is measured at all contacts, head circumference is measured until one year old, length is measured until two years which then changes to height from two years.

Nutrition health promotion and education is also included throughout the WCTO contacts. Anticipatory guidance on infant nutrition and breastfeeding is included in WCTO programme core contacts one (four-six weeks), two (eight -ten weeks), three (three – four months), four (five – seven months), and five (nine - 12 months). This changes to anticipatory guidance

on nutrition and healthy activity, delivered at core contacts six (15-18 months), seven (two – three years) and eight (B4SC, four – four and a half years).

5.4.3 Delivery process

Growth monitoring is a process of taking measurements and plotting to see the changes over time. It is important that each measurement is accurate and plotted correctly so that the pattern of growth can be properly assessed.

Anyone who measures a child and plots or interprets the growth charts, should be suitably trained to do so, or be supervised by someone suitably qualified to ensure the accuracy and quality of the measures taken. The following quality components are important for taking accurate measures of children in the WCTO programme (Ministry of Health 2008a, 2010e):

- babies should be weighed without clothes or nappies
- heavy outer clothing, shoes, headwear or hair ornaments that could affect the accuracy of the height measurement, should be removed
- measurements must be taken with the equipment standing on a hard surface
- weight measure taken to the nearest 100gm
- two measures of height and weight should be taken each time, and the average taken if the two measures do not vary by more than 0.5kgs. If they do vary by more than 0.5kgs a third measure is required, and an average taken from the two closest measures.

There are also requirements for the growth equipment:

- only clinical electronic scales in metric setting should be used to measure weight
- a stadiometer should be used to measure height
- scales should be calibrated regularly (ideally, every six months).

Referral process

A critical issue in assessing growth is the speed of the child's growth. If plotting shows growth that is either falling away or climbing rapidly to the centile lines, further assessment is required to determine the need for intervention.

The WCTO guidelines provide the following criteria for referrals:

- *For infants and toddlers:* referrals are to be made for further assessment when they show a sustained drop or rise across two or more weight centile spaces. Referrals due to concerns about length should be based on clinical judgement.
- *For children from two years:* the BMI is used to assess the need for referrals:
 - if the child's weight or height is below the 3rd percentile, refer to general practice
 - if the child's weight is above the 97th percentile and the BMI is 21 or over, refer to general practice for on-going monitoring and management of obesity complications.

The WCTO providers are encouraged to use their clinical judgement to make referrals outside these criteria, with clinical notes documenting their concerns. For children whose weight is over the 97th percentile, but the BMI is under 21, referrals are not recommended. WCTO providers should provide parents with information about healthy eating and healthy activity for children. Referrals are not recommended for these children because there is

limited evidence of the effectiveness of interventions for childhood obesity (Whitlock et al 2005, as cited in Ministry of Health 2008a).

Protocols and guidelines

A review of documents suggests there is clear documentation guiding the delivery of WHO growth charts for WCTO providers. In particular the WHO Fact Sheets (Ministry of Health 2010e). WCTO parent health book, and the B4SC handbook (Ministry of Health 2008b). However, the protocols and guidelines need to be updated in the WCTO National Schedule Handbook (Ministry of Health 2002b). The following guideline and protocol documents have been identified by WCTO providers:

- WHO growth charts
- WCTO Health Book
- B4SC Handbook for Practitioners
- Health Pathways (In Canterbury only, Health Pathways is an on-line site that provides assessment, management and referral pathway information to health providers).

5.5 New Zealand delivery of WHO growth charts: Clinical quality

5.5.1 Information Sources

Findings in this section are based on the analysis of the B4SC and WCTO data, three DHB case studies sites, focus groups with parents, survey of Tamariki Ora providers, and a stocktake and survey of DHB planning and funding managers. The findings are discussed in the context of the information drawn from the literature search and from discussions with international and national experts.

5.5.2 Purpose

Taking growth measurements is generally viewed by WCTO providers as a standard practice for a check of a child's health. WCTO providers often use the time taking the measures to talk to parents about nutrition and (as appropriate) breastfeeding. The growth charts can also be downloaded from the Ministry of Health website. There are two predominant views from WCTO providers and stakeholders regarding growth monitoring in the WCTO programme. Some considered the measures to be a central component of the WCTO core contacts. Other WCTO providers and stakeholders questioned the appropriateness of taking measurements of children known to be overweight when there are limited pathways available to respond. This was particularly problematic for Māori and Pacific children (refer section 5.7). While there is scope for referrals for intervention for children identified as extremely obese (a BMI of 21 or above), there are limited options available for children who do not meet this criteria, which is the catalyst for some WCTO providers' concerns.

5.5.3 WHO growth chart completion rates

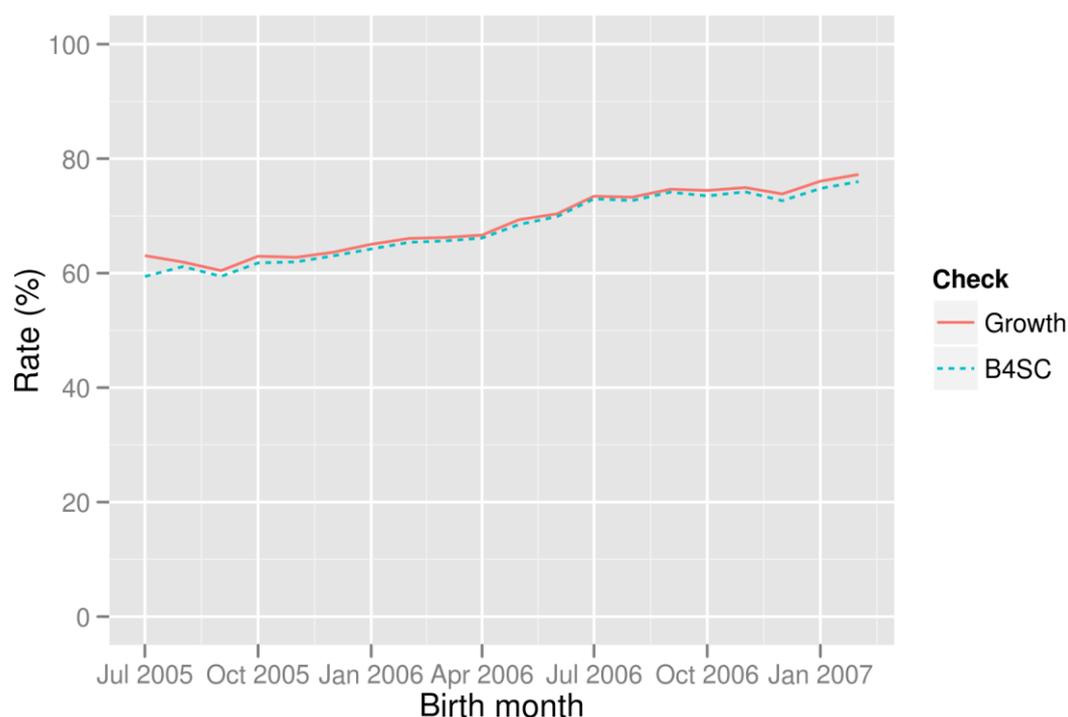
Completion rates in WCTO core contacts one to seven

Growth measurements were taken in 98% of WCTO core contacts one to seven. This percentage was much higher for Plunket (99%) than for Tamariki Ora providers (73%) (where data was available). Population coverage is lower, as not all children would have been provided each core check. The available data is not complete, but as a lower bound, the number of four to six week checks conducted in the second half of 2011 (21312) was 71% of the number of live births in New Zealand during that period (excluding late registrations). The other core checks reached larger numbers of children.

Completion rates in WCTO core contact eight (B4SC)

The B4SC data shows that when the B4SC is being completed, WCTO providers are consistently taking growth measures. Growth measurements were completed as part of the B4SC to 69% of children born between July 2005 and February 2007. This is consistent with the rate of completion of the B4SC (68%)⁶³. The completion rates have steadily increased in more recent birth cohorts (see Figure 5). Again this is in line with a general increase in uptake of the B4SC.

Figure 5: Completion of WHO growth charts at WCTO B4SC



Numerator: B4SC data exported 23 March 2012.

Denominator: PHO enrolment demographics database, quarter 3 2011.

⁶³ Completing the B4SC means all the components of the B4SC have been completed (and may or may not be closed). This does not include children who have partially completed the B4SC. See Annex 5, and the quality review of the B4SC report (Litmus 2012g) for more details on the B4SC completion rates.

5.5.4 Reaching Māori and Pacific families

There are differences in the completion of growth charts between ethnicities (Table 20). However, these differences reflect the completion of the B4SC more generally, and not the specific delivery of growth charts (Table 20):

- Pacific children are least likely to have growth charts completed (51%).
- There are low completion rates for Māori (62%) and Asian (59%) children.
- European children were the most likely to have growth charts completed (76%).

Where the B4SC is being received, growth charts are being delivered by WCTO providers consistently across ethnicity. However, it remains that growth measures are not being taken with large proportions of Māori, Pacific, and Asian children, due to inequalities in delivery issues with B4SC (Litmus 2012g).

Table 20: Children with growth charts completed in WCTO B4SC by ethnicity

Ethnic group	Children with B4SC completed (%)	Proportion of children with growth charts completed at the B4SC (%)
Māori	61%	62%
Pacific	50%	51%
European/other	75%	76%
Asian	58%	59%

Numerator: B4SC data exported 23 March 2012.

Denominator: PHO enrolment demographics database, quarter 3 2011.

5.5.5 Variation in delivery

While growth measures have been taken fairly consistently, it is clear from the case studies that not all WCTO providers are using the WHO growth charts. Midwives are measuring the weight, length and head circumference at the four to six week check, but some may not plot the measures on the growth charts in the WCTO Health Book. WCTO providers based in primary care were also unlikely to use the WHO growth charts, preferring instead to use the tools available in their clinic's electronic systems. General practice computer systems such as MedTech use CDC measures. These are preferred because they are electronic and only require the height and weight measures to be entered and a BMI is automatically calculated. Other WCTO providers had reverted back to the previous CDC measures because of the difficulties experienced using the WHO charts in the WCTO Health Book (refer Section 5.10).

The use of different growth measures by WCTO providers raises concerns about the consistency of the measures being taken. The WHO standards and CDC charts show different growth patterns, which may lead WCTO providers to different conclusions about variations in growth at one-off points. Because the WCTO programme uses a different growth charts to general practice, it is possible that parents are getting different messages about their child's growth.

5.5.6 Perceived effectiveness

While WCTO providers experience some difficulties using the charts (refer Section 5.10), growth measures are generally considered standard practice. This view is supported by the

survey of Tamariki Ora providers, which found that all Tamariki Ora respondents consider growth monitoring services to be delivered effectively in the WCTO programme (Litmus 2012f). DHB planning and funding survey respondents, however, were slightly less favourable. Three out of 13 DHB respondents rated the service delivery for growth monitoring at core contact one to be 'adequate', and 7 out of 19 respondents rated the service delivery at the B4SC as 'adequate', 'poor' or 'very poor'. The reasons for these more negative ratings from DHB respondents are not clear. However, it may be related to concerns in the appropriateness of taking the measures for children known to be overweight where there are limited referral pathways available (refer Section 5.5.2).

5.5.7 Fidelity to delivery protocols

Some WCTO stakeholders queried the fidelity of actual delivery to the growth monitoring protocols, such as taking the measures twice and averaging the two measures. This quality review did not assess fidelity by observing the delivery of growth measures taken by WCTO providers. A review of documents into growth monitoring emphasises the importance of precision in taking measures and provider skill in interpreting the charts and providing information to parents, to reduce the risk of harm from inappropriate referrals and parental anxiety. A review of fidelity of actual delivery to delivery protocols may be relevant to limit the risk of harm in delivering growth monitoring in the WCTO programme.

5.5.8 Referral process and access to interventions

The survey of Tamariki Ora providers and DHB planning and funding managers identified perceived inadequacies with the referral process from the growth measures in the WCTO programme. Of all the domains in the B4SC, the referral process from growth monitoring was given the lowest rating. Just under half of the DHB respondents surveyed (7 out of 16) rated the referral process in the B4SC as 'adequate' or 'very poor'. Tamariki Ora providers also rated the referral process from the provision of anticipatory guidance on nutrition and breastfeeding. One third of the Tamariki Ora providers surveyed (6 out of 18) rated the process as 'adequate' or 'poor'.

Interviews with WCTO providers and stakeholders provide some insights into possible reasons for the poor referral ratings. A commonly held view was there is a significant gap between finding out a child is overweight and being able to do something effective about it. WCTO providers and stakeholders were at times uncomfortable taking measures of children and being unable to provide an effective service. Providing advice on nutrition and healthy activity was thought to be insufficient. WCTO providers and stakeholders identified a need for a whole family approach to address obesity and overweight, rather than focusing on the individual child.

5.6 New Zealand delivery of WHO growth charts: Workforce and training

5.6.1 Training and clinical supervision

WCTO provider training on growth measuring is part of the general training for the WCTO programme. Plunket annually offers a professional development plan that has a component on growth. Plunket provide opportunity for annual updates/ professional development to

Tamariki Ora providers. There is some evidence to suggest that refresher training or clinical review of WCTO providers may be useful to ensure fidelity of actual delivery to the growth monitoring protocols, if strict adherence to the guidelines is required for population monitoring.

5.7 New Zealand delivery of WHO growth charts: Appropriateness for Māori and Pacific

Evidence from the B4SC data shows a large proportion of Māori and Pacific children are not receiving the B4SC, and therefore their growth is not being monitored. Where the B4SC is being delivered to Māori and Pacific children, the measures are being taken by WCTO providers.

Some WCTO providers commented that over-weight seemed particularly prevalent for Māori and Pacific children, and raised concerns over identifying children as being overweight and not having services to refer them to except in obesity cases. In some instances, WCTO providers are referring children to general practice, as per the referral pathways. However, this was not always considered the best approach for Pacific children. Providers felt that more family-centred approaches are required for Pacific children.

Feedback from parents in the case studies suggests that there are no substantive differences in how Māori, Pacific, and European parents experience growth measurements. Māori and Pacific were perhaps more likely to consider the growth monitoring as important part of the core contacts. WCTO providers also identified a difference in the perception families have regarding their baby's/child's weight, with many Pacific families believing bigger babies and children are healthier.

WCTO providers delivering growth measures with Māori families should be skilled in taking the measures in an appropriate way. Many Māori may have an issue with measuring head circumference, which requires the WCTO provider to touch the child's head. While such delivery issues were not identified from the parent groups, WCTO providers should be trained and aware of how to take growth measures appropriately with Māori.

5.8 Delivery of WHO growth charts: parent and child experience

Parents generally liked the growth checks being taken to see how their child is growing and how it compares to their other children. The value parents placed on the measures varied. Some parents found the measures reassuring to see that their child is developing normally.

“It tells me how their growth is and that they're growing to what they're meant to be. I like it, because I never do it.” (Parent).

“It really put my mind at rest with how ... [my child] was growing. (Parent).

Other parents were more indifferent to the measures. They considered them a 'nice to have', rather than an essential part of the WCTO check, or a driving reason to attend. There was a view from these parents that the growth measures may be more relevant for parents with children with growth problems.

“There must be some that are underweight or overweight, so it's important for them.” (Parent).

Parents also had different experiences with WCTO providers discussing growth and healthy nutrition with them. Some parents found the conversation useful as it provided them with tools to address any weight issues. Other parents, found the conversations unsettling and unsympathetic towards their child.

“I found that helpful though, because mine slipped under the average so I changed diet etc. We could identify what we could change.” (Parent).

“I don’t like the emphasis the nurses put on the growth chart. My children have all been completely normal but at certain times were called ‘underweight’ ‘short’ etc, saying there’s something wrong compared to the ‘normal’ graph. They need to just look at how they’re growing.” (Parent).

“To us she looks normal. But they told me she was fat in front of her.” (Parent).

Poor messaging on growth has been identified as a potential cause of harm in growth monitoring (Barlow 2008; Papanich and Garner 2009) as it can result in undue parental anxiety and concern. This is problematic for the WCTO programme, as such unskilled conversations, may impact on parents’ likelihood of attending future appointments with the provider, and acceptance of interventions (Papanich and Garner 2009).

5.9 New Zealand delivery of WHO growth charts: Outputs and outcomes

5.9.1 Assessment of score distributions, referrals and outcomes

In the B4SC, 2% of children measured were extremely obese (with a BMI over 21) (Table 21).

Table 21: BMI ranges for children in the B4SC

Number of children measured	BMI range				
	Underweight	Normal weight	Overweight	Obese	Extremely obese
195481	2.0%	74.0%	17.5%	4.6%	1.9%

Source: B4SC data exported 23 March 2012.

Base: Children who had the growth measures taken during the B4SC contact. Data entry errors and other outliers (0.8%) were omitted.

The referral rate among extremely obese children was 16% (Table 22).

Table 22: Referrals by BMI ranges for children in the B4SC

	BMI range				
	Underweight	Normal weight	Overweight	Obese	Extremely obese
Number of children	3819	144725	34146	9067	3724
Referral rate	1.5%	0.2%	0.4%	3.6%	15.5%

Source: B4SC data exported 23 March 2012.

Base: Children who had the Growth measures taken during the B4SC contact. Data entry errors and other outliers (0.8%) were omitted.

Boys and girls had similar rates of extreme obesity and referrals. Girls have slightly higher rates of extreme obesity, and boys slightly higher on referrals (Table 23).

Table 23: BMI problems and referrals for children in the B4SC by gender

Gender	Number of children measured	Number of extremely obese children	Extremely obese (%)	Referral rate among extremely obese children (%)
Female	95180	1881	2.0%	15.0%
Male	100169	1839	1.8%	16.0%

Source: B4SC data exported 23 March 2012.

Base: Children who had the growth measures taken during the B4SC contact. Data entry errors and other outliers (0.8%) were omitted.

Pacific children were much more likely to be classed as extremely obese than any other ethnic group. The next highest group was Māori. Extremely obese Pacific children were also the most likely to be given a referral, followed by Asian children (Table 24).

Table 24: BMI problems and referrals for children in the B4SC by ethnicity

Ethnic group	Number of children measured	Number of extremely obese children	Extremely obese (%)	Referral rate among extremely obese children (%)
Māori	35597	1166	3.3%	13.7%
Pacific	13827	1032	7.5%	20.3%
European/other	131323	1264	1.0%	12.9%
Asian	14707	260	1.8%	17.3%

Source: B4SC data exported 23 March 2012.

Base: Children who had the growth measures taken during the B4SC contact. Data entry errors and other outliers (0.8%) were omitted.

Rates of extreme obesity increased in areas of greater deprivation. Interestingly, referral rates for extremely obese children were lowest in the least deprived quintile (Table 25).

Table 25: BMI problems and referrals for children in the B4SC by deprivation

Deprivation quintile	Number of children measured	Number of extremely obese children	Extremely obese (%)	Referral rate among extremely obese children (%)
1	38272	250	0.7%	7.6%
2	35217	425	1.2%	17.2%
3	35523	504	1.4%	12.5%
4	36357	822	2.3%	12.8%
5	42532	1582	3.7%	18.8%

Source: B4SC data exported 23 March 2012.

Base: Children who had the growth measures taken during the B4SC contact. Data entry errors and other outliers (0.8%) were omitted.

Rates of extreme obesity varied across DHBs, from 1% in Otago to 4% in Counties Manukau (Table 26). Referral rates were also very variable, ranging from 1% in Wairarapa to 36% in Capital and Coast.

Table 26: BMI problems and referrals for children in the B4SC by DHB

Deprivation quintile	Number of children measured	Number of extremely obese children	Extremely obese (%)	Referral rate among extremely obese children (%)
Auckland	13998	293	2.1%	26.3%
Bay of Plenty	9657	191	2.0%	5.2%
Canterbury	22190	322	1.5%	18.0%
Capital and Coast	12009	207	1.7%	36.2%
Counties Manukau	13291	563	4.2%	10.1%
Hawkes Bay	10579	215	2.0%	35.8%
Hutt	9659	194	2.0%	23.2%
Lakes	5751	95	1.7%	24.2%
Midcentral	9490	192	2.0%	2.1%
Nelson Marlborough	4888	55	1.1%	23.6%
Northland	7390	139	1.9%	15.1%
Otago	6131	50	0.8%	12.0%
South Canterbury	2752	25	0.9%	12.0%
Southland	10443	190	1.8%	24.2%
Tairāwhiti	2610	79	3.0%	19.0%
Taranaki	6542	77	1.2%	10.4%
Waikato	19952	333	1.7%	7.2%
Wairarapa	2887	86	3.0%	1.2%
Waitemata	19658	301	1.5%	4.0%
West Coast	1547	39	2.5%	2.6%
Whanganui	4030	76	1.9%	1.3%

Source: B4SC data exported 23 March 2012.

Base: Children who had the growth measures taken during the B4SC contact. Data entry errors and other outliers (0.8%) were omitted.

5.10 New Zealand delivery of WHO Growth Charts: Information management

WCTO providers identified some practical challenges with using the WHO growth charts in the WCTO programme. The most common challenge is the size of the charts in the WCTO Health Book. Providers frequently struggle with the small graphs and font of the charts in the WCTO Health Book. When delivering WCTO checks in the home environment, there were often additional challenges with poor lighting that made the small print very difficult to see. These challenges with the graphs reduce the likelihood of WCTO providers using the charts, hinder WCTO providers' ability to accurately record a child's measurements on the charts, and hinder their ability to use the charts to talk to parents about their child's growth, nutrition and healthy activity.

The placement of the charts in the book is also an issue. WCTO providers currently have to flick back and forth over pages to view the height and weight charts. Preference was given to being able to see both charts simultaneously. Providers also found the charts difficult to locate in the book. Given the charts are used at all core contacts, WCTO providers wanted easy access to them.

6. Conclusions and Recommendations

6.1 Conclusions

The implementation of the three new assessment tools (PEDS, Lift the Lip and WHO growth charts) was an evidence-informed change to the WCTO programme to better meet the goals of the WCTO programme and improve the health outcomes of New Zealand children. This quality review of the three new assessment tools has found that the new tools are being used by WCTO providers. However, they are not completely embedded in the WCTO programme core contacts. Key quality issues have been identified that limit the extent to which the tools are integrated into the WCTO programme and consistently delivered to the tool protocols.

Lack of understanding of the use of standardised tools: There is a lack of understanding in the purpose of using standardised tools among WCTO providers, which is reflected in some providers not recognising the implications of not following the tool delivery protocols for all three of the new tools.

Parent perspective: Parents lack understanding of purpose of the assessments, particularly for PEDS, and that referrals to other services could occur as a result of attending WCTO core contacts. This has potential implications for uptake of any services referred to.

Incorrect delivery of the tool in the core contacts: This is particularly relevant for the delivery of PEDS. Some WCTO providers are using PEDS as a check list at the end of the contact, duplicating conversations they have already had with parents' about their concerns. PEDS is not always being embedded into the check and used as a starting point for a conversation with parents.

Inequity in completion rates: If children are receiving a WCTO B4SC, WCTO providers are delivering the PEDS assessment, Lift the Lip, and WHO growth measures. However, many Māori and Pacific children are not receiving the B4SC and therefore are not receiving these assessments (Litmus 2012g).

Inconsistent delivery of the tool: Modifications to the actual delivery of the tool is prevalent for all three tools. Modifications are made to enhance parents' understanding or use of the tool, which is what Barlow (2008) refers to as 'planned deviations' (p20) that are used to adapt the tool to fit for the local community. Other modifications are based on WCTO providers' professional judgement on how best to assess a child, with a lack of understanding of the use of standardised tools. Barlow et al (2008) refer to this type of modification as an 'unplanned implementation gap' (Barlow et al 2008, p20) which occurs as a result of inadequate training or resources. Both types of modifications to the delivery of the tools seem to be occurring in the WCTO programme.

Referral process: Across all three tools the referral rates are substantially lower than what is expected. This is an important issue for the tools and requires further research to

investigate why this is occurring. If children are not receiving the interventions when a need is identified, this may undermine the value of the tools. Possible explanations for the lack of referrals are explored in the quality review, and suggest that changes may be required to the recording data to enable accurate recording of, for example, children that are already receiving treatment, or when there are no services available. Quality of referrals and accessibility of secondary services were also identified as quality issues in the referrals for PEDS and WHO growth charts. There is also a lack of accountability for ensuring that families receive the services they are referred for.

Appropriateness of PEDS for Māori and Pacific whānau: While this project did not extensively test the use of the PEDS with Māori and Pacific whānau, preliminary feedback suggests there may be some issues around the appropriateness of PEDS and the delivery of PEDS for Pacific and Māori whānau. It also seems likely that the issues identified in the literature regarding indigenous views of parenting, low education levels and language barriers may also present challenges within the New Zealand context. If PEDS is not effective for Pacific and Māori whānau, then the standard use of it in the WCTO programme has the potential to accentuate existing health inequities.

Identifying fixed and flexible aspects in delivering PEDS: WCTO providers are varying the delivery of PEDS to ensure parents understand the PEDS questions. Some variations are consistent with the PEDS guidelines, but there is a risk that WCTO providers are making variations to aspects of delivery that cannot be modified in order to retain the validity of the tool (e.g. changing question wording). WCTO providers require clarification on where flexibility can be integrated into the delivery of PEDS, and where strict adherence to the delivery protocols is required. Any translations of PEDS also need to be assessed to ensure the sensitivity of the tool is retained.

Use of the WHO growth charts: Not all WCTO providers are using WHO growth charts. Some providers, particularly those based in primary care, and some LMCs, take the growth measures, but tend not to plot them on the WHO charts. In clinic setting providers prefer to use the growth measures that are on their computer systems (commonly CDC growth measures). WCTO providers frequently identified challenges in using the WHO charts in the WCTO Health Book, such as the small size of the charts, which may be hindering their use by providers.

6.2 Recommendations

Recommendations for the three new assessment tools

As a result of the findings in this quality review, the following recommendations are made to improve the integration of the three new assessment tools into the WCTO programme core contacts.

- Refresher training for WCTO providers, including:
 - the purpose of the standardised tools and how they fit within the WCTO programme
 - practical delivery of the tools (especially for Lift the Lip)
 - clarification on the aspects of the tool delivery that need to follow protocols precisely, and aspects of delivery that providers can modify to suit the needs of their communities

- updating the WCTO programme documentation with protocols and guidelines for delivering the new tools
 - referral pathways and information requirements.
- Feedback to WCTO providers on the impact of the new tools in achieving WCTO programme aims.
 - Consideration of the barriers to families accessing services referred to and where the accountability sits in the referral pathways, to ensure that families are receiving the services they are referred for.
 - PEDS is tested for its effectiveness with Māori and Pacific whānau with particular attention to: the degree to which cultural views of parenting and child development; low levels of literacy and health literacy; and not having English as a first language impact on the validity of the results that are obtained from PEDS for these whānau. Research is needed into the use of the PEDS with Māori and Pacific, to ensure the use of PEDS does not increase health inequalities in New Zealand.
 - Development of processes for parents to give informed consent at each of the WCTO core contacts, ensuring parents understand the purpose of the tools, and possibility they may identify issues that may require referral to other services.
 - Further research exploring the low referral rate from the tools, including investigation of data record keeping requirements for accurate documentation of any reasons for not making a referral, when a referral pathway is identified.

Recommendations for the future implementation of new assessment tools

In implementing new tools into the WCTO programme in future, the following recommendations are made to ensure a smooth integration into the WCTO programme and uptake by WCTO providers.

- Having a system in place to review and determine inclusions and exclusions of new tools in the WCTO programme, based on the developing evidence-base e.g. a Technical Advisory Group.
- Clear evidence base for the new tool that is recognised by the New Zealand health sector, including:
 - the identified need for the tool
 - applicability of the tool to the New Zealand context
 - fit with the aims of the WCTO programme
 - evidence of effectiveness of the tool, including expected impact on child health outcomes
 - assessment of the appropriateness and likely effectiveness of the tool for Māori and Pacific.

- Establishment of national protocols, including:
 - delivery protocols and guidelines at a national and organisational level
 - local pathway maps for referrals
 - update WCTO programme documentation with protocols and guidelines for delivering the new tools
 - assess the need for clinical review of implementation of the tool and referrals
 - communication of the purpose and objectives of the tool to WCTO providers
 - training and refresher training on the delivery of the tool, including clarity on the fixed and flexible aspects of its delivery.

- Data monitoring, including feedback loops at a national, DHB and organisation level on:
 - uptake and outputs
 - outcomes monitoring
 - processes (e.g. referral pathways).

- Review of the tools to ensure no unintended consequences.

Summary

Evidence-base

- There is evidence that WHO standards generally correspond with clinical assessments of malnutrition.
- WHO growth charts can be used worldwide, across all ethnicities.
- BMI is considered the best measure of obesity for community and public health use, but there is limited evidence of effective strategies to reduce or prevent infant and childhood obesity.
- There is a risk of causing of unnecessary harm in growth monitoring: unnecessary referrals due to inaccurate measures taken; and inappropriate delivery of growth messages to parents adversely affecting the parents' on-going relationship with the provider and their willingness to action any interventions.

Completion rates

- The B4SC data shows that where the B4SC is being completed, WCTO providers are taking growth measures. Growth measures were recorded as part of the B4SC with 69% of children.
- Māori and Pacific children are less likely to have the B4SC completed (61% and 50% respectively), than European children (75%). Therefore, growth measures are not being taken with large portions of Māori and Pacific children.

WCTO providers' delivery of growth monitoring

- Not all providers taking growth measures in WCTO core contacts are using the WHO growth charts.
 - WCTO providers based in primary care tend to use CDC measures which are on their general practice computer systems such as MedTech.
 - Some midwives tend not to plot the growth measures on the WHO charts.
- WCTO providers commonly experienced difficulty with the small size of the WHO growth charts in the WCTO Health Book, which may limit their use by providers.

Parents' experiences of growth monitoring

- While parents generally liked the growth checks being taken to see how their child is growing, there was variation in the value placed on the growth measures
 - Some parents find the growth checks relevant and reassuring.
 - Other parents were more indifferent to the measures and considered them a 'nice to have', rather than a reason to attend the WCTO visit.
- Parents had different experiences with WCTO providers discussing growth and healthy nutrition with them
 - Some parents found the conversation useful as it provided them with tools to address any weight issues.
 - Other parents, found the conversations unsettling and unsympathetic towards their child.

Appropriateness for Māori and Pacific

- WCTO providers delivering growth measures with Māori families should be skilled in taking the measures appropriately. Many Māori may have an issue with measuring head circumference, which requires the WCTO provider to touch the child's head.
- In some instances, WCTO providers are referring children to general practice, as per the referral pathways. However, this was not always considered the best approach for Pacific children. Providers felt a more family-centred approach is required.

Growth monitoring outcomes and referrals

- In the B4SC, 2% of children measured were extremely obese (with a BMI over 21). Only 16% of children identified as being extremely obese were referred
 - Pacific children were more likely to be classed as extremely obese than any other ethnic group.
 - Rates of extreme obesity increased in areas of greater deprivation.
- Some WCTO providers raised concerns about identifying children as overweight when there are limited referral pathways available to intervene.

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Annex

A1. PEDS Parent Questionnaire Form (reproduced from the B4SC Handbook)**PEDS RESPONSE FORM**

Child's Name _____ Parent's Name _____

Child's Birthday _____ Child's Age _____ Today's Date _____

1. Please list any concerns about your child's learning, development, and behaviour.

2. Do you have any concerns about how your child talks and makes speech sounds?

Circle one: No Yes A little COMMENTS:

3. Do you have any concerns about how your child understands what you say?

Circle one: No Yes A little COMMENTS:

4. Do you have any concerns about how your child uses his or her hands and fingers to do things?

Circle one: No Yes A little COMMENTS:

5. Do you have any concerns about how your child uses his or her arms and legs?

Circle one: No Yes A little COMMENTS:

6. Do you have any concerns about how your child behaves?

Circle one: No Yes A little COMMENTS:

7. Do you have any concerns about how your child gets along with others?

Circle one: No Yes A little COMMENTS:

8. Do you have any concerns about how your child is learning to do things for himself/herself?

Circle one: No Yes A little COMMENTS:

9. Do you have any concerns about how your child is learning preschool or school skills?

Circle one: No Yes A little COMMENTS:

10. Please list any other concerns.

A2. PEDS Score Form (reproduced from the B4SC Handbook)

PEDS SCORE FORM – AUTHORISED AUSTRALIAN VERSION																								
Child's Name: _____		Date of Birth: _____ Date(s) of scoring: _____																						
<p>Find appropriate column for the child's age. Place a tick in the appropriate box to show each concern on the PEDS Response Form. See Brief Scoring Guide for details on categorising concerns. Shaded boxes are significant predictors of difficulties. Non-shaded boxes are non-significant predictors.</p>																								
Child's Age:	0-3 mos	4-5 mos	6-11 mos	12-14 mos	15-17 mos	18-23 mos	24-35 mos	36-47 mos	48-53 mos	54-71 mos	72-83 mos	84-96 mos												
Global/Cognitive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Expressive Language and Articulation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Receptive Language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Fine Motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Gross Motor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Behaviour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Social-emotional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Self-help	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
School	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
Count the number of ticks in the small shaded boxes and place the total in the large shaded box below.																								
<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="width: 10%;"></td> </tr> </table>																								
<p>If the number shown in the large shaded box is 2 or more, follow Path A on PEDS Interpretation Form. If the number shown is exactly 1, follow Path B. If the number shown is 0, count the number of ticks in the small unshaded boxes and place the total in the large unshaded box below.</p>																								
<table border="1" style="width: 100%; height: 40px;"> <tr> <td style="width: 10%;"></td> </tr> </table>																								
<p>If the number shown in the large unshaded box is 1 or more, follow Path C. If the number 0 is shown, consider Path D if relevant. Otherwise, follow Path B.</p>																								

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A3. PEDS Interpretation Form (reproduced from the B4SC Handbook)

Child's Name: _____

Date of Birth: _____

Specific Decisions

PEDS INTERPRETATION FORM

0-3 mos. _____

4-5 mos. _____

6-11 mos. _____

12-14 mos. _____

15-17 mos. _____

18-23 mos. _____

24-35 mos. _____

36-47 mos. _____

48-53 mos. _____

54-71 mos. _____

72-83 mos. _____

84-96 mos. _____

Path A:
Two or more significant predictive concerns?

Yes? →

Two or more concerns about self-help, social, school, or receptive language skills?

Yes? →

No? →

Refer for audiological and speech -language testing. Use professional judgement to decide if referrals are also needed for social work, occupational/physiotherapy, mental health services, etc.

Refer for intellectual and educational assessments. Use professional judgement to decide if speech-language, audiological, or other evaluations are also needed.

Path B:
One significant predictive concern?

Yes? →

Screen or refer for screening.

If screen is passed, counsel in areas of concern and monitor carefully.

If screen is failed, refer for testing in area(s) of difficulty.

Path C:
Non significant concerns?

Yes? →

Counsel in areas of difficulty and follow up in several weeks.

If unsuccessful, screen for emotional/behavioural problems and refer as indicated. Otherwise refer for parent training, behavioural intervention, etc.

Path D:
Parental difficulties communicating?

Yes? →

Foreign language a barrier?

Use a second screen that directly elicits children's skills or refer for screening elsewhere.

Send PEDS home in preparation for a second visit; seek an interpreter, or refer for screening elsewhere.

Path E:
No concerns?

Yes? →

Elicit any concerns at future time-point?

Use PEDS at future time-point.

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A4. New Zealand National Health Committee for assessing screening programmes

The National Health Committee recommends the following criteria be used to assess screening programmes in New Zealand:

- the condition is suitable for screening
- there is a suitable test
- there is an effective and accessible treatment or intervention for the condition identified through early detection
- there is high quality evidence, ideally from randomised controlled trials, that a screening programme is effective in reducing death and illness
- the potential benefit of the screening programme should outweigh potential physical and psychological harm (caused by the test, diagnostic procedures and treatment)
- the health care system will be capable of supporting all necessary elements of the screening pathway, including diagnosis, follow-up and programme evaluation
- there is consideration of social and ethical issues
- there is consideration of cost-benefit issues.

The NHC further recommends that screening programme participants should have access to the information they need to make an informed decision, that there is equity of access to the programme (the screening process does not exacerbate health inequalities by being less accessible to groups with poorer health status) and must make cultural sense to participants.

A5. B4SC completion rates

Table A1 details the breakdown of the completion of the B4SC for children born between July 2005 and January 2007. Overall, 68% of children in the cohort had completed all components of the B4SC; 58% of children had completed all the checks and their record was closed, 10% of children had completed all the checks but their record was not closed. Another 9% of children had completed only some of the checks ('partial completions'). Refer to the quality review report of the B4SC for details (Litmus 2012g).

Table A1: B4SC completion outcomes

	Percentage of children
All checks complete, closed	58.3%
All checks complete, not closed	9.6%
Some checks complete	9.2%
Assigned, but no checks conducted	5.5%
Consent refused	3.4%
Not assigned	14.0%

Table A2 details the breakdown of the completion of the B4SC by ethnicity, for children born between July 2005 and January 2007. Substantial differences in completion rates can be seen between ethnic groups, with Pacific children being least likely to complete all the B4SC checks (50%) and European/other children (75%) being most likely. Refer to the quality review report of the B4SC for details (Litmus 2012g).

Table A2: B4SC completion rates by ethnic group

Ethnic Group	All checks complete, closed	All checks complete, not closed	All checks complete	Some checks complete	Assigned but no checks conducted	Consent refused	Not assigned
Asian	47.1%	10.8%	58%	12.3%	7.4%	2.2%	20.1%
European/other	66.3%	9.0%	75%	8.2%	3.9%	3.9%	8.7%
Māori	51.0%	9.8%	61%	9.9%	7.0%	3.1%	19.1%
Pacific	38.8%	11.3%	50%	11.1%	9.7%	1.9%	27.2%

Quality Review of the Before School Check: Preface

This report has been prepared for the Ministry of Health by Kiri Milne from Litmus Limited, with contributions from Liz Smith and Lisa Gregg (Litmus Limited), Lisa Davies (Kaipuke Consulting), and James Reilly (Statistical Insights Limited).

We acknowledge and thank all those who contributed to the Before School Check Quality Review, including parents, the Royal New Zealand College of General Practitioners, the Royal New Zealand Plunket Society, Well Child Tamariki Ora Providers, District Health Boards, national and international experts and stakeholders, and the Ministry of Health. We also acknowledge the contribution of the Well Child Tamariki Ora Programme Quality Improvement Framework Expert Advisory Group (Appendix A1, Litmus 2012d).

Thanks go to our Litmus Expert Advisors, Dr Amanda D'Souza, Lisa Davies and Sue Johnston (Artemis Group), for their advice and input for the duration of the quality review.

Appendices for this report are contained in a separate volume (Litmus 2012d).

Please contact Liz Smith (liz@litmus.co.nz) if you have any questions about this report.

1. Executive Summary

1.1 Introduction

The Before School Check (B4SC) is the eighth and final core Well Child Tamariki Ora (WCTO) programme contact. It provides a universal, comprehensive and free screening and health education opportunity for all four year old children and their families. The objectives of the B4SC service are to:

1. promote health and wellbeing in preschool children
2. identify any health, behavioural or developmental concerns that may adversely affect a child's ability to learn in the school environment
3. ensure appropriate and timely referrals to improve child health and education outcomes, and reduce inequalities.

The B4SC is available to all eligible⁶⁴ children who are four years of age. The B4SC service (the 'service') has a particular focus on the provision of B4SC to high deprivation populations and to high need Māori, Pacific and new migrant children. B4SC services are expected to contribute to the reduction of health inequalities, particularly for Māori and Pacific children and young people. B4SC providers report to DHBs against total eligible population and high deprivation (quintile 5) targets.

The purpose of the B4SC Quality Review (the 'review') was to assess the content and implementation of the B4SC programme. Review findings are intended to inform the programme's ongoing delivery, development and quality improvement. A key focus of the review was to consider B4SC effectiveness for high deprivation populations, Māori and Pacific populations.

1.2 Review approach

A mixed method data collection process was used to inform the B4SC Quality Review, including: literature review, discussions with international and national experts and key stakeholders, DHB stocktake and survey, WCTO provider survey, analysis of B4SC data, case study of service delivery in three District Health Boards (DHBs), focus groups with Māori, Pacific and European/ Other parents in Christchurch, Counties Manukau and Taranaki DHBs, and input from an expert advisory group.

Data collection and the review were conducted between February and June 2012.

1.3 Key findings

Evidence base

⁶⁴ Eligibility status is applied according to Ministry of Health eligibility criteria (www.moh.govt.nz/eligibility). See Footnote (4).

- There is a strong rationale for the timing and content of the B4SC, but there are some gaps in the evidence base, especially when it comes to the efficacy of individual components.
- There is some but not comprehensive evidence for the efficacy of B4SC components for vulnerable populations, in particular, Māori, Pacific and high deprivation families/whānau. There is significant overseas and New Zealand evidence of barriers to access and utilisation of child health services for vulnerable populations.

B4SC coverage

- Analysis of data from a cohort of children born between July 2005 and February 2007 shows that around two-thirds of four year olds (68%) are receiving all components of the B4SC (this includes non-closed checks). Approximately one third of four year olds (32%) are not receiving the full B4SC.
- The B4SC is significantly less effective at reaching and engaging Māori and Pacific children than it is at reaching and engaging European/ Other children:
 - three quarters of European/ Other children (75%) are completing all components of the B4SC
 - 61% of Māori children are completing all B4SC components; around two-fifths (39%) are not receiving the full B4SC
 - half of Pacific children (50%) are completing all B4SC components
 - nearly one-third (27%) of Pacific four year olds and one fifth of Māori and Asian four year olds (20% and 19%, respectively) are not engaging with the B4SC service; this compares with 9% of European/ Other four year olds.
- There is considerable variation in B4SC coverage by DHB, with Auckland, Counties Manukau and Waitemata DHBs having some of the lowest completion rates and highest proportions of children not engaged with the service.
- The coverage data shows little difference across deprivation quintiles for overall engagement with the B4SC service and check completion.

B4SC referrals

- Cohort data shows that the B4SC service identifies children with problems, with prevalence of identified issues (assessment scores) ranging from 2% for vision, growth and behavioural issues, to 16% for hearing issues and tooth decay. Māori and Pacific children, and children from more deprived areas, are over-represented in having hearing issues, tooth decay, obesity, developmental and behavioural issues.
- Referral rates for identified issues are highly variable and, with the exception of vision and hearing, referral rates are low. Almost all children identified as having a vision or hearing issue are referred or rescreened. Between 11 and 23% of children identified as having dental, growth, developmental or behavioural issues are referred. This means that between 77 and 89% of children with issues in these areas are not being referred. This is a significant concern.
- The data indicates that, consistent with their higher rates of identified issues, Māori and Pacific children, and children from deprived areas, are being referred slightly more often.

1.4 Areas for quality improvement

Develop a coherent strategy for how to improve access to the B4SC service for high deprivation, Māori and Pacific families and whānau. Currently there appears to be no clear and agreed approach to improving service access. This review has identified several barriers to families accessing the B4SC and subsequent specialist services, including availability of Māori and Pacific providers ('Tamariki Ora providers'), availability of flexible service delivery models that accommodate a diversity of caregiving arrangements, and requirements to confirm specialist appointments and prove eligibility for specialist services. The review has also identified provider relationship continuity as a factor likely to encourage participation in the B4SC.

Increase Tamariki Ora provider involvement in the B4SC system. Interviews with DHBs, providers and parents suggest that Tamariki Ora providers provide a culturally appropriate and effective service for Māori, Pacific and high deprivation families and whānau, though evidence for effectiveness has not been assessed as part of this review. They are seen as better able to access Māori, Pacific and high deprivation families, meet cultural (including language) needs, and provide a holistic service. They also have existing relationships with families/ whānau through WCTO core contacts one to seven. However, Tamariki Ora providers currently represent only six of the 42 B4SC providers. Enhancing the role and availability of these providers in the B4SC system is an important pathway towards addressing known barriers and enablers to B4SC participation for priority populations.

Increased contracting of Tamariki Ora providers will also enable these providers to further develop their B4SC and Tamariki Ora services infrastructure, strengthening their ability to provide a well-resourced, high quality service to high deprivation, Māori and Pacific families and whānau. Contracting over a longer term and on a bulk or combined funding basis (rather than fee for service) will also support the sustainability of Tamariki Ora providers, by enabling them to adopt a longer-term approach to their service planning, infrastructure and quality improvement structures and processes.

Investigate ways to integrate the B4SC and WCTO programmes. The disconnection of B4SC services contracts from WCTO services contracts means a loss of provider relationship continuity for many families and whānau, as well as a disconnection in family/ whānau engagement with the WCTO programme as a whole. The requirement to establish a relationship with a new provider may be a barrier to B4SC participation for some families.

Assess the cultural appropriateness and effectiveness of B4SC tools for high deprivation, Māori and Pacific families and whānau. While this review did not explicitly test the use of B4SC tools with Māori and Pacific children and parents, interviews with providers and parents indicate that some screening tests may elicit inaccurate results due to language barriers and cultural differences. This appears to be an issue for Pacific families in particular. This finding highlights the importance of ensuring all tools are relevant, understood and appropriate for high deprivation, Māori and Pacific families and whānau. This has important implications for quality of assessment outcomes. It also highlights the need to ensure B4SC delivery, overall, is effective for Pacific children and parents. This includes the availability of Pacific B4SC provider organisations and nurses who speak Pacific languages, translation of B4SC tools into Pacific languages and developing Pacific language B4SC resources.

Consider undertaking the B4SC slightly earlier than four years old. B4SC data indicates that, while most children are completing the B4SC before they start school, many are not completing it until close to five years old. This makes it difficult for any referrals to be initiated, let alone any intervention completed, prior to a child starting school. There is little evidence to indicate that the B4SC should not take place slightly earlier (the Centre for Community Child Health (2009) suggests three and a half years is the ideal time). Providers and parents both suggest that the B4SC should take place earlier to allow time for issues to be addressed before school entry.

Determine the role of the B4SC in supporting families and whānau to access specialist services, and establish clear processes for referral follow up. There is uncertainty among providers as to the processes for following up referrals, and how many follow ups are required. This presents a risk that referrals may slip through the cracks and children may miss out on specialist services. Similarly, it is not clear what role (if any) B4SC providers have in supporting families to progress through the initial stages of the referral process (agreeing an appointment time, attending appointments) and, subsequently, the ongoing interactions with specialist services. This also represents a potential system gap where children, particularly those in more vulnerable families, may end up missing out on interventions because of family and system-level barriers to accessing specialist services.

Clarify clinical accountabilities relating to the B4SC and ensure all DHBs have local referral pathways, formal referral review arrangements and multidisciplinary B4SC Clinical Advisory Groups. The referral rates suggest issues with provider adherence to referral protocols. The Ministry, DHBs and B4SC providers have made considerable progress in identifying and addressing causes of variation and under-referral. However, there is an ongoing need to focus on referral processes and adherence to protocols in order to achieve appropriate referral outcomes. Clinical leadership, review and accountability structures are key to improving referral processes. It will be particularly important to ensure that these structures are available and accessible to smaller Tamariki Ora providers, who do not always have the capacity to develop their clinical leadership structures.

Strengthen systems for monitoring and enhancing provider competency. A key strength of the B4SC programme is that all providers are B4SC-trained registered nurses. However, there appear to be few firm mechanisms for ensuring providers meet competency requirements, for monitoring the quality of their service delivery and for monitoring the quality and consistency of training. Enhanced quality improvement systems for monitoring and improving workforce competency will contribute to higher-quality assessment and referral decisions and reduced referral variation.

Continue to strengthen systems for monitoring and improving the effectiveness of the B4SC. The B4SC database is a great asset to the programme, enabling identification of the eligible B4SC population. However, the B4SC database is currently not integrated with any other information systems, including WCTO reporting. Integration of B4SC and WCTO databases needs to be prioritised. As a bare minimum, B4SC providers need access to a child's previous WCTO assessment and referral results.

Another important strength of the B4SC system is the Ministry's provision of regular DHB-specific quality improvement information. This information appears to have significantly increased awareness of quality improvement and, in particular, the use of referrals data to inform review of practice. The momentum of this work should be continued with introduction of the WCTO quality improvement framework.

The quality improvement framework should be used to:

- foster inter-agency discussions about WCTO (including B4SC) programme vision and results at a local, regional and national level, to create a greater sense of a multi-disciplinary team focused on population level results and not individual service delivery
- agree changes to WCTO and B4SC programme locally and regionally to enhance families/ whānau experience of the WCTO and B4SC services and to identify ways to improve service delivery that will affect positive health and wellbeing outcomes.

Continue to develop the B4SC evidence-base for New Zealand. Continue to monitor the international evidence and seek to test in the New Zealand context. Set up a technical advisory group to review evidence and make suggested recommendations to the B4SC programme.

2. Introduction

This section of the report presents an overview of the Well Child Tamariki Ora (WCTO) programme, the 2012 WCTO programme quality reviews, the quality review of the Before School Check (B4SC) and the approach to and limitations of the B4SC quality review. It finishes with an overview of the report structure.

2.1 The WCTO programme

The prenatal and early childhood period is a crucial time for laying the foundations for life-long health and wellbeing. New Zealand has not performed well in child health in international comparative studies (OECD 2009) and has significant health inequalities, particularly for Māori and Pacific children (Craig et al 2007). However, New Zealand has a strong platform of early childhood services on which to build, and a workforce committed to improving the health and wellbeing of New Zealand children and reducing inequalities.

The three cornerstones of early childhood health care services in New Zealand are primary maternity services, the WCTO programme and primary health care services. All three are interrelated and expected to promote a holistic approach, recognising the physical, social, and emotional needs of the mother, child and family/ whānau.

The role of the WCTO programme is to support and promote the healthy development of children and their families from birth to five years and is based on the principle of universal provision of services for all, with additional services according to need (Ministry of Health 2010a; Ministry of Health/DHBNZ 2011b). WCTO services are provided free of charge and encompass clinical assessment, health promotion, family/ whānau support, and interventions or referral as appropriate.

The WCTO programme interfaces with a number of other Ministry of Health ('the Ministry') work programmes that aim to improve outcomes for children and their families, such as the national immunisation programme, newborn metabolic screening, and universal newborn hearing screening. It also interfaces with agencies and services external to the health sector, such as the whānau ora initiative and a range of family support, early childhood education and early intervention services (Ministries of Education and Social Development).

Over the last ten years, the Ministry has undertaken a range of measures to improve the WCTO programme. First was the introduction of the WCTO Framework in 2002 (Ministry of Health 2002a and 2002b), designed to improve consistency in service delivery. 2007/08 saw the beginning of a major review of the WCTO programme (Ministry of Health 2010a and 2010b) and alongside this, the introduction of the comprehensive B4SC at age four.

The initial focus of the 2007/08 review related to the content of the programme. Content areas included the response to psychosocial factors (such as violence and child abuse), oral health, growth monitoring, development and behaviour screening, vision and hearing, smoking cessation, and maternal and infant mental health. Other developments included piloting of a new approach to needs assessment and care planning, and investigating how best to meet parent information needs.

The 2007/08 review process resulted in the phasing in of a range of evidence-based changes across the WCTO programme, including changes related to the timing and content of the contacts (Ministry of Health 2010a and 2010b). The current core schedule involves four contacts during the postnatal period provided by lead maternity carers, a six week check by general practice, and a further eight contacts from four to six weeks through to five years (Ministry of Health 2010c). The B4SC is the final core contact, with District Health Boards (DHBs) employing a range of different delivery mechanisms (Ministry of Health/DHBNZ 2011a). Most of the other seven contacts are provided by the Royal New Zealand Plunket Society ('Plunket'), under contract to the Ministry. Plunket WCTO service provision covers approximately 85-90% of New Zealand children. The remaining 12-15% of WCTO services are provided by 50 to 60 DHB-funded organisations, primarily Māori and Pacific health providers ('Tamariki Ora providers').

2.2 Quality review of the WCTO programme, 2012

In 2012, the Ministry built on the work undertaken in the 2007/08 review with a 'second phase' review of the WCTO programme. This second phase review focused on implementation, quality, and the way in which services were delivered.

The Ministry commissioned Litmus Ltd to undertake three concurrent reviews of components of the WCTO programme, to inform ongoing WCTO policy, delivery and quality improvement. The specific components of the programme being reviewed were:

1. the content and implementation of checks undertaken at four to six weeks (Litmus 2012a)
2. the content and implementation of the B4SC (this report)
3. the three new assessment tools introduced into the WCTO programme in 2010: the Parental Evaluation of Developmental Status (PEDS) questionnaire, updated World Health Organization (WHO) growth charts, and the 'Lift the Lip' (LTL) oral health screen (Litmus 2012b).

From the findings of these reviews, and in consultation with key WCTO stakeholders in New Zealand, an ongoing quality improvement framework and indicators for the WCTO programme were developed (Litmus 2012c).

The Ministry also commissioned a quality review focusing on validation of the Strengths and Difficulties Questionnaire (SDQ) in the New Zealand context. This third project is being conducted independently by the School of Rehabilitation and Occupation Studies, Auckland University of Technology.⁶⁵

This report provides the findings of the quality review of the B4SC.

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2.3 Quality review of the B4SC

Background

The B4SC is the eighth and final core WCTO check (Ministry of Health/DHBNZ 2011a). It was rolled out nationally in 2008 following piloting in Counties Manukau DHB and Whanganui DHB. The B4SC replaced the Well Child School New Entrant Check.

The B4SC provides a universal, comprehensive and free screening and health education opportunity for all four year old children and their families. Its objectives are to:

1. promote health and wellbeing in preschool children
2. identify any health, behavioural or developmental concerns that may adversely affect a child's ability to learn in the school environment
3. ensure appropriate and timely referrals to improve child health and education outcomes, and reduce inequalities.

The B4SC includes validated, evidence-based behavioural and developmental questionnaires, fully manualised assessments for growth, vision and hearing screening and surveillance, and collection and entry of clinical information for every child seen into a national database.

Specifically, the B4SC includes the following components:

Health education	<ul style="list-style-type: none"> ▪ advice and support for parents and caregivers about child health and development ▪ oral health promotion ▪ healthy eating and healthy action advice.
Screening	<ul style="list-style-type: none"> ▪ vision (distance visual acuity using a single optotype test) ▪ hearing (sweep audiometry followed by tympanometry, if indicated) ▪ oral health (LTL oral health check) ▪ family violence (in situations where the provider has the appropriate training and support systems) ▪ smoking cessation (in situations where the provider has the appropriate training and support systems).
Surveillance	<ul style="list-style-type: none"> ▪ height (measurement, recording and interpretation) ▪ weight (measurement, recording and interpretation).
Assessment	<ul style="list-style-type: none"> ▪ identifying developmental issues (PEDS questionnaire) ▪ identifying behavioural issues (SDQ for parents and teachers) ▪ child health questionnaire.
Informed consent	<ul style="list-style-type: none"> ▪ for B4SC ▪ for any immunisations required.
Referral	<ul style="list-style-type: none"> ▪ for immunisation if required⁶⁶ ▪ to appropriate health, education and/or social services where the B4SC has identified a need for further assessment and/or interventions.

⁶⁶ Note that some B4SC Providers give immunisations.

B4SC is available to all eligible⁶⁷ children who are four⁶⁸ years of age (Ministry of Health/DHBNZ 2011a). The B4SC service has a particular focus on the provision of B4SC to high deprivation populations and to high need Māori, Pacific and new migrant children ('priority populations'). B4SC Services are expected to contribute to the reduction of health inequalities, particularly for Māori and Pacific children and young people. B4SC providers report to DHBs against total eligible population and high deprivation (quintile 5) targets.

Purpose

The purpose of the B4SC Quality Review was to assess the content and implementation of the B4SC programme. Review findings are intended to inform the programme's ongoing delivery, development and quality improvement. A key focus of the Review is to consider B4SC effectiveness for high deprivation populations and Māori and Pacific populations.

The Review includes:

1. international and national evidence for the timing, content and delivery of a universal Well Child check undertaken at four years old
2. infrastructural factors, including contracting, workforce, clinical review and support, information management and implementation processes
3. parents' and family/ whānau experiences and perceptions of the B4SC
4. measureable outputs and outcomes⁶⁹ of the B4SC programme, including assessment and referral outcomes
5. measurable B4SC programme implementation factors, including completion rates, closure and consent rates and delivery timing
6. review of outputs, outcomes and implementation factors against a range of variables (e.g. DHB, ethnicity, deprivation) to assess differences and to determine best practice in implementing B4SC.

Appendix A2 (Litmus 2012d) provides detailed review questions.

2.4 B4SC quality review approach

A mixed method data collection process was used to inform the B4SC Quality Review. A brief summary of each of the quality review activities is provided below. Full methodological details can be found in Appendix A4 (Litmus 2012d).

- **Literature review:** The purpose was to identify evidence for the timing, content and delivery of a universal Well Child check undertaken at or around four years old. Dr Amanda D'Souza provided expert advice and guidance on the literature review.

⁶⁷ Eligibility status is applied according to Ministry of Health eligibility criteria (www.moh.govt.nz/eligibility). New Zealand and Australian citizens and permanent residents, refugees and protected persons, and holders of work visas are eligible for publicly funded health and disability services. People under 17 years of age are eligible for publicly funded health and disability services if they are in the care and control of an eligible parent or guardian. Proof of eligibility is required by health service providers.

⁶⁸ Five and six year olds who have missed out on the B4SC prior to entering the school system are eligible for hearing and vision screening, as a minimum.

⁶⁹ Note that, in this context, 'outcomes' refers to service delivery outcomes, not overall health and wellbeing outcomes.

- **Discussions with international experts:** Eight interviews were conducted. These interviews provided information about best practice models and quality improvement approaches for delivering the WCTO programme, based on international experience.
- **Discussions with New Zealand experts and key stakeholders:** Twenty-one interviews were conducted. These interviews provided information about best practice and quality improvement, and provided a deeper understanding of the WCTO programme from a diverse range of perspectives. Interviews included discussions with representatives from Plunket, The Royal New Zealand College of General Practitioners (RNZCGP), The New Zealand College of Midwives (NZCOM), Tamariki Ora providers, DHB representatives, vision and hearing representatives, and the Ministry of Health.
- **DHB stocktake and survey:** The purpose was to gather operational and infrastructural information on WCTO checks undertaken at four to six weeks, B4SC and the new assessment tools, specifically: overview of Tamariki Ora and B4SC contracts, delivery models, protocols and guidelines, processes and linkages, workforce capability and development, service delivery, information management, and key quality improvement areas. All 20 DHBs submitted stocktake and survey responses.
- **WCTO provider survey:** Targeting Tamariki Ora providers, the survey purpose was to gain an understanding of the WCTO services offered, including staff numbers and competencies, clinical governance structures, training arrangements, protocols and guidelines, information management and technology, and suggestions on quality improvements for the WCTO programme as a whole. Nineteen Māori and four Pacific Tamariki Ora providers participated, out of a potential 56; representing a 41% return rate. Ten of the providers had contracts to deliver B4SC as well as WCTO services, providing useful information for this review on the Tamariki Ora B4SC provider workforce and associated organisational structures and processes.
- **Analysis of B4SC data:** Using the Ministry's B4SC information system, analysis was undertaken of B4SC implementation factors, outputs and outcomes.
- **Case study of three DHBs:** The purpose of the case studies was to gain a deeper understanding of on-the-ground delivery of the B4SC. Three DHBs were selected to represent the three B4SC service delivery models: Taranaki DHB (DHB-led delivery), Canterbury DHB (primary care-led), and Counties Manukau DHB (Plunket-led). In each of the DHBs, interviews were undertaken with B4SC providers, including: DHB staff, Public Health Nurses (PHNs), Vision and Hearing Technicians (VHTs), Plunket and Tamariki Ora providers of B4SC, Primary Health Organisations (PHOs), General Practice teams (GPT) and B4SC Coordinators.
- **Focus groups with parents:** Eight focus groups were conducted with Māori parents (three groups), Pacific parents (two groups) and European/ Other parents (three groups) in Taranaki (two groups), Canterbury (three groups) and Counties Manukau (three groups) DHBs. Parents recruited had children who had recently completed the B4SC. At least half of the parents in each group had a child under one year old and had used a Tamariki Ora provider. The groups explored parents' expectations, views and experiences of the B4SC and its delivery.
- **Expert Advisory Group:** A sector-wide, multi-disciplinary Expert Advisory Group was set up to inform the development of a quality improvement framework for the WCTO programme. The Expert Advisory Group were updated on data collection and emerging findings from this and the other two quality reviews (Litmus 2012a and 2012c). The preliminary findings from the quality reviews were presented to the Expert Advisory Group for validation and discussion.

All quality review tools are included in Appendix A5 (Litmus, 2012d). Supplementary information on the findings of the DHB and Tamariki Ora provider surveys and stocktakes can be found in Litmus 2012e and 2012f.

2.5 Quality review limitations

The quality review team is confident that this report accurately represents the views and perceptions of participants who contributed to the B4SC Quality Review, and is supported by wider literature and data. The consistency of themes across participants and their support through the wider surveys, data and documentation, strengthens and validates the findings presented.

In considering the findings of this quality review of the B4SC, a number of limitations are acknowledged:

- The literature review undertaken was not a systematic literature review, although care was taken to ensure that systematic reviews (where they existed) were included. Although extensive searching was undertaken, Litmus cannot guarantee that all literature relevant to the reviews was identified and included in this report.
- Nineteen out of a potential 56 Tamariki Ora providers (41%) completed the stocktake and only ten of these delivered B4SC. The findings of this survey are therefore indicative and not definitive.
- Case study participants (DHB staff, PHNs, VHTs, Tamariki Ora providers, etc.) were identified by the DHBs. It is possible therefore that some wider issues may not have been identified due to sample selection bias.

2.6 Glossary of terms

For clarification, in this report the following terms have been used as follows:

- B4SC and 'the check' – Before School Check
- DHBs – District Health Boards
- ECE - Early Childhood Education
- GPs – General Practitioners
- PEDS – Parental Evaluation of Developmental Status
- PHN – Public Health Nurse
- PHO – Primary Health Organisation
- Plunket – The Royal New Zealand Plunket Society
- SDQ – Strengths and Difficulties Questionnaire
- Tamariki Ora providers - refers to Māori and Pacific provider organisations delivering WCTO and B4SC Services
- VHTs – Vision and Hearing Technicians

- WCTO programme – Well Child Tamariki Ora programme which refers to the programme as a whole, including core contacts one to seven plus additional contacts and the B4SC
- B4SC providers – all providers of the B4SC programme, including Plunket, Māori and Pacific Tamariki Ora providers, General Practice and Public Health Nurses.

2.7 Report structure

This report is divided into the following sections:

- Evidence for the B4SC
- Contracting
- Implementation processes
- Workforce
- Clinical quality
- Information management
- Parent views
- Completion and outcomes data
- Future directions

At the end of each section is a summary of key findings.

3. Evidence for the Before School Check

This section provides a brief summary of the evidence underpinning key aspects of the B4SC. Section 3.1 identifies the strong and widely accepted evidence-base for intervening early in the life course to improve health and wellbeing outcomes. Section 3.2 outlines evidence and arguments for and against universal, targeted and progressive universal approaches to child health programmes. Section 3.3 summarises arguments for undertaking Well Child checks at or around four years old. Sections 3.4 and 3.5 provide an overview of the content of checks undertaken overseas at or around four years old, and a brief summary of evidence for different components. Section 3.6 describes key barriers to access and utilisation of Well Child checks, particularly for vulnerable families. The final section (Section 3.7) provides a brief overview of expected and achieved outcomes of four year old checks, identified from New Zealand and Australian research.

3.1 Early intervention

Well Child programmes are underpinned by overwhelming evidence pointing to the impact of early life experiences and environments on future development and achievement. The first few years of life are a time of substantial and rapid brain development (Centre for Community Child Health 2009). The younger the child, the more vulnerable the brain is to environmental influences, positive and negative. Adverse experiences in the early years can be particularly damaging, shaping the development of young children's brains in ways that have long-lasting effects. Positive and appropriate caretaking environments can significantly ameliorate the adverse consequences of early challenges.

There is substantial research pointing to the value of identifying emerging problems early, and initiating intervention. Early intervention confers enormous benefits to children, families and society, by ameliorating existing problems and, in many cases, preventing them altogether (Glascoe and Marks 2011). Intervening early in the course of a condition or problem is likely to be more effective and less expensive than remediation later in life (Centre for Community Health 2009; Williams and Holmes 2004).

The Marmot Review (2010) identifies '*giving every child the best start in life*' as its highest priority recommendation. This independent review, whose goal is to propose the most effective evidence-based strategies for reducing health inequalities in England, identifies this recommendation as crucial to reducing health inequalities across the life course. The authors note that later intervention, although important, is less effective where good early foundations are lacking.

"The foundations for virtually every aspect of human development – physical, intellectual and emotional – are laid in early childhood. What happens during these early years (starting in the womb) has lifelong effects on many aspects of health and well-being - from obesity, heart disease and mental health, to educational achievement and economic status." (Marmot Review 2010 p22)

New Zealand's *Green Paper for Vulnerable Children* is underpinned by the comprehensive body of knowledge confirming the importance of a positive childhood (Ministry of Social Development 2012). In this country, the links to poor adult outcomes for those that do not have positive childhood experiences are clear. For example, children in contact with Child, Youth and Family are five times more likely to have a Corrections' sentence by age 19 or 20 years than a young person with no contact with Child, Youth and Family. The New Zealand Government has indicated its concern about the number of children who have childhoods that make it unlikely they will thrive, belong and achieve, and has sought public submissions on ideas outlined in the Green Paper on how to improve leadership for vulnerable children, policy changes, and changes to how services are delivered.

3.2 Universal, targeted and progressive approaches

Universal child health programmes seek to ensure that all children in a population can benefit from series of health checks that include screening, assessment and health education activities. Blair and Hall (2006) identify four key arguments for providing a universally available service:

1. There are some screening and health promotion procedures of established value that should be undertaken with every child.
2. Many problems of early childhood, notably developmental disorders, vision and hearing defects, are often first suspected by parents, so all parents need to know about the services and support available if they have any concerns, and how they can access these.
3. Without a universal service, it is difficult to locate and engage with all those parents who may have difficulty in accessing routine health care.
4. A service that is provided for everyone is likely to be more acceptable than one perceived as being targeted just at 'bad parents'.

The key challenge of a universal approach is how to ensure that children and families who most need support and services receive the support and services they require, and linked to this, how to reduce overall inequity between population groups, when all groups are receiving the same services.

"The recurring dilemma is the need to provide on the one hand, access to universal services for every parent and child, but on the other to increase investment and provision for families whose children are at risk of future educational and behavioural problems because of their circumstances." (Blair and Hall 2006 p733)

Starfield (2011) refers to this dynamic as 'vertical inequity'. Inequity is the presence of systematic and potentially remediable differences among population groups defined socially, economically or geographically. It is not the same as inequality, which is a much broader term and can encompass non-remediable differences. Starfield identifies that inequity can be horizontal or vertical. Horizontal inequity indicates that people with the same needs do not have access to the same resources. Vertical inequity exists when people with greater needs are not provided with greater resources.

A 'one size fits all' approach to universal services runs a particular risk of not addressing vertical inequities. A 'one size fits all' approach also assumes that the same services and delivery models are effective for all population groups. Barrett (2008 cited in Grey 2011) notes that vulnerable families are diverse and may need more than one form of service provision and support.

Selectivity through targeting is one alternative to a universal approach. The theory behind targeting is that some sections of the population are at higher risk of problems and that concentrating services on these people is a more efficient way of deploying resources (Bellman and Vijeratnam 2012). The challenge with targeting is how to ensure the right people receive the service. Bellman and Vijeratnam note that experimentation with an ‘at-risk’ register in England in the 1960s found that most children ended up on the register, negating the cost-benefit of targeting, but only about half of children with disability were identified. Targeting also presents the risk that children not on the register may be neglected.

Progressive universalism is another alternative. This is the concept of universally-accessible support and development services with enhanced access for those requiring special or targeted support. Progressive universalism is the approach used in the New Zealand WCTO programme and the United Kingdom Healthy Child Programme (UK HCP).

In New Zealand, the WCTO programme works on the principle of ‘universal provision of services for all, with additional services according to need’. This approach is supported by Hall and Elliman (2006), who argue that a child health promotion programme should be made available to the whole population, but that there should be additional resources and alternative means of providing care to ensure that socially excluded groups benefit from and participate in programmes. Hall and Elliman suggest that services should be planned to improve equity of provision and reduce inequalities in health. This includes determining what services and support each family requires and will use, and developing a ‘family services plan’ in the first year (similar to New Zealand’s Needs Assessment and Care Planning process). The UK HCP is based on Hall and Elliman’s suggested approach.

Where Hall and Elliman’s approach differs from New Zealand’s approach is their suggestion that, following development of a family services plan, a more targeted approach involving fewer ‘routine’ contacts should be adopted. In New Zealand, all eight WCTO core contacts are available to all children; additional contacts are available for children and families/whānau assessed as having higher needs.

The Marmot Review (2009) advocates progressive universalism (which the authors refer to as ‘proportionate universalism’) as a key approach to reducing health inequalities. In the authors’ opinion, actions must be proportionate to the degree of disadvantage, and hence applied in some degree to all people, rather than applied solely to the most disadvantaged. The authors argue that focusing solely on the most disadvantaged (targeting) will not reduce health inequalities sufficiently.

“To reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage. We call this proportionate universalism.” (Marmot Review 2010 p15)

A progressive universalism approach needs to be implemented with care. In the UK's HCP, 'progressive universalism' results in a selective screening programme offered to high-risk children while a basic set of screening tools is used universally, especially in the first year of life (Bellman and Vijeratnam 2012). In their review of the UK HCP, which has recently moved from a universal to a more targeted approach, Bellman and Vijeratnam question whether progressive universalism has resulted in the loss of an essential safety net. They cite research showing that, in a high-risk area of targeted intervention by Health Visitors, less than half the families with high needs were identified by the target criteria, and that most families who live in deprived areas need regular help to protect the most vulnerable children (Wright et al 2009).

"...the targeting 'safety net' gives a false sense of security and many children, who in fact need help, fall through it." (Bellman and Vijeratnam 2012 p75)

In interviews with Health Visitors working in deprived areas in Britain, Condon (2011) found that some children who would have benefited from enhanced health visiting services were offered only the core programme. Health Visitors interviewed were concerned that offering a minimal core programme placed the onus upon parents to bring health problems to the attention of relevant services and that, given the known barriers to parents accessing Well Child services (see Section 3.6), this approach could mean that children miss out on services. Health Visitors also indicated that a universal programme is an acceptable framework for monitoring children's health and wellbeing and key to gaining access to a family in a way which is acceptable to parents. There is no stigma attached to having a Health Visitor visit if everyone gets that same visit.

In the context of New Zealand's WCTO programme, a progressive universal approach presents a significant risk for high deprivation, Māori and Pacific families/ whānau. Firstly, they may not receive the additional services and resources intended for them (an issue of reach) and secondly, the generic services and delivery models may not be effective for the diversity of these families and whānau (a delivery issue).

3.3 Undertaking Well Child checks at four years old

Several overseas jurisdictions with Well Child programmes and approaches similar to New Zealand have a comprehensive Well Child check at or around four years old. This includes:

1. UK HCP: School Entry Review
2. United States (US) Bright Futures programme: four year old visit
3. Australia: Healthy Kids Check (HKC) undertaken nationally at four years old
4. Victoria (Australia) Mothers and Healthy Babies Programme: three and a half year check
5. Northern Territory (Australia) Healthy Under Fives: four year old visit.

In addition, Child Health Services in Western Australia offer a health and development assessment to three year olds and New South Wales Health offers free vision screening to all four year old children. A project has also been undertaken in Australia to determine the feasibility of implementing and administering a national universal check (at one point between the ages of 18 months and three years) that could serve the purposes of early detection and monitoring, population monitoring and data collection, and health promotion and parent information (Centre for Community Child Health 2009).

This literature review did not identify any studies demonstrating that a Well Child check undertaken at or around four years old is particularly (as distinct from Well Child checks at other ages) associated with improved health and educational outcomes. It did, however, identify a number of strong arguments in support of a health and development assessment undertaken at this time, as well as arguments against.

A universal, comprehensive health and development assessment at or around four years old can offer the following benefits:

1. *An assessment at or around four years old can act as a 'safety net'* (Hall and Elliman 2006), providing an opportunity to:
 - Identify any physical, developmental or emotional problems that have previously been missed or not treated, and initiate relevant intervention.
 - Ensure all children entering school have received an appropriate programme of preventive health care and deal with any omissions (e.g. immunisations).
 - Ensure all children are engaged with primary health care and dental care. Although most children with serious disability are identified in preschool years, some problems remain undetected or untreated prior to school entry. This may be due to incomplete coverage of preschool surveillance, particularly among vulnerable populations, or because of parental reluctance to progress offers of referral or intervention. It may also be because some problems, particularly emotional and behavioural, are not evident in younger children (see (2) below).
2. *An assessment at or around four years old may provide opportunity to identify disorders that only become apparent as a child gets older.* The Centre for Community Child Health (2009) notes that, while significant developmental delay and serious health problems are usually detected in the first year or two of life, more subtle problems, especially relating to development and behaviour, are often not evident until the toddler and kindergarten/preschool years.
3. *An assessment undertaken after three years is likely to result in more accurate assessments and appropriate referrals than earlier checks.* The Centre for Community Health (2009) advises that the optimal time to undertake a one-off, universal child health and development check is around (but not prior to) the third birthday. They note that:
 - Prior to three years there are many problems that are difficult to sort out due to a broad range of what could be considered 'normal' development, leading to an unsustainable rate of referrals.
 - Beyond three years of age there is increased reliability and validity of the various measures used to assess the domains of child health and development
 - The most effective measures for identifying problems with language and behaviour are for children aged over three years.
4. *An assessment at or around four years old can be an opportunity to connect families to school health services* and provide information to parents about specific health issues for school-age children (e.g. nutrition, exercise and activity, dental care) (Hall and Elliman 2006).

The key argument against undertaking a universal check at or around four years of age relates to yield. Some commentators argue that an effective, universal Well Child programme should have picked up most health and development issues by the time a child is four years old. In Hall and Ellimans' (2006) view, the benefits of any form of universal health appraisal at school entry, for children who have had access to and made use of primary health care in the preschool years, and have been to preschool facilities where any serious developmental problems are likely to have been detected, are probably small in relation to the cost. They believe that screening for previously overlooked physical disorders at four to five years old does not fulfil the criteria for screening programmes (prevalence, clinical significance, yield, benefits of detection and treatment) that would justify offering every apparently healthy child a full physical examination at school entry. The exceptions to this are screening for growth disorders and hearing and vision problems (included in the UK HCP on Hall and Ellimans' recommendation).

This argument begs the question – what about those children who are not engaged with primary care or the Well Child programme, and their health and development issues have not been identified by the time they start school? In this context, the 'safety net' argument in support of a four year old check is key. A check at four years old can provide an opportunity to identify problems that have been missed or not treated in the preschool years, and initiate intervention prior to school. This is important for children in vulnerable families, who are more likely to have missed earlier WCTO contacts.

3.4 Content of a four year old check

The literature review did not identify strong evidence for the effectiveness of the checks included in the B4SC. It did, however, reveal some key content commonalities across New Zealand, UK, US and Australian Well Child checks undertaken at or around four years old (summarised in Table 1):

1. all checks measure height and weight
2. most include vision and hearing screening
3. New Zealand and Australian checks include oral health assessment, with a preference for the LTL tool
4. almost all checks have some element of oral health promotion
5. several checks include a developmental assessment, with a New Zealand and Australian preference for use of the PEDS tool.

Further details on the content and delivery of the UK School Entry Review, US Bright Futures four year old check, Australian HKC and proposed Australian one-off check, are provided in Annex 1. A brief summary of evidence for key components of the B4SC is provided in Section 3.5.

Table 28: Content of proposed and actual Well Child checks undertaken at or around four years old

B4SC component	B4SC (NZ)	School Entry Review (UK)	Bright Futures (US)	HKC (Aust)	Mothers and Babies (Vic, AU)	Scoping for universal 3yr check (Aust)	Evidence-based assessments for primary care (Aust)
Vision screening	√ Optotype test	√ Orthoptist-led	√	√	√		√
Hearing testing	√ Sweep test	√ Sweep test	√ Audiometry	√			√
Oral health assessment	√ Lift the Lip			√ Lift the Lip	√	√ Lift the Lip	√ Lift the Lip
Growth / height and weight measurements	√	√	√	√	√	√	√
Developmental issues	√ PEDS		√		√ PEDS	√ PEDS	√ PEDS
Behavioural issues	√ SDQ					√ SDQ	
Immunisations (review / provide)	√	√	√				
Family violence screening	√ Where qualified	√ Alert to signs			√		
Smoking cessation advice	√ Where qualified						√
Oral health promotion	√	√ Access to dental care		√		√	√
Injury prevention	√				√		√

B4SC component	B4SC (NZ)	School Entry Review (UK)	Bright Futures (US)	HKC (Aust)	Mothers and Babies (Vic, AU)	Scoping for universal 3yr check (Aust)	Evidence-based assessments for primary care (Aust)
Healthy eating and physical activity advice	√				√	√	√
General health	√ Child Health Questionnaire				√	√	
Advice for parents	√	√			√		

The content of the checks in Table 1 reflect a shift in emphasis, in recent times, from a focus on detection to prevention of developmental problems. Blair and Hall (2006) describe how developmental screening and examination procedures were introduced in an era when there was little public and professional awareness of childhood disability and children at risk of disability were not effectively identified or monitored. Nowadays disabling conditions such as cerebral palsy, severe visual impairment, and classical autism, are better understood and more likely to be recognised at an earlier stage; routine developmental examinations make little contribution to their identification. In contrast, speech and language issues, learning difficulties, and emotional and behavioural disorders, are more prevalent than the above disabling conditions.

There has also been an epidemiological shift in most developed countries from acute infectious diseases towards chronic illness, reinforcing the emphasis on prevention and health promotion. The American Academy of Pediatrics (1982) calls this shift the 'new morbidity', whereby chronic illness and disability and behavioural issues are the major conditions now facing children and families. The introduction of the B4SC in New Zealand reflected an increasing recognition of the 'new morbidity' for children (Tuohy 2010).

In New Zealand, however, not all children and population groups have made the shift away from acute infectious diseases. Baker et al (2012) found that infectious diseases made the largest contribution to all New Zealand hospital admissions in the period 1989 to 2008, their contribution had increased in the latter years, and there were clear ethnic and social inequalities in infectious disease risk - Māori and Pacific peoples and people in the most deprived areas were more than twice as likely as European/ Other and people in least deprived areas to be admitted to hospital for infectious disease. Further, these inequalities have increased substantially in the past 20 years, particularly for Māori and Pacific peoples in the most deprived quintile.

In the period 2000 to 2009, Milne et al (2012) found that incidence rates of acute rheumatic fever among Māori and Pacific children aged between five and 14 years were 40 and 81 cases per 100,000 respectively, compared with two cases per 100,000 for non-Māori /non-Pacific children in this age bracket. Māori and Pacific incidence rates increased by 79% and 73% between 1993 and 2009, while non-Māori/Pacific rates declined by 71%. Māori and Pacific children comprised 30% of children aged five to 14 years of age overall, but accounted for 95% of new acute rheumatic fever cases. Almost 90% of cases were in the highest five deciles of socioeconomic deprivation and 70% were in the most deprived quintile.

This evidence raises the question of whether New Zealand's WCTO programme, with its focus on prevention and health promotion, is adequately set up to address the acute health issues that continue to face our most vulnerable children. The WCTO programme must have the capacity and capability to detect and respond to both the old and the new morbidities. The Needs Assessment process and anticipatory guidance are key mechanisms by which providers can assess socioeconomic and psychosocial need, provide advice on broader health and wellbeing issues, and refer to health and social support agencies. No evidence of the implementation and effectiveness of the Needs Assessment and Care Planning process was identified through this review.

3.5 Evidence for B4SC components

The variation in content of checks undertaken at or around four years old, evident in Table 1 above, reflects the variation in the strength of evidence for different components. While it was outside of the scope of this quality review to undertake a comprehensive review of evidence for each component of the B4SC, a brief evidence summary is provided.

Vision screening

Vision impairment in children ranges from those whose conditions are classified as 'mild' through to blindness (JR McKenzie Trust 2008). Refractive errors such as myopia (short sightedness), hyperopia (long sightedness), and astigmatism (non spherical cornea) are the most common cause of mild and moderate vision impairment.

New Zealand data on the prevalence and types of vision impairment in children is very limited. A review of evidence for changes in policy relevant to children with mild and moderate vision impairment (the *See Here* review), estimated that around 10 to 20% of New Zealand children are affected by vision impairment (JR McKenzie Trust 2008).

Screening to identify vision problems in New Zealand children is largely conducted through the National Vision Hearing Screening Programme (Ministry of Health 2009). Screening occurs in schools and preschools at four (B4SC), five and 11 years of age. Vision screening identifies children with deficits in distance vision, amblyopia (lazy eye) and squint – all part of the WCTO Schedule. No screening for near vision is conducted as part of the Schedule. The majority of vision and hearing screening is conducted by VHTs. VHTs are employed by DHBs and complete a National Certificate in Health, Disability, and Aged Support (Vision Hearing Screening) through CareerForce (2010).

There is limited evidence of the efficacy of preschool vision screening programmes for improving outcomes (Alexander and Mazza 2010a; Chou et al 2011; Mathers et al 2010). In a recent literature search and review of studies pertaining to screening, diagnosis and treatment of visual impairment in children one to five years of age, Chou et al (2011) found that direct evidence of the effectiveness of preschool vision screening for improving visual acuity or other clinical outcomes is limited, and does not adequately address whether screening is more effective than no screening. The authors found indirect evidence that:

1. a number of screening tests have utility for identification of preschool aged children with vision problems
2. diagnostic accuracy does not clearly differ for children stratified according to age, although testability rates were generally lower in children one to three years of age
3. treatments for amblyopia or unilateral refractive error were associated with mild improvements in visual acuity compared with no treatment.

Chou et al (2011) did not find any studies that evaluated preschool vision screening in relation to school performance or other functional outcomes.

In a literature review on the effectiveness of vision screening programmes in children aged 16 years and under, Mathers et al (2010) also found that screening and early treatment among children aged 18 months to five years led to improved visual outcomes (the benefit was primarily through treatment of amblyopia). However, the overall quality of the evidence was low. Further, the implication of improved visual acuity (e.g. any potential impact on quality of life) was not considered. The authors state that, without consideration of 'quality of life' values, such as loss of vision in one eye or possibility of future bilateral vision loss, the cost-effectiveness of screening is questionable. Mathers et al also found that screening and treating children with uncorrected refractive error can improve educational outcomes.

The *See Here* review found a mixed picture with regard to educational and school outcomes (JR McKenzie Trust 2008). The review identified evidence that some types of vision problems contribute to less than expected levels of educational attainment or school performance in some children. The review also found that some vision problems, especially myopia, appear to be associated with average or above average educational attainment. Studies into the relationship between vision problems and performance in non-learning areas (such as sport or self esteem) suggest reduced outcomes may be more likely for some vision impaired children, although the authors note that the picture is complex.

Despite the limited evidence for efficacy, preschool vision screening is undertaken in New Zealand and overseas (Ministry of Health 2010b). As noted previously, Hall and Elliman (2006) believe that screening for vision problems is one of the few physical disorders that does fulfil the criteria for screening programmes (when reviewed in relation to prevalence, clinical significance, likely screening yield, and benefits of detection and treatment). Evidence suggests that screening should occur in the preschool years (Mathers et al 2010). Orthoptists are favoured as screening personnel; however, nurses can achieve high sensitivity and specificity with appropriate training (ibid).

The efficacy of New Zealand's National Vision Hearing Screening Programme has never been assessed (JR McKenzie Trust 2008). That is, information on the proportion of children identified correctly as a result of this programme, and whether these children get the help they need to improve outcomes, has never been collected nationally.

The *See Here* review (JR McKenzie Trust 2008) noted substantial variation in vision screening coverage, as well as variation in delivery of vision screening and vision screening practice across DHBs. It also highlighted the need for national monitoring and evaluation of vision screening and the need for monitoring of individual screener practice. Its recommendations included that:

1. Appropriate data (including through the B4SC database) be collected from vision screening in order to conduct a comprehensive review of the efficacy, costs and benefits of such screening.
2. Should screening be continued based on the above efficacy assessment, a robust process for regular review of evidence relating to vision screening be developed and this process should inform changes in screening protocols and practice and improve understanding of vision impairment among New Zealand children.
3. Processes be put in place to ensure families of children at risk of not receiving the B4SC are aware of what to do should they suspect their child may have a vision impairment, and vision screening service should be provided to all five year olds who do not receive vision screening as part of their B4SC (this latter consideration is provided for within the B4SC programme).

This literature review did not identify any studies assessing the effectiveness (reach and outcomes) of preschool or four year old vision screening for vulnerable populations. The *See Here* review (published before the B4SC had been introduced) did however note that B4SC vision screening had the potential to increase inequalities if coverage was inadequate (JR McKenzie Trust 2008).

Hearing testing

The prevalence of short-term hearing loss in preschoolers varies considerably by socioeconomic situation, but has been estimated at 15%; long-term hearing loss has been estimated at 3% prevalence (Ministry of Health 2008a). There are two types of hearing loss: sensorineural hearing loss and conductive hearing loss.

- **Sensorineural hearing loss:** An estimated 60 percent of sensorineural hearing loss has a genetic basis (Ministry of Health 2008a). Newborn hearing screening programmes, such as New Zealand's Universal Newborn Screening and Early Intervention Programme, should identify many of those children with congenital hearing loss in the neonatal period. The remainder should be identified via Well Child checks in early childhood.

Audiometry screening at four years old (via the B4SC) is an important part of the follow-up for New Zealand's newborn hearing screening programme (Ministry of Health 2008a). Research in the United Kingdom found that just under 20% of permanent bilateral or unilateral hearing impairments remained to be identified at the UK's School Entry Review (Bamford et al 2007).

- **Conductive hearing loss:** The most common cause of conductive hearing loss is otitis media with effusion (OME or glue ear). It is estimated that 80% of children develop OME during their first year of life and 100% will have had at least one episode by three years of age, with an indication of higher prevalence among Māori and Pacific children (Ministry of Health 2010a). Not all children with OME suffer clinically significant hearing loss.

Universal screening for OME is not well supported by the evidence (Alexander and Mazza 2010a; NZHTA 1998). Current research and opinion indicates that, for most children, OME is not associated with significant learning problems, delays in speech acquisition or behavioural difficulties (Ministry of Health 2010b). However, children with existing difficulties or risk factors for speech language or learning problems (e.g. suspected or diagnosed speech and language delay, autism spectrum disorder, blindness, cleft palate) should undergo OME screening.

This literature review did not identify any studies assessing the effectiveness (reach and outcomes) of preschool or four year old hearing screening for vulnerable populations.

Oral health screening and promotion

The WCTO programme supports a broad understanding of oral health. LTL, an oral health screen to identify early signs of visible decay in children's teeth, is delivered in conjunction with oral health promotion and encouraging enrolment with the Community Oral Health Service.

Inclusion of LTL and oral health promotion in the WCTO programme reflects the high prevalence of dental disease in New Zealand children and substantial oral health inequalities, as well as the belief that oral health promotion plays an important role in early intervention and prevention of oral health disease (Litmus 2012c). By the time New Zealand children reach five years of age, just over half (57%) are decay free. Māori and Pacific children living in the most deprived areas experience the greatest oral health inequalities (Ministry of Health 2010d). Māori and Pacific children are less likely to have decay-free primary teeth, less likely to brush their teeth regularly with fluoride toothpaste, less likely to access oral health care, and more likely to have untreated dental needs. Children living in the most deprived areas are less likely to brush their teeth with fluoride toothpaste and are more likely to have more missing primary teeth, than those in the least deprived areas.

There is little evidence that the provision of information on dental oral health improves oral health outputs and outcomes. An Australian systematic review found no evidence that information on dental oral health, on its own, is sufficient to impact on dental behaviour (Satur et al 2010). However, there is evidence of the effectiveness of preventative interventions (such as reduced consumption of sugar, tooth-brushing with fluoride toothpaste, and regular dental examinations) to prevent dental disease (Hall et al 2009; Satur et al 2010). There is also evidence that the earlier preventative interventions are introduced, the more likely they are to establish good oral health practice in children (Savage et al 2004 as cited in Olley et al 2011).

There are significant gaps in the evidence-base for the use and effectiveness of LTL as an oral health assessment to identify early dental caries. However, LTL may be a useful interactive tool to couple with oral health promotion. Further, the high prevalence of dental disease in New Zealand children and the associated inequalities, coupled with evidence for effectiveness of preventative interventions, provides a strong rationale for including an oral health assessment such as LTL in the B4SC.

Further research is needed to assess whether LTL is an effective screening tool for identifying dental caries and whether greater referrals equates to greater attendance at a dental service and improved oral health outcomes (Litmus 2012c). The Ministry is currently analysing the impact of the identification of dental caries from LTL, by investigating any changes in the rates of identification of dental caries of children at school age.

See Litmus (2012c) for further information on LTL and its implementation in the WCTO programme.

Growth surveillance

Growth measurements are included in the WCTO programme for three key reasons:

1. to enable identification (and if appropriate, referral) of children with unrecognised growth problems
2. to monitor changes in the height, weight and Body Mass Index (BMI) of New Zealand children
3. to inform public policy and planning.

Stand-alone measures of height and weight do not confer health benefits for preschool children in screening programmes, but are useful when translated into measures of BMI and tracked over time (Alexander and Mazza 2010a).

The prevalence of obesity is increasing in New Zealand and preventive and management strategies are needed to halt and then reverse the increase (Ministry of Health 2008a). The 2006/07 Health Survey found that one in twelve children (aged between two and 14 years) were obese (8.3%), one in five children were overweight (20.9%), and Māori and Pacific children were significantly more likely to be obese than children in the total population (two and a half and one and a half times more likely, respectively) (Ministry of Health 2008b).

Part of the Ministry of Health's strategy to prevent and manage the rise in obesity, and the associated health issues, is population monitoring. BMI is used in the WCTO programme for population monitoring purposes and to initiate a referral pathway for children who are extremely overweight. BMI is considered the best measure of obesity for community and public health use (Hall et al 2009; Hall & Elliman 2006), and is recommended by the World Health Organization (WHO) and the UK Department of Health for determining overweight and obesity.

BMI is plotted on WHO growth charts. These growth charts are recommended for use worldwide and many countries have adopted them, including the UK and the US (Litmus 2012c). WHO growth charts are considered an applicable measure of optimal growth for children worldwide as healthy breastfed babies have very similar growth patterns and rates no matter what ethnicity (WHO 2009). The Ministry reiterates that WHO growth charts are relevant for Māori and Pacific children, stating that while Pacific children are often slightly bigger, they are within the normal range on the WHO growth charts (Ministry of Health 2010e; WHO 2009).

The main concern in growth monitoring is the risk of causing unnecessary harm. A Cochrane review (Papanich and Garner 2009) found very little information on the harms of growth monitoring, and concluded that the lack of evidence is possibly because growth monitoring does not intrinsically seem harmful. However, there is potential for harm from growth monitoring, for example:

- growth issues, or the possibility they may be detected, can cause parental anxiety (Hall & Elliman 2006)
- inappropriate delivery of growth messages to parents may have implications for the parents' on-going relationship with the provider, or their willingness to action interventions (Papanich and Garner 2009)
- unnecessary referrals for interventions are a risk due to inaccurate measures taken by providers (Hall, Williams and Elliman 2009)
- growth measures are subject to bias from the person taking the measurements (Hall and Elliman 2006).

See Litmus (2012c) for further information on growth monitoring and implementation of the WHO growth charts in the WCTO programme.

Assessment of developmental and behavioural issues

Children often reach primary school with undetected or untreated developmental or behavioural problems. As identified previously, some issues are not evident until children are three or older and some are simply undetected (Section 3.3). The American Academy of Pediatrics (2006) notes that current detection rates of developmental disorders are lower than their actual prevalence, which suggests there are ongoing challenges to early identification of children with developmental disorders.

There is evidence that early identification and intervention can improve developmental and other social and health outcomes (Centre for Community Child Health 2002). The link between early developmental delay and later school learning difficulties is well established (Nelson 2000, and Shonkoff and Phillips 2000, cited in Ministry of Health 2010b). Early language delays are associated with both difficulties in school and poor behavioural and social outcomes in adolescence and adulthood (Stothard et al 1998, cited in Ministry of Health 2010a).

Developmental surveillance is the process of recognising children who may be at risk of developmental delays (American Academy of Pediatrics 2006). **Developmental screening** is the use of standardised tools to identify children at risk of developmental disorder; it does not result in diagnosis or treatment plan but identifies areas in which a child's development differs from same-age norms. Developmental screening and surveillance is recommended by the American Academy of Pediatrics (2006) for every Well Child visit and is included in the US Bright Futures Well Child care guidelines (Brothers, Glascoe and Robertshaw 2008; Schonwald 2009).

There is no universally accepted developmental screening tool appropriate for all populations and ages (American Academy of Pediatrics 2006). Tools should be reliable and valid, with good sensitivity and specificity.

Parental Evaluation of Developmental Status (PEDS)

PEDS, a validated tool for the early identification of developmental delays and behavioural issues in children from birth to eight years, is used in Australia and recommended by the Centre for Community Child Health (2009) for inclusion in a three-year-old universal health check. PEDS uses a family-centred approach to detect developmental delays and establish a pathway for early intervention. It is not recommended in the UK as it does not meet the UK criteria for screening tests. However, providers can use validated developmental screening tools, such as PEDS, as a resource to support their professional judgement in assessing development and behavioural concerns (Department of Health 2009).

PEDS was introduced into the WCTO programme after the 2007/08 review. In the WCTO programme, PEDS is used as a tool for surveillance of developmental and behavioural issues, and as a method to engage with, and respond to, parents' concerns (Litmus 2012c). PEDS is not a diagnostic tool and it is not a one-off screen for developmental delays.

PEDS is as accurate and effective as other, professionally administered, developmental assessment tools, with similar levels of sensitivity and specificity (Armstrong and Goldfeld 2004). A review of evidence for the effectiveness of PEDS found that PEDS meets the gold standard for sensitivity and specificity (Wagner, Jenkins and Smith 2006) and studies on the implementation of PEDS have reported evidence to suggest that PEDS is identifying children with developmental or behavioural issues (Davies and Feeney 2009; Schonwald 2009).

There is minimal information on the impact PEDS has on referral rates, access to services when a need is identified, and the implications for child health outcomes. Further research is required to assess whether identification rates will equate to improved health outcomes and child wellbeing.

International studies of parents' experiences have found that parents generally have positive experiences using PEDS (Coghlan, Kiing and Wake 2003; Davies and Feeney 2009). PEDS is generally well-received, the questionnaire is considered easy to complete and parents feel involved in the check. Studies show that the conversations providers have with parents are important.

Studies have also identified several challenges to parental involvement in PEDS, including:

- *Parental education requirements:* Parents with low education levels may experience difficulties in completing PEDS (Armstrong and Goldfeld 2004; Coghlan, Kiing and Wake 2003).
- *Parental language requirements:* Evaluation of the New Zealand B4SC pilot programme recommended that WCTO providers deliver PEDS face-to-face to address issues with parents' ability to read, understand and correctly interpret the PEDS questionnaire, particularly for parents where English is an additional language (CBG 2007).
- *Parental/ caregiver attendance at Well Child contacts:* Children coming to Well Child appointments without a caregiver who knows the child creates difficulties for providers in getting the questionnaire completed and having conversations about the child's development (Schonwald 2009).
- *Perceived legitimacy of the tool:* Parents with tertiary education level are less likely than other parents to view PEDS as a helpful tool (Armstrong and Goldfeld 2004;

Coghlan, Kiing and Wake 2003). This may suggest that highly educated parents do not see PEDS as a legitimate tool for assessment.

There is minimal evidence assessing potential implications of PEDS for health equity issues in a New Zealand or international context. One study by Cox (2010) found a potential cultural difference in how parents respond to the PEDS questionnaire. In Australia's Northern Territory, PEDS is not used due to significant and fundamental differences in parenting approaches between remote Aboriginal parents, and non-Aboriginal parents (Northern Territory Department of Health and Families and the Charles Darwin University 2009). This difference is seen as potentially impacting on the reliability of PEDS. It is possible that there are similar cultural considerations that need to be addressed when using PEDS in the New Zealand context. Further research is needed into the use of PEDS with Māori and Pacific, to ensure the use of PEDS does not increase health inequalities in New Zealand.

See Litmus (2012c) for further information on PEDS and its implementation in the WCTO programme.

Strengths and Difficulties Questionnaire (SDQ)

The SDQ focuses on whether a child has difficulty with emotions, concentration, behaviour or getting along with others (Ministry of Health 2008a). It is designed to assess three to 16-year-olds and has different versions, depending on the age of the child and whether a parent or teacher is to complete the questionnaire.

The SDQ is still being evaluated for predictive validity, reliability, sensitivity and specificity.⁷⁰ However, it is seen to contain good principles for considering a child's strengths as well as any areas of difficulty (Ministry of Health 2010b). The questionnaire, which is behavioural in focus, reflects current academic thought about risk and resilience and the impact this has on a child's development and learning (Allen and Clarke 2005).

Immunisation

Childhood immunisation is one of the most cost-effective activities in health care.

Every country in the world has a national immunisation programme and these programmes have had a significant impact on childhood diseases (Andre 2001).

Immunisation coverage in New Zealand has improved markedly in recent years

(Turner 2012). In 1991, less than 60% of children were fully immunised by two years of age, including only 42% of Māori children and 45% of Pacific children. By June 2011, rates of immunisation for those at two years of age were over 90%. Furthermore, the equity gap has been closing, with Māori rates in June 2011 at 88% and Pacific rates at 94%. The gap between the lowest and highest socioeconomic deciles had reduced to 4% in June 2011.

A number of factors are seen to have played a role in New Zealand's progress in immunisation coverage (Turner 2012). These factors include: prioritising immunisation at the national and district levels, having the right tools to measure coverage, public reporting and feedback loops, and provider systems that effectively enrol infants at birth, enable engagement, precall, audit and create prioritisation of immunisation at all visits. Reflecting the key role of providers in achieving good immunisation coverage, B4SC providers are

⁷⁰ Auckland University of Technology, School of Rehabilitation and Occupation Studies (underway). Validation of the Strengths and Difficulties Questionnaire (SDQ) in the New Zealand context.

required to provide immunisation or referral for immunisation as part of the B4SC (MOH/DHBNZ 2011).

Family violence screening

Family violence is a problem affecting families from all cultures, classes, backgrounds and socio-economic circumstances (Ministry of Social Development 2002). Children who experience violence in families/ whānau are more likely than children who have not experienced any form of family violence to develop severe cognitive and behavioural problems, become violent as an adolescent and continue the cycle of violence. Māori are significantly over-represented as both victims and perpetrators of violence in families/ whānau.

The New Zealand Family Violence Prevention Strategy confirms the importance of identifying family violence early and intervening immediately. The Ministry of Health's Family Violence Intervention Guidelines (2002c) do not support screening for child abuse, because high false positive rates and risk of inappropriately labelling the caregiver as a child abuser mean that the possible harms associated with screening outweigh the benefits. The Guidelines do support asking women about family violence when they present for health care. In this context, B4SC Service Specifications identify family violence screening as a component of the B4SC, to be provided in situations where the provider has the appropriate training and support systems (MOH/DHBNZ 2011). However, this is not currently a routine component of the B4SC.

The US Preventive Services Task Force (USPSTF) found insufficient evidence to recommend for or against routine screening of parents or guardians for the physical abuse or neglect of children, of women for intimate partner violence, or of older adults or their caregivers (US Preventive Services Task Force 2004). The USPSTF found no direct evidence that screening for family and intimate partner violence leads to decreased disability or premature death. The USPSTF found no existing studies that determine the accuracy of screening tools for identifying family and intimate partner violence among children, women, or older adults in the general population. The USPSTF found fair to good evidence that interventions reduce harm to children when child abuse or neglect has been assessed. The USPSTF found limited evidence as to whether interventions reduce harm to women, and no studies that examined the effectiveness of interventions in older adults. No studies have directly addressed the harms of screening and interventions for family and intimate partner violence. As a result, the USPSTF could not determine the balance between the benefits and harms of screening for family and intimate partner violence among children, women, or older adults.

The Canadian Task Force on Preventive Health Care (CTFPHC) also recommends that screening procedures aimed at identifying individuals at risk for experiencing or committing child maltreatment should be excluded from the periodic health examination (MacMillan 2000).

Smoking cessation screening

Around one in five (20%) New Zealand adults currently smoke (Ministry of Health, 2008b). Smoking prevalence is higher among Māori, Pacific peoples and people living in the most deprived neighbourhoods.

The New Zealand Smoking Cessation Guidelines provide recommendations for the use of evidence-based interventions in priority population groups (Ministry of Health, 2007a). The Guidelines are based on a comprehensive literature review that summarises recent national and international evidence on best practice in smoking cessation. The Guidelines advise that health care workers should:

- give brief advice to stop smoking to all people who smoke, regardless of whether they say they are ready to stop smoking or not
- provide evidence-based cessation support for people who express a desire to stop smoking
- recommend smoking cessation treatments of proven effectiveness to people interested in stopping smoking.

In this context, B4SC Service Specifications identify smoking cessation screening as a component of the B4SC, to be provided in situations where the provider has the appropriate training and support systems (MOH/DHBNZ 2011).

Consistent with New Zealand Guidelines, the USPSTF recommends that clinicians ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products (US Preventive Services Task Force 2009). In non-pregnant adults, the USPSTF found convincing evidence that smoking cessation interventions, including brief behavioural counselling and pharmacotherapy delivered in primary care settings, are effective in increasing the proportion of smokers who successfully quit and remain abstinent for one year. Although less effective than longer interventions, even minimal interventions (less than three minutes) have been found to increase quit rates.

Injury prevention

Injuries are among the leading causes of morbidity and mortality in New Zealand children (Kypri et al 2000, 2001 and 2002), with children under five years of age carrying a particularly heavy burden. In 2001, 23% of New Zealand's 0 to 14-year-olds were less than five years of age, yet 52% of deaths and 35% of hospitalisation from injury occurred in this age group (Gulliver et al 2005). For preschool age children, falls, unintentional poisoning, burns and scalds and injuries arising from 'inanimate forces' (e.g. being struck by objects or bumping into things) are all common causes of hospital admission, with children one to three years being particularly vulnerable to a number of these causes (University of Otago 2010). For mortality, suffocation and drowning are of particular concern (among non-transport injuries). The risk of injury has been found to be higher for those from more disadvantaged socioeconomic backgrounds, those with younger mothers, those from large families, and amongst boys (Kendrick et al 2007; Shaw et al 2005).

There is evidence that injury prevention anticipatory guidance can change parent behaviours. A 2010 Cochrane review (Kendrick et al 2007) found that home safety education was effective at increasing the proportion of families who had safe hot water temperatures, functional smoke alarms, medications and cleaning products stored out of reach, IPECAC and poisons centre number accessible, fixed stair gates, socket covers, and sharp objects stored out of reach.

In addition, the European Child Safety Alliance (2006) found parental knowledge to be an effective injury prevention strategy in the following areas:

- child passenger safety – use of restraints and seat belts
- child cyclist safety – use of helmets
- child fall prevention – window safety mechanisms and stair gates
- prevention of burns and scalds in children – child resistant lights and self-extinguishing cigarettes.

There is no strong evidence that injury prevention anticipatory guidance improves injury outcomes among children. The Cochrane review (2007) found no evidence that home safety education reduced rates of thermal injuries, poisoning, or the range of injuries. There was also no consistent evidence that interventions were less effective in families whose children are commonly believed to be at greater risk of injury, such as single-parent families.

3.6 Barriers to access and utilisation of Well Child checks

There is substantial evidence of barriers to access and utilisation of child health services, particularly as experienced by vulnerable populations. In the US, it has been estimated that fewer than half of children and adolescents receive all recommended Well Child visits (Chung et al 2006). US children from racial/ethnic minorities are more likely to have poorer health services utilisation and to experience access barriers than children from ethnic majorities (Newacheck et al 2002, cited in Ou et al 2011). In Australia, indigenous and non-English speaking background (NESB) infants are significantly less likely than English speaking background (ESB) infants to use a range of health services, and more likely to experience access difficulties (Ou et al 2011).

Vulnerable populations may experience particular access barriers in relation to specialist services. In a discussion of inequity in health care, Starfield (2011) notes that vulnerable populations tend to have less access to specialist services than their needs require, representing vertical inequity.

In the New Zealand context, the Fit 4 School⁷¹ programme reached 39% of its target eligible population (four year olds) (Lake Taupo PHO 2007). Participation was lower among Māori and Pacific children (23% compared with 51% for European/ Other children) and among children from the most disadvantaged areas (31% compared with 42% in other areas). Early evaluation of the B4SC programme in the Hawke's Bay also found lower programme participation for children in more deprived areas (quintile 5) (Wills et al 2010).

⁷¹ The Fit 4 School programme was a predecessor of the B4SC and provided in some parts of New Zealand. Including parts of Waikato. It was also provided in the Taupo area (Lake Taupo PHO 2007). Like the B4SC, it aimed to provide a comprehensive health and development check for every four year old child.

Studies have identified a range of barriers to families accessing quality Well Child checks. In a systematic review of articles related to childhood preventive care published from 1994 through 2003, Chung et al (2006) identified a number of barriers to receipt of high-quality preventive care:

- **Cost barriers** (in the US, this tends to relate to insurance coverage; Chung et al,2006).
- **Continuity with a clinician or place of care:** Chung et al (2006) defines continuity as a long-term relationship between a patient and provider, generally a specific clinician but sometimes just a specific place of care. US studies have found that continuity with a provider or clinician increases the likelihood of children and families participating in Well Child visits and receiving anticipatory guidance. Vulnerable families (in this US study these were publicly insured, Hispanic and non-English speaking families) have less continuity of relationship than others.
- **Clinician awareness or skill:** Studies have found that clinicians' awareness of the importance of surveillance and guidance and their skill in providing these services are essential to quality preventive care (Chung et al 2006).
- **Racial/ethnic barriers:** Findings are mixed on racial/ethnic barriers (Chung et al 2006). In one US study, African American and Hispanic children were less likely than white non-Hispanic children to meet Well Child visit recommendations. In another US study the opposite was true.
- **Language-related barriers:** Some studies indicate that parents or patients with limited English proficiency may experience disparities in screening (Chung et al 2006).
- **Lack of time:** Longer visit times are associated not only with increased developmental or psychosocial surveillance and anticipatory guidance but also with parent satisfaction (Chung et al 2006). A US survey found that nearly half of primary-care pediatricians expressed concern about having enough time to undertake preventive counselling. (Cheng et al 1999, cited in Chung et al 2006). Nurses delivering the Fit 4 School check in Taupo also noted that their capacity to undertake checks was a barrier to achieving high participation in the programme (Lake Taupo PHO 2007).

Ou et al (2011) found key barriers to service access for Indigenous and NESB children in Australia included cost, transport problems, child care difficulties, service availability, waiting times and family reasons. Service operating hours were identified as a barrier to service access for ESB children.

New Zealand evaluations have identified the importance of WCTO nurses' community networks and relationships with families for enhancing service access and utilisation. Evaluation of the Hawke's Bay B4SC programme identified WCTO nurses' existing relationships with families and outreach workers' extensive community networks as effective at helping access hard to reach and often mobile families (Wills et al 2010). Evaluation of the Fit 4 School programme in Lake Taupo PHO identified the importance of Māori providers for enhancing participation of Māori and Pacific children in the programme (Lake Taupo PHO 2007):

“One of the main advantages of making Fit 4 School available through these provider groups was their relationship with and access to kōhanga and the fact that their Well Child service is also delivered in people's homes.” (p6)

There is strong evidence that intensive home visiting is effective in improving maternal and child health, particularly during and after pregnancy (Marmot Review 2010). Systematic reviews of home visiting programmes show good evidence of improved parenting skills, child development, reduced behavioural problems and improved maternal mental health and social functioning.

3.7 Expected outcomes

A review of New Zealand and Australian research reveals a wide range of expected and achieved referral outcomes for three to four year old Well Child checks.

In its examination of the feasibility of a national and universal child health and development check, the Centre for Community Child Health (2009) estimated expected outcomes for different stages of the check's pathway. These included that:

1. At least 3 to 5% of three year old children will already have been identified as having a significant developmental disability and will therefore not need to be referred for further testing and intervention.
2. In the first stage of the check, 50% of children will be identified as having a health and/or developmental concern.
3. Of these children, 15% will have a mild condition that can be addressed by the consulting health professional, 5% will be referred directly to the secondary or tertiary health sector for diagnosis and assessment, and 30% will be referred to the next stage for a more detailed investigation of any problems.
4. It is unknown what proportion of the 30% of children who have a detailed investigation are likely to be referred on for formal diagnosis and assessment, however, the authors estimate that, overall, 10 to 15% of children will end up in the diagnosis and assessment stage and 5% in the treatment/intervention stage.

Early evaluation of B4SC delivery in Hawke's Bay DHB found the following referral rates (Wills et al 2010):

1. Around 50% of checks resulted in a referral.
2. The most common issues requiring referral were:
 - *Oral health* (24% of all referrals and 14% of children – note that most related to non-enrolment in dental care)
 - *Hearing* (21% of referrals and 12% of children – most of these were for glue ear)
 - *Vision* (20% of referrals and 11% of children).
3. Developmental and behavioural concerns had lower referral rates than oral health, hearing and vision:
 - *Developmental concerns* (13% of all referrals, 7% of children)
 - *Behavioural concerns* (5% of all referrals, 3% of children).
4. Children in quintile 5 had the highest referral rates.
5. 74% of referrals were accepted – a yield of 41% once decline at triage and parent decline had been removed.

Evaluation of the Fit 4 School programme implemented in Taupo achieved the following rates (Lake Taupo PHO 2007):

- *Hearing screening* (using tympanometry): 9% of children screened were referred to a GP for review; referral for hearing was higher among Māori/ Pacific children (15% compared with 7% for European/ Other children) and among children living in high need areas (19% compared with 6% for other areas). This evaluation also found that Māori and Pacific children and children living in high need areas were more likely to have had their hearing screened at preschool.
- *Vision screening* (using age-appropriate chart): 3% of children screened were referred to a GP or optometrist; referral for vision impairment was higher among Māori/ Pacific children (8% compared with 1% for European/ Other children).

- *Dental enrolment* (LTL and school dental service enrolment form): 13% of children screened were not enrolled with a dental provider; Māori and Pacific and children living in high need areas were over-represented (24% for Māori/ Pacific compared with 9% for European/ Other; 14% for children living in high need areas compared with 9% for children living in other areas).

Evidence for the B4SC: Summary

- New Zealand's WCTO programme is underpinned by strong evidence that early life experiences impact on future development and achievement, and that identifying problems and intervening early is likely to be more cost-effective than remediation later in life.
- The WCTO programme adopts a progressive universal approach, that is, services available to all, with additional resources and enhanced access for those with greater need. The risk of this approach for vulnerable families – high deprivation, Māori and Pacific families and whānau - is that they do not receive the additional services and resources intended for them (an issue of reach), and that the generic services and delivery models are not effective for the diversity of these families and whānau (a delivery issue).
- There is a strong rationale for undertaking a Well Child check at or around four years old, but limited evidence that undertaking a check at this time improves health, wellbeing and educational outcomes. A critical argument for New Zealand's B4SC is that a check at four years old can act as a 'safety net', providing opportunity to identify problems that have been missed or not treated in the preschool years, and initiate intervention prior to school. This is important for children in vulnerable families, who may be more likely to have missed earlier WCTO contacts.
- There are some gaps in the evidence-base for B4SC components. Overall, there is a good rationale for most components of the B4SC but limited evidence of the efficacy of many of the checks for improving health and wellbeing outcomes (childhood immunisation and smoking cessation screening are the exception, where there is good evidence).
- There is some but not comprehensive evidence for the efficacy of B4SC components for vulnerable populations, in particular, high deprivation, Māori and Pacific families and whānau. Research on PEDS highlights the need to validate the effectiveness and appropriateness of B4SC tools for priority populations.
- The content of the B4SC reflects a shift in focus from disabling conditions and acute infectious diseases (the 'old morbidity') to prevention of developmental and behavioural problems and chronic illness and disability (the 'new morbidity'). However, in New Zealand, not all children and population groups have shifted away from acute infectious diseases. Evidence that high deprivation, Māori and Pacific families and whānau continue to experience disproportionately high rates of infectious disease, highlights the need for Well Child checks to cover detection and response to both the old and the new morbidities.
- There is substantial New Zealand and overseas evidence of barriers to access and utilisation of child health services, particularly as experienced by vulnerable families. Barriers to access include cost, continuity, cultural and language barriers, clinician knowledge, skill and time, service availability, waiting times, transport and child care difficulties. New Zealand evaluations have identified the importance of WCTO nurses' community networks and relationships with families and whānau as enablers of service access and utilisation.

4. Contracting

This section describes the B4SC contracting arrangements used by different DHBs, and considers key advantages, disadvantages and quality implications of these arrangements. The section begins with an overview of the Ministry's requirements regarding contracting of B4SC Services.

4.1 Ministry of Health specifications

The B4SC Service Specification (Ministry of Health/DHBNZ 2011) does not specify the providers DHBs should use to deliver B4SC services. Instead the specification focuses on the requirements that a B4SC service must meet, such as who the service should be made available to, what the service should include, and what professional competencies are required by those who deliver the service (addressed in subsequent sections).

The key service requirements relevant to B4SC contracting relate to the coordinator role, ensuring clinically, culturally and socially appropriate delivery of the check, and ensuring service effectiveness for Māori and Pacific children, families and whānau. Relevant information from the Service Specification (Ministry of Health/DHBNZ 2011) is outlined below:

- The B4SC service provider must employ a coordinator who is accountable and responsible for managing and coordinating the B4SC, and any resulting referrals, in the DHB's area.
- The B4SC service provider must deliver the B4SC in a clinically, culturally and socially appropriate manner and setting that respects the privacy and developmental needs of the children and their families.
- Māori health: B4SC services must -
 - *“recognise the cultural values and beliefs that influence the effectiveness of services for Māori and must consult and include Māori in service design and delivery”* (p4)
 - *“develop effective models of service delivery that are Māori responsive and contribute to whānau ora: Māori families supported to achieved their maximum health and wellbeing and consistent with the directions set in key strategic documents (He Korowai Oranga – the Māori Health Strategy and Whakatataka Tuarua 2006-2011)”* (p4)
 - *“offer an integrated service that includes developing and maintaining relationships with other primary and specialist health, education and social services that influence Māori children and young people's health outcomes”* (p4).
- Pacific health:
 - B4SC Services must *“take account of key strategic frameworks, principles and be relevant to Pacific health needs and identified concerns. For regions that have significant Pacific populations, the B4SC service must link service delivery to the improvement of Pacific health outcomes”* (p6)
 - *The Service Specification further identifies that “Improving the quality of delivery of the B4SC service to Pacific families will require services that are culturally competent, respond to Pacific people's needs and expectations, are more acceptable to a wider spectrum of individuals and families, enable Pacific people to make healthy choices and facilitate access to other services”* (p7).

The deliberate flexibility of the Service Specifications, in relation to how a DHB delivers B4SC services, means that DHBs can establish B4SC contracting arrangements that best meet the needs of the local population and make best use of the providers available in their region. As outlined in Section 4.2 below, a range of different B4SC contracting arrangements and providers are evident across the 20 DHBs. However, contracting arrangements likely to enhance effectiveness for Māori and Pacific children, families and whānau are less evident.

4.2 Contracting, coordination and delivery arrangements

DHBs' B4SC contracting and coordination arrangements can be broadly categorised into three models:

1. DHB-led (eight DHBs)
2. Plunket-led (four DHBs)
3. Primary care-led (eight DHBs).

In the DHB-led model, the main contract⁷² to coordinate and deliver B4SCs is held by the provider arm or public health unit within a DHB. PHNs deliver most of the region's B4SCs, sometimes assisted by Plunket and/or Tamariki Ora providers (see Table 2). Vision and hearing checks are provided by DHB-employed VHTs.

Taranaki DHB is an example of a DHB-led model (see Figure 9). In this DHB, the B4SC Coordinator is employed by the DHB and the DHB, via PHNs, delivers the bulk of the region's B4SCs. PHNs access eligible children through preschools – parents are notified of the B4SC and invited to make an appointment for a check. B4SC clinics are held at a central community location on set dates. VHTs provide the vision and hearing check components at PHN-run clinics and, separately, at preschools. Two Māori providers (via a single contract) are also contracted to deliver B4SCs in Taranaki. These providers deliver B4SCs to their own clients as well as to children that, for a variety of reasons, PHNs have been unable to reach (covered by an 'outreach' contract with the DHB). Māori providers undertake B4SCs at a range of locations, including homes. B4SC nurses working for the two Māori providers are trained to undertake vision and hearing screening, as well as all other B4SC components.

In the Plunket-led model, the main contract to deliver B4SCs is held by Plunket. Plunket may also hold the contract to coordinate the region's B4SC Services. In three of the four DHBs with Plunket-led delivery models, Plunket nurses deliver all B4SCs (Table 29). In Counties Manukau, Tamariki Ora providers are contracted alongside Plunket to deliver B4SCs. Plunket nurses deliver B4SCs in a range of locations, including home, community and mobile clinics. Vision and hearing checks are provided by DHB-employed VHTs.

⁷² DHBs identified the 'main' B4SC contract holder in a survey on DHB B4SC contracting (Litmus 2012e); this determined the contracting model identified in Table 2.

Counties Manukau DHB is an example of a Plunket-led model (see Figure 2). In this DHB, the B4SC Coordinator is employed by the DHB. The DHB contracts Plunket, two Māori Tamariki Ora providers and one Pacific Tamariki Ora provider, to deliver the region's B4SCs. Plunket deliver around 95% of B4SCs; Tamariki Ora providers deliver the remainder. Checks are delivered primarily in homes. B4SC providers identify and contact four year olds from their client registers; the B4SC Coordinator also sends invitation letters out to all eligible children and their families. VHTs deliver most vision and hearing checks at preschools although they will do home visits if required. The DHB-based Coordinator has oversight of all providers' B4SC services.

In the primary care-led model, the main contract to deliver B4SCs is held by a Primary Health Organisation (PHO) or a primary care consortium. The PHO or consortium may also have the Coordinator role. Practice Nurses provide the B4SCs. Eligible children are identified by individual practices or PHOs and parents are contacted and invited to make an appointment to see the nurse for a B4SC. Appointments take place at the surgery. At the time this review was undertaken, there were no Tamariki Ora providers contracted to deliver B4SCs under a primary care-led model (Table 2). Some primary care-led models include outreach contracts to facilitate access to hard to reach families, however, these contracts are not currently with Tamariki Ora providers. As with the other models, vision and hearing checks are provided by DHB-employed VHTs.

Canterbury DHB is an example of a primary care-led delivery model (see Figure 3). In this DHB, the main B4SC contract is held by a PHO, Partnership Health Canterbury. Partnership Health sub-contracts the B4SC Coordinator role to Pegasus, a general practice consortium. General practices belonging to all three Canterbury PHOs deliver the region's B4SCs via their practice nurses. PHNs have an outreach contract to deliver B4SCs to hard to reach children and families, and to children belonging to general practices that do not provide B4SCs.

Figure 9: Example of a DHB-led contracting model (Taranaki DHB)

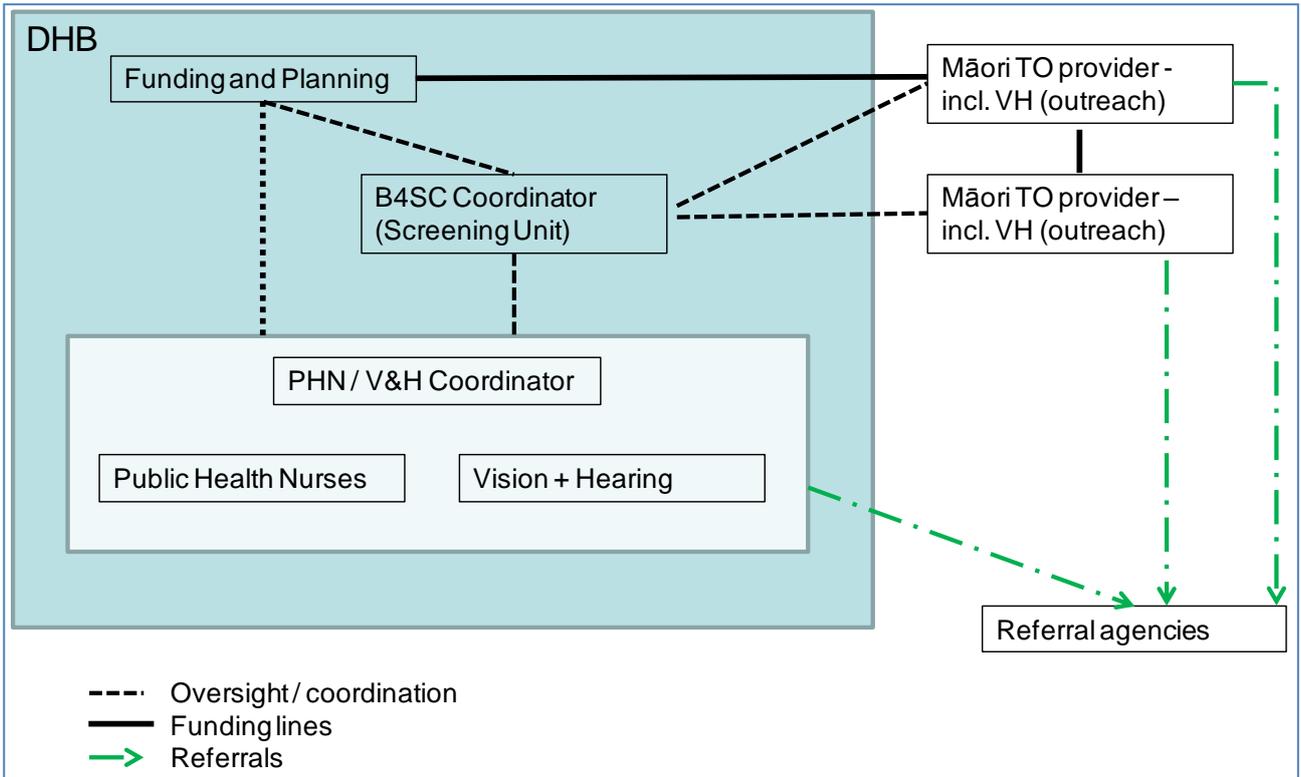


Figure 10: Example of a Plunket-led contracting model (Counties Manukau DHB)

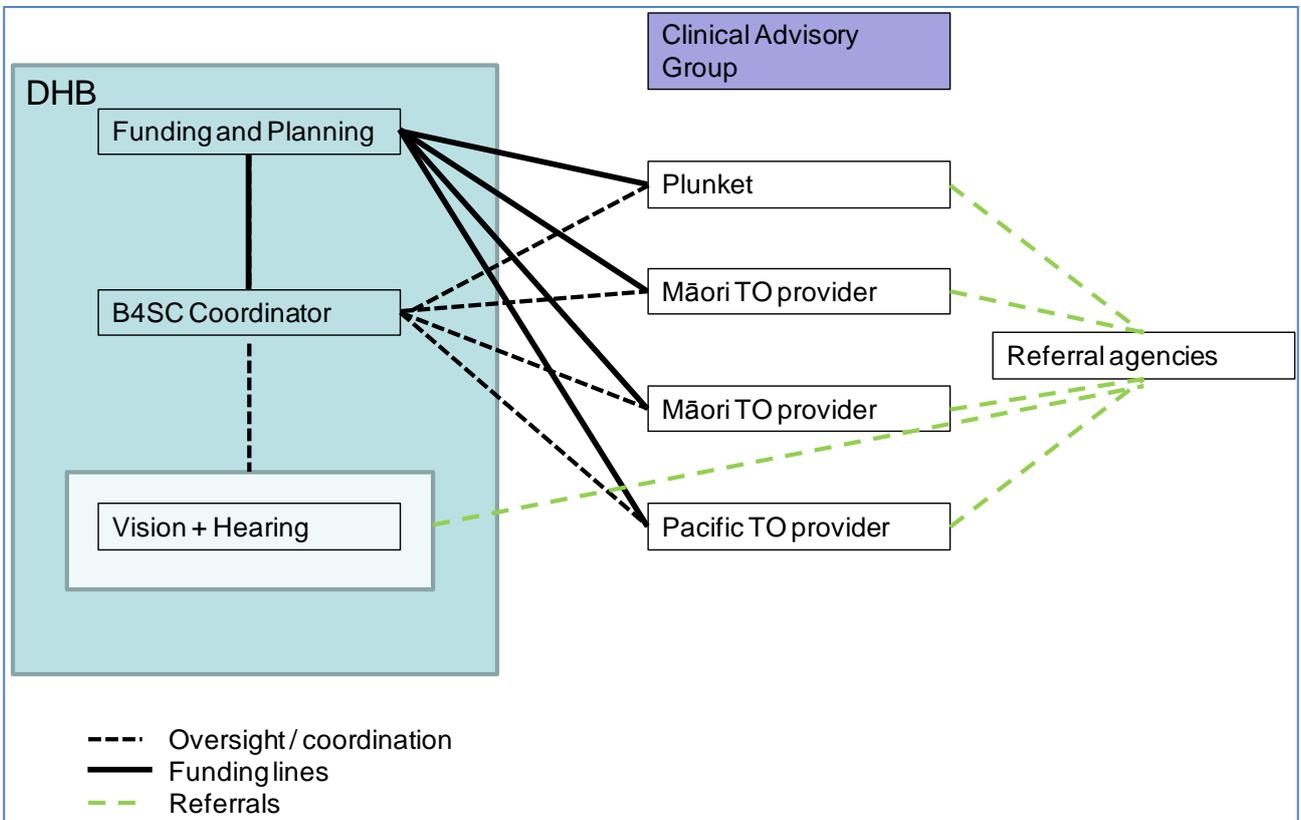
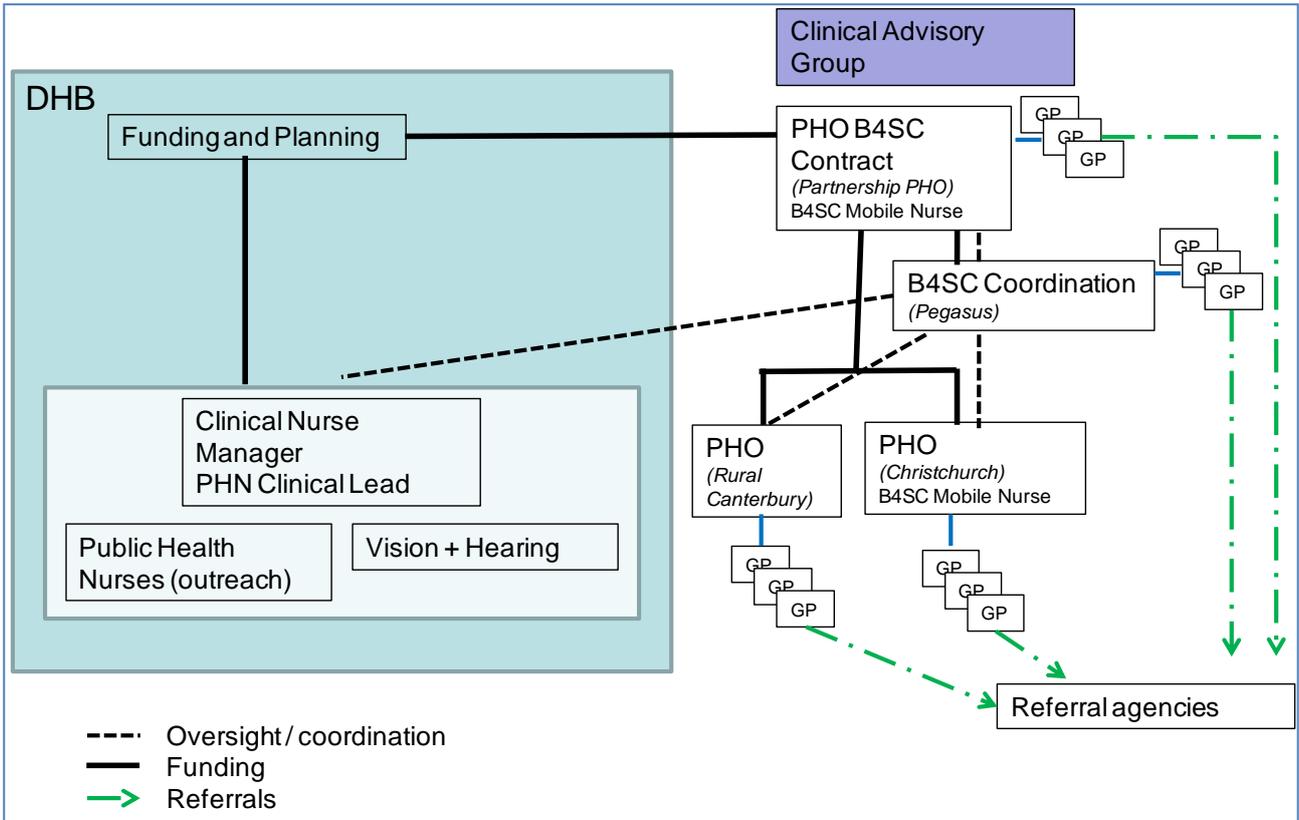


Figure 11: Example of a primary care-led contracting model (Canterbury DHB)



Eight of the 20 DHBs have between one and five B4SC contracts in addition to the main contract. As shown in Table 2, at the time DHBs were surveyed (early 2012):

- there were a total of 42 B4SC contracts, across 20 DHBs
- the number of B4SC contracts per DHB ranged from one (12 DHBs) to six (Auckland DHB)
- 18 of the 42 B4SC contracts were held by PHOs, 11 were held by DHB provider arms (PHNs) and six were held by Plunket.

Table 29: Number and type of B4SC providers, by DHB and B4SC contracting model

DHB	Total number of B4SC contracts	Type of provider				
		Māori health service / iwi provider	Pacific health service	Plunket	Primary health organisation	DHB provider arm
DHB-led contracting model						
Bay of Plenty DHB	2	-	-	-	1	1
Lakes DHB	4	1	-	1	1	1
Nelson-Marlborough DHB	1	-	-	-	-	1
South Canterbury DHB	1	-	-	-	-	1
Southern DHB	1	-	-	-	-	1
Tairāwhiti DHB	3	2	-	-	-	1
Taranaki DHB	2	1	-	-	-	1
West Coast DHB	1	-	-	-	-	1
Plunket-led contracting model						
Capital and Coast DHB	1	-	-	1	-	-
Counties Manukau DHB	4	2	1	1	-	-
Hutt Valley DHB	1	-	-	1	-	-
MidCentral DHB	1	-	-	1	-	-
Primary care-led contracting model						
Auckland DHB	6	-	-	1	4	1
Canterbury DHB	4	-	-	-	3	1
Hawke's Bay DHB	1	-	-	-	1	-
Northland DHB	1	-	-	-	1	-
Waikato DHB	5	-	-	-	4	1
Wairarapa DHB	1	-	-	-	1	-
Waitemata DHB	1	-	-	-	1	-
Whanganui DHB	1	-	-	-	1	-
TOTAL	42	6	1	6	18	11

Source: Litmus 2012e

Only a small number of B4SC contracts (7) are held by Tamariki Ora providers and none of these are the main contract for the DHB (see Table 2). Six B4SC contracts were held by Māori providers, across four DHBs (Lakes, Tairāwhiti, Taranaki and Counties Manukau DHBs). One B4SC contract was held by a Pacific provider (in Counties Manukau DHB). As noted above, there were no contracts with Tamariki Ora providers in DHBs with primary care-led contracting models.

Tamariki Ora providers who deliver B4SCs also deliver WCTO core contacts one to seven, additional WCTO contacts and a range of other social and health services, such as family support programmes (e.g. Family Start, Parents as First Teachers, Teen Parenting), smoking cessation, drug and alcohol counselling, and whānau ora (Litmus 2012f).

Most B4SC contracts are short-term and on a fee-for-service (FFS) basis (Litmus 2012e). At the time DHBs were surveyed for this review, 31 out of the 42 B4SC contracts were for periods of 12 months or less; only eight contracts were for more than two years. Around half of contracts were funded on an outputs or FFS basis (22 out of 42); a further 13 contracts were funded on a combination of both outputs and bulk funding; only five contracts were solely funded on FTEs or bulk amount. FTE or bulk funding was associated with longer contract periods.

Nearly half of the 42 DHB-contracted B4SC providers (19) sub-contract other organisations to provide aspects of the B4SC Services (Litmus 2012e). Sub-contracted organisations included Māori providers, Plunket, general practices and PHOs. All but one of the 42 B4SC providers also deliver other, non-B4SC services.

Vision and hearing services are contracted and managed separately from other B4SC service contracts.

4.3 Perceptions of different contracting and provider arrangements

Most DHBs rate their B4SC contracting and coordination model highly for ‘ensuring quality delivery of B4SC services’. As shown in Table 3, 17 of the 20 DHBs gave their B4SC contracting arrangements a rating of 1 or 2. None of the DHBs rated their B4SC contracting models poorly (4 or 5).

Table 30: DHB self-reported rating of effectiveness of contracting and coordination models

Rating	Total (n=20)	DHB-led (n=8)	Plunket-led (n=4)	PHO-led (n=8)
1-Excellent	6	3	0	3
2	11	5	2	4
3	3	0	2	1
4	0	0	0	0
5-Very Poor	0	0	0	0

Source: Litmus 2012e

DHBs and providers identified a range of advantages and disadvantages of the different contracting models and associated providers. These are outlined in Table 4.

Table 31: Perceived advantages and disadvantages of different contracting models and providers

Contracting model / provider	Advantages	Disadvantages
DHB-led model, with PHN delivery of B4SCs	PHNs often have existing relationships with Early Childcare Education (ECE), enabling access to children and enhancing ECE completion of SDQ-T	PHNs do not tend to have existing relationships with children or their families, requiring the establishment of a new provider-relationship for families; this may be a barrier to B4SC participation
	PHN delivery of B4SC enables PHNs to establish a relationship with children and families that will continue through school	PHNs do not have access to children's or their family's medical or Well Child history
	The small number of PHNs involved in B4SC-delivery, coupled with the strong clinical support structures that PHNs often work within, can enhance quality monitoring and improvement opportunities and practices	
Plunket-led model, with Plunket nurse delivery of B4SCs	Experts in Well Child health	Concern by some stakeholders that Plunket are less equipped than Pacific providers to deliver a B4SC service that is culturally appropriate and effective for Pacific populations
	Families are often already engaged with Plunket for WCTO core contacts one to seven, enabling continuity of service and provider-family relationship, as well as access to a child's Well Child history	
	Plunket nurses are able to deliver B4SCs in a range of settings, including the home, enhancing uptake and completion of B4SCs	
	Plunket nurses work within a strong nationwide infrastructure that provides clinical support, supervision and guidance, providing the potential for enhanced quality monitoring and improvement practices and opportunities	

Contracting model	Advantages	Disadvantages
Primary care-led model, with Practice Nurse delivery of B4SCs	B4SC delivery enables general practices to build on (or establish) relationships with children and their families	Practice nurses are not routinely trained in child health or Well Child
	General practices have access to a child and their family's medical history, including referrals, enabling B4SC assessments to be contextualised and referrals appropriate to a family's situation	The small volume of B4SCs undertaken in any one general practice may be a barrier to investment in nurse professional development and dedicated resource (e.g. space, extended appointment times, dedicated time for contact and follow up)
	B4SC delivery via primary care is a good fit for practices with large numbers of children – they can focus their service delivery, including B4SC, around the needs of families	The small volume of B4SCs undertaken by any one practice nurse may make it difficult for nurses to maintain B4SC proficiency
	B4SC delivery via primary care strengthens linkages between the WCTO programme and primary care	The requirements of the B4SC are not always a good fit with the General Practice way of working e.g. the length of appointment required; the proactive contact and follow-up requirements; the B4SC information system does not inter-operate with MedTech, requiring a duplication of data entry and record keeping; the lack of flexibility for home visits
		General Practice is a fee-for-service environment - unpaid bills may be a barrier to families attending B4SCs undertaken at their general practice

Contracting model	Advantages	Disadvantages
Tamariki Ora providers	Experts in Well Child health	Small provider organisations may struggle to maintain an infrastructure that supports ongoing professional development and quality monitoring and improvement
	Better able to access Māori, Pacific and high needs families than mainstream providers such as PHNs and Plunket	
	Provide a holistic service	
	Better able to meet cultural needs, including language e.g. <i>“Pacific providers would know that when you go into a home first you acknowledge the kaumātua out of respect. You don’t go direct to parent or the child and start questioning them.”</i>	
	Families and whānau are often already engaged with Māori and Pacific providers for WCTO core contacts one to seven, enabling continuity of service and provider-family relationship, as well as access to a child’s Well Child history	
	Tamariki Ora nurses can be flexible around time and place of delivery, enhancing uptake and completion of B4SCs	
VHTs	Separate ‘bulk’ delivery of vision and hearing testing through ECE settings can be efficient	Accessing children through ECE means that some children, particularly those with lower levels of ECE participation (Māori, Pacific, high needs families) may miss out
		Separate contracting of vision and hearing screens can result in a tension between the DHB funder, who requires vision and hearing components to be completed before payment can be claimed, and VHTs e.g. DHBs may be seen to ‘pressure’ VHTs to ‘chase up’ children who have not completed the vision and hearing components of the check, to enable DHBs to claim payment; the requirement to chase up individual children can compromise the efficiency of the VHT system (bulk delivery of B4SCs through ECE)

4.4 Quality considerations

The above overview of DHBs' B4SC contracting arrangements indicates several issues that have potential quality implications. These are discussed below.

Representation of Tamariki Ora providers in B4SC contracting

Tamariki Ora providers play a lesser role in delivery of B4SC Services than in delivery of WCTO Services (core contacts one to seven). This is particularly evident in the eight DHBs with primary care-led models. In these DHBs there are no direct contracts with Tamariki Ora providers for the delivery of B4SC Services and Māori providers are sub-contracted in only three of the eight primary care model DHBs. Given the explicit focus of B4SC on effectiveness and reducing inequalities for Māori and Pacific children and children from deprived areas, the lack of Tamariki Ora providers in the B4SC system would appear to be a significant issue.

Interviews with DHBs and providers indicate that Tamariki Ora providers provide a culturally appropriate and effective service for Māori, Pacific and high needs families and whānau. Further, they are already engaged with families and whānau through WCTO core contacts one to seven. The under-utilisation of Tamariki Ora providers in the B4SC system fails to maximise the capacity, expertise and cultural appropriateness of these providers, as well as their existing relationships with Māori and Pacific families and whānau. It also lessens Māori and Pacific families' and whānau ability to choose to continue their relationship with their WCTO provider.

Enhancing the role and availability of Tamariki Ora providers in the B4SC system is an important pathway towards reducing known barriers to B4SC participation for priority populations (e.g. continuity of relationship, cultural and language barriers). Contracting Tamariki Ora providers to deliver B4SC Services enables these providers to further develop their B4SC and Tamariki Ora services infrastructure, strengthening their ability to continue to provide a well-resourced, high quality service to vulnerable families and whānau.

Fee for service funding

The prevalence of fee-for-service (FFS) funding of B4SC providers (around half of contracts) has several possible negative implications for the quality of B4SC service delivery, as well as for the sustainability of small providers' involvement in B4SC. FFS funding is perceived by some stakeholders as:

- not recompensing the additional resources associated with engaging hard-to-reach families
- driving a focus on targets rather than quality interactions with children and families
- not providing any additional resources for B4SC providers to participate in professional development, clinical support and service network activities.

Tamariki Ora providers are particularly affected by these dynamics as they often have outreach contracts and/or a population base with a high representation of hard-to-reach families. The focus on meeting targets and the lack of any funding buffer may put pressure on the amount of time these providers feel they are able to spend with families and whānau, increasing the risk that broader child and family issues may not be picked up or addressed.

In recognition of the pressure that FFS funding can place on quality of service delivery, one DHB has indicated a move to combination funding, where a portion of the contract value is bulk-funded.

Short-term contract periods

Most B4SC contracts are less than one year long. A lack of certainty around future funding does not encourage forward-planning and reduces the likelihood of investment in quality improvement structures and processes (e.g. professional development, improved information systems, enhanced clinical supervision). Short-term contracts can also have a negative impact on continuity of care, with providers unable to assure families that they will still be providing the B4SC by the time a child turns four.

General Practice delivery of B4SC

General Practice delivery of B4SC faces significant challenges in meeting the requirements of the B4SC service. Practice Nurses' ability to participate in training and undertake enough B4SCs to maintain proficiency has implications for the quality of checks delivered in this setting. Practices' ability to follow up families who have not attended a B4SC has implications for B4SC uptake, particularly by harder-to-reach families and whānau. Outreach arrangements are critical in this context.

Disconnection of B4SC Services contracting from WCTO Services contracting

Even though the B4SC is the eighth core WCTO contact, it is contracted and often delivered separately from WCTO core contacts one to seven. As a result, many children do not receive their B4SC from the same provider they received their earlier WCTO checks from, meaning a loss of provider relationship continuity. Further, a child's WCTO history is not available to the B4SC nurse unless they also provided WCTO core contacts one to seven. This means that decisions about referrals are made without knowledge of previous WCTO assessment results and referrals. A key intended benefit of the WCTO schedule of checks is that the same checks are made regularly and progress can be tracked over time. This benefit is not routinely realised for the eighth contact of the WCTO schedule of checks.

Contracting: Summary

- DHBs' B4SC contracting and coordination arrangements can be broadly categorised into three models: DHB-led (eight DHBs), Plunket-led (four DHBs) and primary care-led (eight DHBs). At time of writing, there were a total of 42 B4SC contracts, across 20 DHBs.
- There are a range of perceived advantages and disadvantages associated with the different B4SC providers:
 - Plunket and Tamariki Ora providers have Well Child health expertise and existing relationships with families and whānau from WCTO core contacts one to seven, providing continuity of relationship and access to a child's Well Child history.
 - Tamariki Ora providers are perceived to be better able than Plunket, PHNs or primary care to engage with Māori, Pacific and high deprivation families and whānau, as well as offer a holistic service to these families.
 - Plunket and PHNs are perceived to have strong clinical support and governance structures for their B4SC nurses that can enhance quality monitoring and improvement.
 - General practices often have an existing relationship and history with children and families, and their involvement in the B4SC programme is seen to enable greater integration of primary care with WCTO services; however, there are issues with the B4SC 'fit' with primary care delivery models.
- A number of quality implications can be identified with regard to contracting arrangements:
 - There are very few Tamariki Ora providers contracted to provide B4SC. Increasing the role and availability of Tamariki Ora providers is likely to support increased Māori and Pacific participation in the B4SC, as well as support these organisations to further develop their B4SC and Tamariki Ora services infrastructure, strengthening their ability to provide a well-resourced, high quality service to Māori and Pacific families and whānau.
 - The prevalence of FFS funding, for Tamariki Ora providers in particular, may drive a focus on targets rather than quality interactions with children and families. This presents a risk that wider social and economic issues in vulnerable families will not be picked up by providers. Target-based funding also limits the resource and opportunity for smaller providers to participate in professional development.
 - The predominance of short-term contracts is unlikely to encourage forward-planning and investment in quality improvement structures and processes.
 - General practice delivery of B4SC faces significant challenges in meeting the requirements of the B4SC service, particularly in terms of maintaining Practice Nurses' competency.
 - The disconnection of B4SC services contracting from WCTO services contracting means a loss of provider relationship continuity for many families and whānau. It also means many providers do not have access to a child's WCTO history, limiting their ability to make assessment and referral decisions that are well-informed by a child's previous health experiences and interventions.

5. Implementation Processes

This section provides an overview of the Ministry's specifications for the practical implementation of the B4SC, including contacting families, undertaking the check, and referral processes. It then describes implementation practices across DHBs for these three areas and considers quality implications.

Note that adherence to delivery and referral protocols is covered in Chapter 7 (Clinical Quality).

5.1 Ministry of Health specifications

The B4SC Service Specification (Ministry of Health/DHBNZ 2011), in conjunction with the B4SC Handbook (Ministry of Health 2008a), provides substantial detail regarding how the B4SC must be delivered:

- The B4SC service provider must provide a universal service that maintains a strong focus on serving high deprivation populations. The service must be offered to all eligible children.⁷³ Targets are set for high deprivation (quintile 5) children.
- The B4SC service provider must provide the B4SC service to children and families free of charge. This includes the process of referring children and their families for further assessment and/or intervention.
- The DHB or contracted service provider must establish and maintain a system for contacting parents, coordinating with providers, and ensuring children receive all the components of the service they are entitled to receive. Entry to the B4SC service will be by the service provider or B4SC Coordinator making contact with the parents or guardians of children at the time of their fourth birthday, inviting them to have a B4SC and arranging an appointment (parents or guardians can also contact their local B4SC Coordinator to request their four-year-old have a check).
- Services may be delivered in the child's home or in a primary health care clinic or community setting.
- The B4SC must be undertaken and completed before a child's fifth birthday. Clinically appropriate referrals should be made as close as possible to the time of the B4SC. Referrals should be followed up to confirm they have been assessed and accepted by the relevant referral service provider and the referral service has been provided in a timely manner (i.e. before the child begins school).
- The B4SC service provider must monitor the appropriateness and timeliness of referrals, the impact on referral pathways, and the availability of referral services.
- The B4SC service provider will provide the components of the B4SC as specified in the *B4 School Check – A Handbook for Practitioners* (Ministry of Health 2008a).

The B4SC Handbook (Ministry of Health 2008a) provides standard protocols for each component of the B4SC. The protocols are intended to be used for planning services, training nurses and VHTs, and improving quality. The handbook also describes the clinical pathways and referral processes for the screening and surveillance aspects of the B4SC.

⁷³ Eligibility status is applied according to Ministry of Health eligibility criteria (www.moh.govt.nz/eligibility).

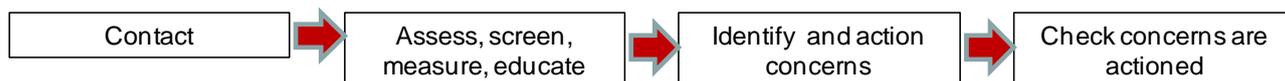
5.2 B4SC pathway

There are four key stages to the B4SC pathway (Figure 4):

1. Making contact with parents and caregivers of four year olds, this includes identifying the names and contact details of the eligible and target (quintile 5) population of four year olds, contacting parents and caregivers and organising an appointment time and place.
2. Undertaking all components of the B4SC as per the B4SC handbook protocols.
3. Assessing outcomes (or scores) of the B4SC components and deciding what actions are required, as per protocols outlined in the handbook, and making referrals, as per referral processes outlined in the handbook.
4. Following up with referral agencies to check referrals have been assessed, and where appropriate, accepted and actioned.

Implementation of each of these stages is addressed in the following sections. Adherence to protocols is discussed in Chapter 7 (Clinical Quality).

Figure 12: B4SC pathway



5.3 Contacting children and families

A number of mechanisms are used to identify and contact parents of four year olds and invite them to undertake a B4SC. These include:

1. contacting children and families listed on the B4SC database provided by the Ministry of Health (see below)
2. using general practice, PHO or Tamariki Ora provider databases to identify and contact eligible children and their families
3. contacting parents through ECEs and kohanga reo
4. advertising the B4SC (e.g. displays at the Parent and Child Show, posters in waiting rooms)
5. opportunistic contacts.

Each DHB's contact list for eligible children is extracted by the Ministry from PHO enrolment data. Having a contact list is a key strength of the B4SC service. It enables identification of children that are eligible for the B4SC and subsequent targeting of those children who have not received the check.

A key issue with the B4SC database is that not all eligible children are on the database. This is because PHO enrolment data does not capture the entire New Zealand population. A comparison of PHO enrolment data with the New Zealand population indicates that most New Zealanders (around 96%) are enrolled with PHOs (Ministry of Health 2012a). However, there are still some families that are not registered with PHOs, and vulnerable families and whānau are likely to be over-represented in this group.

Another issue with the database is that information is often not up-to-date. Names are extracted from the PHO register for a set period. Any updates to the register during this period will not be translated across to the B4SC database. This means that B4SC Coordinators may find themselves trying to contact children and families who are no longer eligible for the check, for example, they may have moved from the area or sometimes the child has died and this has not yet been recorded.

DHBs use a range of mechanisms to identify children and families not on the B4SC database. These include contact through ECE and kohanga reo, B4SC advertising and opportunistic contact. For example, in one DHB, providers often go into houses where there are other eligible children present that have not done their B4SC and may not be on the database. In this situation, providers are expected to utilise this opportunity to offer a check. Children not on the B4SC database and not identified through other provider contact lists may miss out on the B4SC, so it is important that DHBs and B4SC service providers use a range of mechanisms to identify and make contact with eligible four year olds and their families.

It is also important that DHBs and B4SC providers make significant effort to follow up those families who do not respond to initial invitations to have a B4SC. Some providers go to significant lengths to establish contact with families and offer them an appointment. This might mean driving to a child's home several times if they have not received a response to phone or letter contact, asking relatives to make contact, texting, or undertaking a check when opportunity presents rather than waiting for a scheduled appointment. A B4SC provider estimated that "the very hard to reach" families can take five to six home visits to achieve a completed B4SC; some families will never complete. These proactive approaches are very time and resource-intensive. However, they are necessary if the B4SC is to reach and be effective for hard-to-reach families and whānau. To this end, the establishment of targets for quintile 5 families and the use of outreach contracts appear to achieve their intent of driving a focus on reaching children in more vulnerable families.

5.4 Implementing the check

Setting

B4SCs are delivered in a range of settings across DHBs including primary health care clinics, homes, clinics in community settings (e.g. Plunket clinics, clinics in hospital rooms, community venues), ECE settings, mobile health care clinics and schools (Litmus 2012e). Tamariki Ora providers, Plunket and PHNs mostly deliver B4SCs in homes, ECE settings and other community settings. PHOs mostly deliver B4SCs in primary health care clinics. As noted in Section 4.3, concern about unpaid doctors' bills may present a barrier to some families undertaking their check in a primary health care clinic.

Many parents prefer to have the B4SC done at home (see also Chapter 9). In Counties Manukau DHB, an estimated 75 to 80% of checks are undertaken in homes. Although most DHBs would not have as higher proportion of home visits as Counties Manukau, most would consider it important to allow for some home visits (particularly as a mechanism for engaging more deprived and/or harder-to-reach families).

Vision and hearing screens are generally conducted separately from the rest of the B4SC, in ECE or school settings. However, in some DHBs, VHTs and B4SC nurses conduct B4SC components at the same time, in the same centralised setting, with children progressing from vision and hearing screening with the VHT to the rest of the check with the B4SC nurse (or the other way round). Tamariki Ora providers in one DHB and some Practice Nurses are vision and hearing-trained, so the entire check can be delivered in one setting.

Workforce

The B4SC is primarily delivered by Registered Nurses who have received B4SC training, with vision and hearing screening components delivered by DHB-employed VHTs. B4SC Nurses include Plunket Nurses, Public Health Nurses, Practice Nurses, Tamariki Ora Nurses and some independent nurses (e.g. Hawke's Bay DHB).

A survey of WCTO providers with B4SC contracts found that all or most of the organisations' WCTO nurses had undertaken B4SC training (Litmus 2012f). There was no evidence that registered health professionals other than nurses had undertaken B4SC training. As noted above, some Practice Nurses and Tamariki Ora nurses have received vision and hearing training to allow them to deliver all components of the B4SC.

The ability for B4SC nurses to deliver the entire B4SC, including vision and hearing screening, is seen by some providers as beneficial for hard-to-reach families and whānau. Children in these families are less likely to be ECE-enrolled than other children, meaning that a separate vision and hearing appointment is required for their check to be completed. Providers report high non-attendance for separate vision and hearing appointments. Undertaking the entire check on one occasion means there is no need for an additional appointment, assisting with completion of checks.

Rising costs of vision and hearing training may, however, be an emerging barrier to Tamariki Ora and Practice Nurses maintaining vision and hearing competency.

Recent changes to the vision and hearing screening protocols, which require more expensive and frequent training and use of a tympanometer, may make it unaffordable for small providers to continue to provide vision and hearing screening as part of the B4SC.

See Chapter 6 (Workforce) for more on workforce competency and development.

Timing

A key objective of the B4SC is that it be undertaken as close as possible to a child's fourth birthday to allow time for further assessment and/or intervention to occur before the child turns five. The following graphs provide information on the age at which children begin and close the B4SC and the length of time required to close B4SCs. The graphs are based on data exported from the B4SC information system in March 2012, and more specifically on children born from July 2005 to February 2007 (the last twenty months for which the children's eligibility for the B4SC would have finished before the data was exported).

B4SC data shows that most children begin the B4SC closer to four than five years of age (Figure 5). However, many do not close the check until closer to five years of age (Figure 6). For a significant proportion of children the check is not closed until several months after they turn five.

Figure 13: Density plot of children's ages when starting B4SC

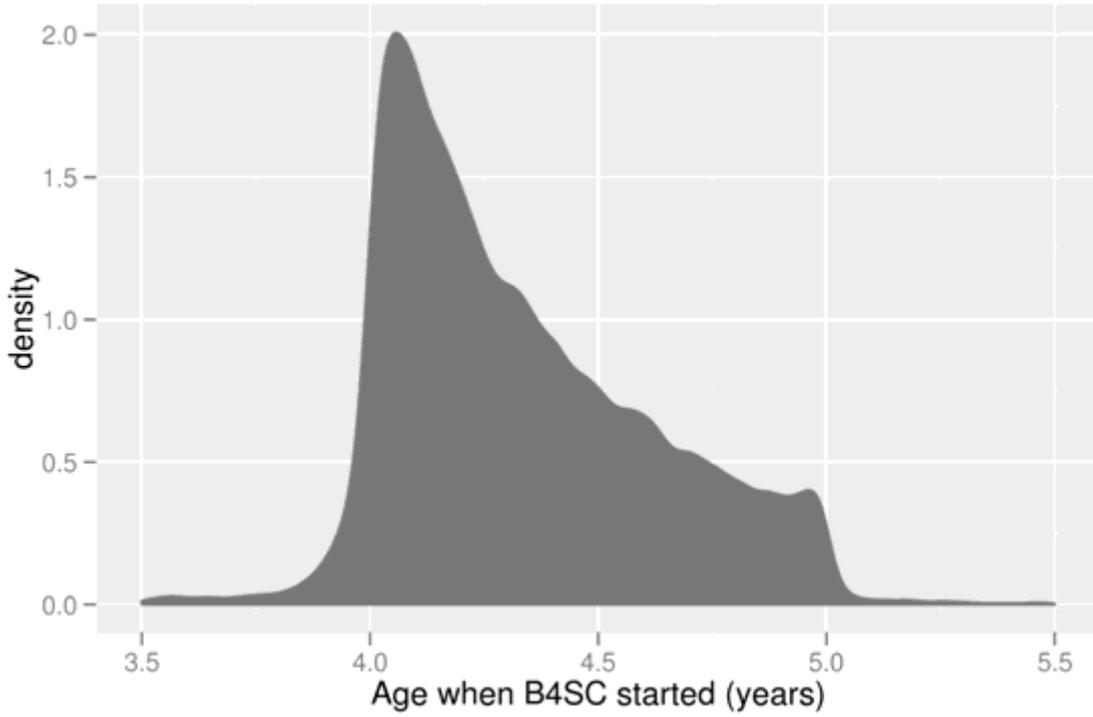
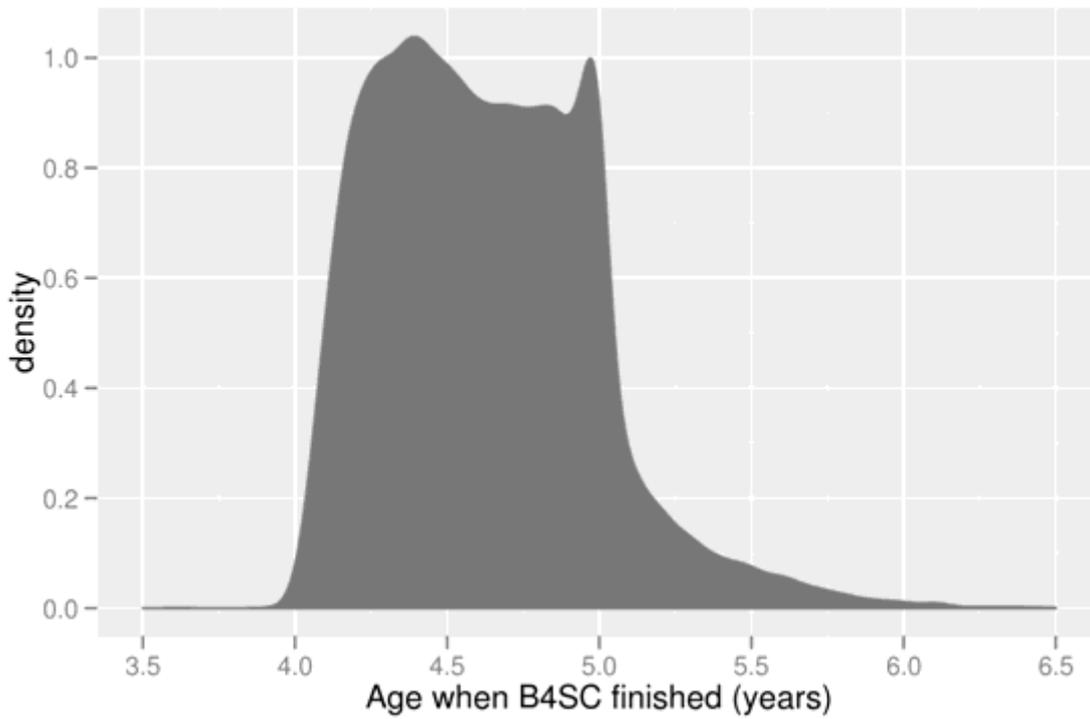


Figure 14: Density plot of children's ages when B4SC closed (excluding refusals)



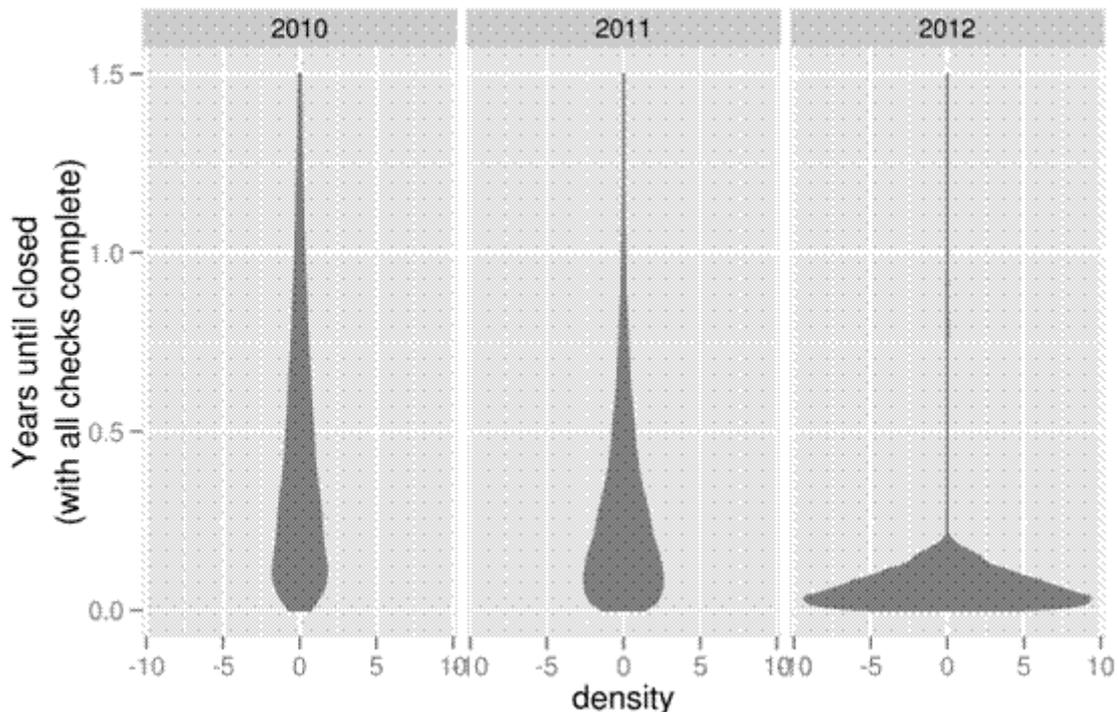
Completion of the B4SC closer to five than four years old makes it difficult for any referrals to be initiated, let alone intervention completed, prior to a child starting school. For this reason, some providers suggest that the B4SC needs to take place before four years old, in order to allow time for issues to be addressed before school entry. Some parents also think that the B4SC should take place earlier (see Section 9).

The available data provides some guidance on how much lead time is required to close the B4SC for most children, although the analysis needs some care. The following violin chart contrasts the distributions of time required to close B4SC for checks begun in 2010, 2011, and 2012 (Figure 7). Earlier data is not presented due to poor data quality.

Since the data was extracted in late March 2012, all the closed checks that were begun in 2012 had to be completed within three months, thus the distribution for 2012 is skewed towards shorter times. Similarly, the checks begun in 2011 omit a substantial proportion of checks that are not yet closed, and thus the distribution is again skewed towards shorter times. Only a small proportion of the checks begun in 2010 have yet to be closed, thus the 2010 distribution provides a fairly accurate picture of the times required for B4SC closure.

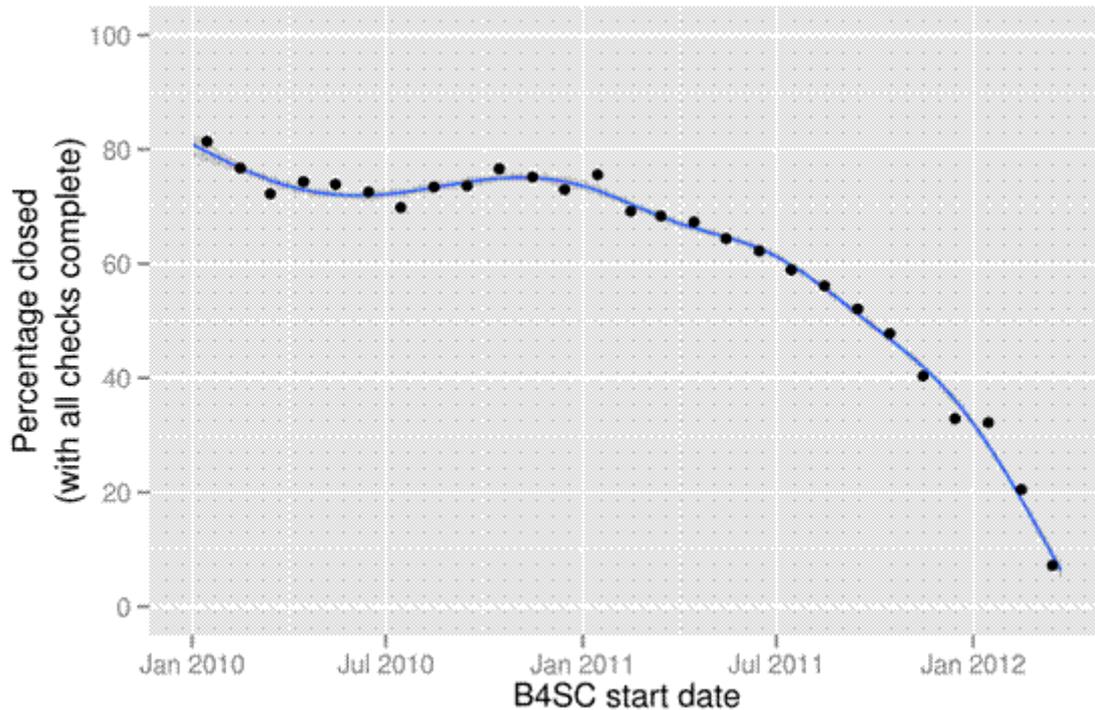
Data for checks begun in 2010 show that the majority are closed within half a year, and most within a year, but there is still a noticeable proportion of checks that take longer.

Figure 15: Density plots of time required to close B4SC, split by year the check was started*



*Excludes checks not yet closed.

Figure 8 shows how the percentage of checks closed depends on when they began. Data points show the average percentage of closed checks for checks started in each calendar month, and the smooth curve shows a generalised additive model fitted to the raw data. Data from checks begun before 2010 has again been omitted.

Figure 16: Proportion of checks closed by start date

Only a small percentage of checks that were recently begun have been closed as yet. The percentage climbs steadily as start dates get earlier, finally plateauing around 75% for checks started during 2010. Some 15 months is required to close essentially all of the checks that will be closed. Approximately six percent of checks take between 12 and 15 months to close, and another 18% of checks are closed between six and 12 months after they begin. This graph demonstrates the importance of allowing at least six months for the checks to be conducted, since the percentage closed climbs so steeply over the first six months.

Informed consent

B4SC providers are required to ensure informed consent. Obtaining informed consent for health services for children means ensuring that parents/caregivers are well informed, have the capacity to give consent and do so freely (Ministry of Health 2008a, p5). Children should also be informed and involved in decisions affecting themselves at a level appropriate to their maturity and understanding, regardless of their capacity to consent.

The Ministry of Health has developed an information pamphlet (Ministry of Health 2008c) and an informed consent standard (Ministry of Health 2008a) to support B4SC providers in ensuring that parents/caregivers have given informed consent to their child having a B4SC. Prior to the B4SC taking place, parents/caregivers should be given the information pamphlet, providers should have a discussion with parents/caregivers to ensure they understand what is involved, and parents/caregivers must sign the consent form.

Refusals data presented in Section 10.1 shows that a very small proportion of parents and caregivers refuse consent (3%).

Delivery of B4SC components

Providers spoken to for this review indicate that they, in the main, undertake all components of the B4SC (this excludes vision and hearing, which is generally undertaken separately by VHTs). This is confirmed in the B4SC data, which shows that only a small percentage of the eligible cohort of children (9%) *partially* completed the B4SC (see Section 10.1). Note that there is a strong incentive to complete all B4SC components as payment is linked to a check being completed and closed.

The key reasons cited by providers for non-completion of B4SC components include:

- the child's ECE does not agree to complete the SDQ-T (a condition that does not preclude payment) - see below
- parents do not agree to complete one or more components
- a child is non-compliant with having an assessment done (in which case another appointment is scheduled)
- the B4SC nurse makes a judgement that the situation is not conducive to, or appropriate for, conducting a particular assessment (in which case another appointment is scheduled).

See Section 10.1 for full details on partially completed checks.

There has been some reluctance from some ECE providers to complete the SDQ-T. DHBs and B4SC providers report that some ECE providers dislike the language used in the SDQ-T and are concerned that completing the tool (and the development assessments required) may upset parents. B4SC data shows considerable variation in SDQ-T completion rates, with Pacific (51%), Māori (62%) and Asian (59%) children significantly less likely than European/ Other (76%) children to have completed the SDQ-T. Completion in the three Auckland DHBs is also significantly lower than the overall completion rate (Auckland: 51%; Counties Manukau: 49%; Waitemata: 58%; compared with 69% completion overall). Research being undertaken by the School of Rehabilitation and Occupation Studies (Auckland University of Technology) may provide further information on uptake of the SDQ-T.⁷⁴

See Chapter 7 (Clinical Quality) for more on delivery variation.

Referral processes

The B4SC Service Specification (Ministry of Health/DHBNZ 2011) sets out three key requirements of B4SC service providers in relation to referral processes:

1. that the provider must monitor the appropriateness and timeliness of referrals
2. that the provider must follow up referrals to confirm they have been assessed and accepted by the referral service in a timely manner
3. that the provider must monitor the impact of B4SC referral on referral pathways and the availability of referral services.

⁷⁴ Key contact: Associate Professor Paula Kersten, Phone +64 9 9219180 | paula.kersten@aut.ac.nz.

The first of these areas is addressed in Chapter 7 (Clinical Quality). The other two areas are addressed below.

1. Referral follow-up

There is some uncertainty around who is responsible for following up B4SC referrals. In DHBs that participated in this review, B4SC Coordinators were responsible for following up on referrals made by B4SC nurses (checking that referrals have been received, accepted, assessed and, where appropriate, an appointment confirmed). However, there also appeared to be an expectation that individual B4SC providers were responsible for ensuring that any referrals they make are progressed (as a professional obligation), as well as a recognition that providers may not be adequately resourced to do this follow up. This lack of clarity around responsibility for referral follow-up presents a significant risk to the referral aspect of the B4SC system, raising the possibility that referrals may not get progressed and problems not addressed in a timely way.

There is some uncertainty around how many times a referral should be followed up. There is an expectation that B4SC Coordinators follow up on referrals to ensure they are accepted, assessed and intervention initiated. A B4SC cannot be 'closed' until referral outcome information has been entered and stored in the B4SC database. However, payment for completion of the check is not impacted. If a specialist service is overloaded, then assessment of referral and initiation of intervention may take months, impacting B4SC providers' ability to close a check – which is a quality measure. A similar issue applies to vision and hearing re-screens. Some DHBs question how long they have to wait for re-screens to take place before the check is deemed to be complete.

There does not appear to be process and accountability in the B4SC system for supporting children and families to receive the intended specialist intervention. It is likely that some parents and caregivers do not fully understand that, when they consent to the B4SC, they are also consenting to possible referrals and specialist appointments.

Provider and parent interviews indicate multiple barriers to families and whānau engaging with specialist services. These include:

- **Salience:** Reluctance to progress with specialist services because parents/caregivers do not really believe that further intervention is required; addressing the issue may be a low priority for families who are overwhelmed with other issues.
- **Language:** Not speaking English as a first language.
- **Cost:** If referrals are not progressed before a child turns five, there may be costs for the family in seeking specialist services.
- **Practical barriers to attending appointments:** Having no transport to specialist appointments, no child care for other children, being unable to take time off work.

- **Requirement to provide proof of eligibility for specialist services:** In Counties Manukau DHB, families and whānau are required to provide a birth certificate or passport for every referral, to prove their eligibility for publicly funded health and disability services. While this requirement is consistent with Ministry information,⁷⁵ enforcement of this requirement was not reported in either of the other case study DHBs. The requirement to prove eligibility presents both a cost and an effort barrier – parents need to find the right documentation, get it photocopied, send it to the referral agency, and they need to do this every time they access a specialist service. Providers interviewed in Counties Manukau noted that the families involved are usually eligible for the service, but they may not end up accessing the service because the process simply becomes too hard.
- **Requirement to confirm appointments:** Children can lose their referral ‘slot’ if families do not call back to confirm appointments or if they miss two scheduled appointments.

Families, particularly vulnerable families, may need significant support to progress the referral and ensure their child receives the intended specialist intervention. The B4SC service currently does not appear to assign this responsibility to anyone. Once the referral has been accepted and intervention initiated, the final box of the check can be ticked and the record closed. The question, as asked by a provider, is –

“Who is walking beside the families after the check to support them and ensure the referrals are done?”

2. Referral services

Most DHBs have referral services relevant to B4SC available in their region, however, capacity is variable (Litmus 2012e). Referral services for growth/obesity, behavioural issues and developmental issues received the poorest ratings from DHBs for their capacity to promptly service B4SC referrals. Five DHBs rated the capacity of referral services for behavioural issues as poor or very poor.

Other comments from DHBs included that:

- Family violence support and speech and language services can be limited in rural areas.
- Vision services have been overwhelmed with referrals since the change in vision screening protocols.

More than half of DHBs (12 out of 20) rate highly the effectiveness of providers’ relationships and communications for supporting referral from B4SC Services to specialist services (Litmus 2012e). Four DHBs all gave a mid-range rating for effectiveness of provider relationships in supporting referrals. One DHB gave a ‘poor’ rating, noting that, as this is the final WCTO check with a one-off payment, providers are not well resourced to assist with follow-up of referrals.

⁷⁵ Eligibility status is applied according to Ministry of Health eligibility criteria (www.moh.govt.nz/eligibility). New Zealand and Australian citizens and permanent residents, refugees and protected persons, and holders of work visas are eligible for publicly funded health and disability services. People under 17 years of age are eligible for publicly funded health and disability services if they are in the care and control of an eligible parent or guardian. Proof of eligibility is required by health service providers.

5.5 Quality considerations

Timing of the B4SC

B4SC data indicates that, while most children are completing the B4SC before they start school, many are not completing it until close to five years old. This makes it difficult for any referrals to be initiated, let alone any intervention completed, prior to a child starting school. This has implications for achievement of the B4SC's stated objective to 'ensure appropriate and timely referrals to improve child health and education outcomes', as delays to B4SC completion and referrals reduce the likelihood of problems being addressed before a child starts school.

Intensive resource required for engaging priority populations

Making contact, setting up a B4SC appointment and completing that appointment can be highly resource intensive and time consuming with hard-to-reach families. This investment is important, however, if the B4SC service is to reach and be effective for its priority populations. Persistence in 'tracking down' families, flexibility around where and when to undertake the B4SC and inclusion of vision and hearing screening in the one appointment, are all important mechanisms for increasing priority population uptake and completion of B4SC. As noted in the previous chapter, accessing hard-to-reach families is seen as a particular strength of Tamariki Ora providers.

Responsibility for supporting families to engage with specialist services

The role of the B4SC system appears to end once a referral has been accepted and intervention initiated. It is not clear who, if anyone, has responsibility to support families to progress through the initial stages of the referral process (agreeing an appointment time, attending appointments) and, subsequently, the ongoing interactions with specialist services. This represents a potential system gap where children, particularly those in more vulnerable families, may end up missing out on interventions because of family and system-level barriers to families accessing specialist services.

Responsibility for following-up referrals

The lack of certainty among providers as to who is responsible for following up referrals, and how many follow ups are required, presents a risk of referrals falling through the cracks and children missing out on specialist services.

Implementation Processes: Summary

- There are four key stages to implementing the B4SC: making contact with families, undertaking the B4SC, assessing scores and referring as appropriate, and following up referrals.
- A contact list derived from PHO enrolment information enables identification of children that are eligible for the B4SC. This is a key strength of the B4SC system. However, not all families are listed on this database and the database is not always up-to-date, so DHBs and B4SC Service providers use a range of other strategies to identify and contact eligible four year olds and their families that are not on the list.
- B4SCs are delivered in a range of settings across DHBs including primary health care clinics, homes and clinics in community settings. For most parents, the preference is to have the check done at home.
- The B4SC is primarily delivered by Registered Nurses who have received B4SC training, with vision and hearing screening components delivered by DHB-employed VHTs. Some general practice and Tamariki Ora B4SC nurses have received vision and hearing training to allow them to deliver all components of the B4SC.
- Most children begin the B4SC closer to four than five years of age, however, many do not close the check until closer to five years of age (a noticeable proportion are not closed until after five years).
- Most DHBs have specialist services relevant to B4SC available in their region, however, capacity is variable. Referral services for behavioural issues are given the poorest ratings by DHBs for their capacity to service B4SC referrals.
- A number of quality implications can be identified with regard to implementation processes:
 - Many B4SCs are not closed until a child is closer to five than four years old. This makes it difficult for any referrals to be initiated, let alone any needed intervention completed, prior to a child starting school.
 - Intensive resource is required for engaging hard-to-reach families and whānau. Persistence in 'tracking down' families, flexibility around where and when to undertake the B4SC and inclusion of vision and hearing screening in the one appointment, are all important mechanisms for increasing uptake and completion of B4SC among priority populations. As noted in the previous chapter, accessing hard-to-reach families is a particular strength of Tamariki Ora providers.
 - There is some uncertainty around who is responsible for following up B4SC referrals and how many times a referral should be followed up. This presents the risk that referrals may slip through the cracks and problems not be addressed because everyone assumes someone else will check.
 - It is not clear who, if anyone, has responsibility for supporting families to progress through the initial stages of the referral process. This represents a potential system gap where children, particularly those in more vulnerable families, may end up missing out on interventions because of family and system-level barriers to families accessing specialist services.

6. Workforce

This section provides an overview of B4SC training arrangements and DHB processes to ensure workforce standards and competencies are met. Capacity and capability and professional development issues are discussed before consideration of quality implications. The section begins with an overview of Ministry specifications for B4SC practitioner qualifications and training, and a description of B4SC professional nursing standards and competencies.

6.1 Ministry of Health specifications

With regard to B4SC practitioner qualifications and training, the B4SC Service Specification (Ministry of Health/DHBNZ 2011) stipulates that:

- The service (apart from the hearing and vision screening component) will be delivered by Registered Nurses (or other registered health professionals) who have a background in Public Health, WCTO or Primary Health Care.
- Before delivery of B4SC, the service will provide the registered health professionals with training in:
 - The content of the service, from a trainer who has received Ministry-approved Train the Trainer training, and
 - Child development, behaviour and speech and language, from a Senior Clinical Advisor / Paediatrician (the service provider will need to assess the child development knowledge of the registered health professionals and provide access to adequate training).
- The hearing and vision screening component of the service will be provided by qualified, DHB-funded VHTs who are provided with training from an Audiologist and Ophthalmologist / Optometrist in the national hearing and vision screening protocols in accordance with the *B4 School Check – A Handbook for Practitioners* (Ministry of Health 2008a). The training must be provided before delivery of any B4SCs. Where VHTs are not available, this component can be delivered by the Registered Health Professionals who have received training equivalent to that of a VHT. The B4SC service provider must demonstrate how the registered health professionals will maintain competence and quality.

In addition, professional nursing standards and competencies for B4SC have been developed by a working group consisting of New Zealand-based, expert child and family health nurses – *Professional Nursing Standards and Competencies for the B4SC* (Ministry of Health 2007). The B4SC standards and competencies are reflective of the core Registered Nurse competencies developed by the Nursing Council (2005). Nine standards are set out, as follows:

1. promoting health and wellbeing
2. early intervention
3. accessible service
4. reduce disparities
5. child and family, or whānau, centred service
6. positive parenting
7. preparing for school life
8. full participation
9. preparing the school community.

Each standard has an associated outcome, outcome criteria, nursing competencies and details what achievement should look like.

A **B4SC Competency Self Audit Tool** has been developed based on the above nursing standards and competencies (Plunket 2008). The self-assessment process is intended to document the extent to which competencies are developed and the need for any follow-up training.

6.2 Training

DHBs report that all B4SC providers have undertaken training in the content and delivery of B4SC (Litmus 2012e).⁷⁶ Training is delivered by someone who has undertaken the Ministry's B4SC (Train the Trainer) training, often the B4SC Coordinator, Clinical Leader or Plunket.

"All providers have staff that have attended Train the Trainer course enabling them to support/train new staff."

The training is a two day course, preceded by an optional half-day course providing the theoretical foundation for the practical competencies of the B4SC. The two day course covers all B4SC components, as well as modules on building relationships with parents, referral services and reducing health disparities.

Some DHBs have developed their own training materials (e.g. Hawke's Bay and Canterbury DHBs; Canterbury DHB 2012; Hawke's Bay DHB, 2012).

"Training requirements are locally designed – comprehensive training is provided to all nurses and VHTs participating in the programme as per MoH protocol and Train the Trainer resources."

In addition to initial B4SC training, B4SC nurses can (and are sometimes contractually required to) participate in in-service/ refresher courses. These courses tend to focus on one area (e.g. PEDS, new growth charts, over-referral issues) and are generally provided by the B4SC Coordinator or a Clinical Leader.

DHBs report that they ensure training requirements have been met through (Litmus 2012e):

- Contract monitoring and audits.

"Provider monthly returns completed quarterly, and [training] should be specified in narratives."

"Contract performance monitoring reports."

"Regular direct reporting to DHB by [PHO] Service Development Manager of workforce development and training being provide."

"Recently audited which demonstrated full contractual requirements are being met."

⁷⁶ Note that DHBs did not comment on VHT training as VHTs are contracted and managed separately from the B4SC service contracts.

- Monitoring of training uptake and completion by B4SC Coordinators.

“B4SC Administrator monitors contractual requirement of providers to attend in services.”

Some DHBs do not have any formal processes to monitor whether providers are meeting training requirements, in some cases indicating that a formal process is not necessary.

“Nothing formal – expectation that nurses will be trained.”

“Regular meetings.”

6.3 Competency

DHBs indicate that more than half of contracted B4SC providers meet ‘all’ competencies specified in the B4SC Service Specification (Litmus 2012e). Thirteen providers were deemed to meet ‘most’ B4SC competencies; all but one of these were PHOs (across four DHBs). Further investigation is required to understand why these 13 PHOs are not seen by contracting DHBs to meet ‘all’ required competencies. It is possible that this assessment is based on the lack of child health and development expertise among Practice Nurses. This is something that B4SC service providers are expected to address via training with a Senior Clinical Advisor/Paediatrician (MOH/DHBNZ 2011).

In addition to clinical review and support mechanisms outlined in Chapter 7 (Clinical Quality), **DHBs cite the follow systems and processes to ensure and support providers to meet competency requirements** (Litmus 2012e):

- Setting out a contractual requirement, as per service specifications, that B4SC practitioners must undertake B4SC training before they deliver any checks.

“No B4SC can be undertaken without nurses having completed all three days/components of B4SC training.”

“All providers are expected to have staff delivering checks complete the B4SC-specific training. Providers are not sub-contracted without this.”

“The [DHB] contract with [provider] requires any nurse completing a B4SC to have completed B4SC training with an approved trainer.”

- Specification of required competencies in provider contracts.

“Core key competencies identified for the contract – in service specification as mandatory.”

- Provision of, and participation in, training opportunities.

“B4 school training held at start-up of programme and just about to roll out more training days for refresher and new staff.”

“Both DHB and provider participate in national forums.”

“Provider arranges regular training session for front line staff.”

- Use of competency assessment tools.

“Competency tool for clinicians that all staff (PHN and VHT) audited against.”

“Alignment with the ‘District Health Board B4SC Competency Self Audit Tool April 2008’ by [provider].”

“Staff audit processes have been developed by the provider.”

One DHB commented that the B4SC Competency Self Audit Tool is not well-suited to delivery of B4SC in a General Practice setting due to the time required to complete the tool (more than two hours) and depth of assessment. As a result, a modified competency framework better suited to primary care delivery has been developed by a group of B4SC Coordinators. This tool, which was due to be finalised in May 2012, is expected to provide a quality competency assessment framework for primary care B4SC nurses.

Some DHBs do not have any formal processes to ensure providers are meeting competency requirements.

“We have an expectation that all quality requirements are met. All staff are appropriately qualified and trained.”

“No on-going updates, no one formally designated as clinical leader, informal support and peer support.”

“Clinical support is difficult to provide over a widespread [primary care] workforce. At the moment there is no formal process for skills assessment following training.”

6.4 Capacity and capability issues

DHBs and providers identify a range of challenges relating to the capacity and capability of the workforce to provide quality delivery of the B4SC. Key issues relate to overall capacity of the B4SC workforce, the capacity of smaller providers to ‘fit’ the B4SC into existing workloads and practices and the capacity of smaller providers to maintain and improve competency.

Views vary on the overall capacity of the B4SC workforce. Some DHBs / service providers feel comfortable with the availability of trained staff.

“Excellent capability - B4SC trained staff available in all areas (urban and rural).”

Others note challenges associated with recruiting and retaining qualified B4SC practitioners.

“It is difficult to employ already qualified people when a staff member leaves, e.g. Vision and Hearing Technician, creates a large gap in service provision while recruitment and training occurs.”

“The provider has reported occasional difficulties in resourcing staff when current staff leave, though they have always managed to recruit eventually.”

“Workforce remains an issue for our smaller Tamariki Ora/Well Child providers who have high staff turnover.”

Short-term contracts (discussed in Chapter 4) can be a barrier to recruitment and retention of B4SC staff.

“Ongoing short term contracts since inception of B4SC programme affects recruitment and retention of staff.”

Fitting the B4SC into existing workloads and work practices is a commonly identified capacity challenge at the organisational level, particularly for General Practice and smaller Tamariki Ora providers.

“Capacity is an issue – many providers are fitting the check into other workloads. The B4SC programme is administration intensive/heavy.”

“In General Practice, not all practices have a nurse/capacity/space. Building more capacity is limited to availability of nurses and funding for training.”

“Limited by environment issues e.g. suitable facilities.”

“There are still a small number of practices who are not allowing one hour for the B4SC.”

“Sufficient B4SC practice nurses have been trained who can carry out the checks. But changes in staffing and workload at the practices can make B4SC priority variable.”

“It works best when the GP understands and believes in the service and enables the Practice Nurse to have dedicated time rather than fitting it in with other work.”

Participating in B4SC training can also be a challenge for smaller B4SC providers and for VHTs. As discussed in Chapter 4, FFS funding is not seen to encourage or facilitate provider participation in professional development activities. Funding to participate in training, and ongoing access to Plunket training, is one of the most frequently identified capacity and capability issues for Tamariki Ora providers.

“Back-filling to attend updates to ensure latest information/training is received. Nurses find it difficult to meet study leave limits and to manage to attend all available courses applicable to primary health. Often Well Child health is not the current priority for study leave.”

“Continued access to Plunket training important.”

“Funding for training.”

“Support for VHT training.”

“VHT annual conference and study days. Not all VHTs can attend due to financial constraints.”

A common concern across DHBs and service providers relates to the need for B4SC nurses to deliver a high enough volume of checks to maintain proficiency (also identified in Chapter 4 as a potential disadvantage of primary care B4SC delivery). This is a particular challenge for General Practices and smaller Tamariki Ora providers.

“Confidence is poor in practices as checks are irregular rather than routine.”

Some providers are moving from having all nurses conducting B4SCs to having a dedicated B4SC team within the wider nursing team. A dedicated team is expected to support maintenance of B4SC proficiency by enabling a higher volume of B4SCs per nurse.

“The smaller providers have realigned their work whereby one nurse is dedicated to B4SC rather than all doing an average of two per week as this compromises the quality of the programme.”

Other capacity and capability issues mentioned by individual DHBs include:

- Workforce capacity issues place limitations on DHBs’ and service providers’ ability to provide a range of service delivery options.

“Current workforce capacity dictates that current service delivery for DHB completed checks is via centralised clinics, the ability to carry out smaller, community based clinics would enhance service delivery.”

- Limited capability of the B4SC workforce to think about and address quality issues.

“Capacity and the clinical capability of the workforce to deliver B4SC is not an issue; but rather the capability to work from a quality lens to deliver to those children most in need.”

- Practice nurses are unlikely to have specific Well Child expertise.

“Nurses in General Practice are not specially Well Child trained. Practice nurses are often required to multi-task with normal GP nursing. Mind set is different for ‘sick children’ and ‘well children’. Some practice nurses may not be child focused.”

As noted above, funding to attend training is an important capacity and capability challenge for Tamariki Ora providers. Other issues identified by Tamariki Ora providers were:

- The need for greater technological capability to access patient management systems when away from the office.

“[Provider] provides services to hard to reach/vulnerable whānau. The challenges associated with their practice requires that they are mobile. Funding to support resources such as iPads would assist the team to provide up to the minute information for organisation and clients.”

- The potential value of a National Tamariki Ora advisory group.

“A national Tamariki Ora operational or advisory group would be very beneficial. It could provide a robust infrastructure for support, advice and clinical guidance.”

6.5 Professional development

DHBs’ and providers’ suggestions for enhancing competency and professional development for B4SC providers relate to standardised, national level training and

qualifications, strengthened training and competency requirements in service specifications, the importance of regular shared learning opportunities, and specific training opportunities.

Suggestions and illustrative quotes are provided below:

- National B4SC training, to reduce variability in training content and encourage shared learnings.

“National training to allow B4SC Nurse to interact and discuss screening processes and update techniques (encourage shared learnings).”

“Train the Trainer was disappointing – difficult to take this back to new staff – perhaps regular generic training that new staff could be booked into.”

- National standards and structures for B4SC to improve quality and consistency of B4SC practice.

“National standards for programme, national oversight of practitioners is required for quality and consistency. A nationally recognised B4SC (e.g. NZQA) certificate. National coordinator roles.”

“Qualification needs to sit in the NZQA quality framework.”

- Enhanced training and competency specifications.

“Stated requirements that: 1) every provider has to have completed the B4SC basic seven hour training day. 2) On completion of the training day, the provider needs to have successfully completed the self-assessment tool. 3) Compulsory refresher training should be required.”

- Enhanced opportunities for shared learning and updates.

“Perhaps the opportunity for refreshers/updates, in B4SC providers group session.”

“Regular coordinator/educator national meetings for ongoing quality service delivery.”

“Ongoing up to date workshops when changes are made.”

“More regular training. Family violence prevention, child abuse and neglect.”

“Frequency of training/ refresher courses. Funding for workshops. Better communication from Ministry on changes to services. Provision of online training tools.”

- Enhanced on-the-job training and mentoring.

“One-on-one on the job training works well to teach the practical aspects.”

“Improved mentoring by B4SC Coordinators.”

- Advanced training for B4SC trainers and updated training material.

“Advanced training for B4SC trainers – focusing on specific components of the check.”

“Update the Train the Trainer manual for B4SC. Update the B4SC manual to ensure currency.”

- Training and support for administrators.

“B4SC data administrators need national training and ongoing support to ensure quality data input and national consistency.”

- Cultural safety training and support.

“B4SC managers could benefit from additional cultural safety education and support in integrating their service with other providers.”

6.6 Quality considerations

Monitoring of provider competency

DHBs appear to have relatively low level expectations and processes for ensuring providers comply with B4SC training and competency requirements. DHBs cite contract monitoring as their main mechanism for monitoring training and competency requirements. Competency self audit tools are used in a small number of DHBs. Some DHBs have no formal processes in this area. It is not clear the extent to which DHBs monitor service specification requirements that providers ‘assess the child development knowledge of the registered health professionals and provide access to adequate training’ and ‘demonstrate how the registered health professionals [who will provide vision and hearing screening] will maintain competence and quality’.

Aside from knowing that all B4SC practitioners are Registered Nurses and have undertaken between one and three days of B4SC training, DHBs do not seem to have a lot of information on the competency of the workforce. There is significant room for improved systems and processes for ensuring and enhancing workforce competency. This could include: providing more detail in service specifications regarding training and competency requirements, enhanced reporting requirements and ongoing competency assessment using the Competency Self Audit Tool (or similar).

Variability in B4SC training delivery and materials

B4SC training is currently provided by different providers, often using different training material, across different DHBs. While it is critical that B4SC providers receive training relevant to their local population and context, it is important to balance this with the need for consistent, high-quality training. Standardised training, with provision for local elements (e.g. referral pathways and services, priority population needs), is likely to contribute to increased adherence to B4SC delivery and referral protocols.

Barriers to maintaining competency in primary care and small provider settings

The above review of competency, capacity and capability issues for B4SC providers has revealed that smaller providers, especially General Practices, can face considerable barriers to effectively accommodating and supporting delivery of B4SCs in their practising environments. These barriers relate to resources (e.g. ability to provide dedicated space and one hour appointments, capacity and funds to support nurses to attend training) and the ability of small organisations to generate enough checks for B4SC nurses to maintain proficiency. It is important that B4SC providers provide, and potentially be required to demonstrate that they can provide, an environment that supports practitioner proficiency and quality delivery of checks.

Workforce: Summary

- DHBs report that all B4SC providers have undertaken training in the content and delivery of B4SC and more than half of providers meet required competencies.
- Compliance with training and competency requirements is loosely monitored through contract monitoring and audits; some DHBs have no formal processes to monitor whether providers are meeting training and competency requirements. A small number of DHBs use competency self-assessment tools.
- Key professional development issues identified by DHBs and providers include:
 - the need for standardised, national level training and qualifications
 - the need for strengthened training and competency requirements in service specifications
 - the need for enhanced and regular opportunities for shared learning.
- Key workforce capacity challenges identified by DHBs and providers include:
 - recruiting and retaining qualified B4SC practitioners (in this context, short term contracts are identified as a barrier to recruitment and retention of B4SC staff)
 - fitting the B4SC into existing workloads and work practices, particularly an issue for General Practice and smaller Tamariki Ora providers.
- Key workforce capability challenges identified by DHBs and providers include:
 - barriers to participation in B4SC training for smaller B4SC providers and for VHTs
 - maintaining a high enough volume of checks to maintain practitioner proficiency.
- Key quality considerations in the areas of workforce competency, capacity and capability include:
 - DHBs appear to have relatively low level expectations and processes for ensuring providers comply with B4SC training and competency requirements. There is significant room for improved systems and processes in this area. This could include: providing more detail in service specifications regarding training and competency requirements, enhanced reporting requirements and ongoing competency assessment using the Competency Self Audit Tool (or similar).
 - B4SC training is currently provided by different providers, often using different training material, across different DHBs. Standardised training, with provision for local elements (e.g. referral pathways and services, priority population needs), is likely to contribute to increased adherence to B4SC delivery and referral protocols.
 - Smaller providers, especially General Practices, can face considerable barriers to effectively accommodating and supporting delivery of B4SCs in their practising environments. It is important that B4SC providers provide an environment that supports practitioner proficiency and quality delivery of checks.

7. Clinical Quality

The chapter provides a brief overview of Ministry service specifications that relate directly to clinical quality. It then provides information on adherence to delivery and referral protocols, including contractual expectations in this regard, cultural appropriateness of B4SC tools, and clinical leadership, support and review structures. The chapter concludes with consideration of quality implications.

7.1 Ministry of Health specifications

There are three key stipulations in the B4SC Service Specification that relate directly to clinical quality (Ministry of Health/DHBNZ 2011):

- The B4SC service provider will provide the components of the B4SC as specified in the *B4 School Check – A Handbook for Practitioners* (Ministry of Health 2008a).
- The B4SC service provider must monitor the appropriateness and timeliness of referrals.
- The B4SC service will ensure B4SC practitioners have access to:
 - a Senior Child Health Clinical Advisor to provide guidance on clinical issues (e.g. developmental / community paediatricians, GPs or senior nurses)
 - a range of other multidisciplinary specialists to support them in making referral decisions.

7.2 Adherence to delivery protocols

It was outside the scope of this review to establish whether B4SC nurses deliver B4SC components according to specified protocols - this would require an observational study. However, surveys of DHBs and Tamariki Ora providers give some insight into contractual expectations of adherence to protocols and guidelines, and interviews with B4SC nurses and parents provide insight into variation in delivery of B4SC components.

18 of the 20 DHBs indicate that they specify protocols or guidelines in contracting B4SC Services (Litmus 2012e).⁷⁷ The guidelines most commonly referenced are the B4SC Handbook (Ministry of Health 2008a) and the WCTO Handbook (Ministry of Health 2002b). Tamariki Ora providers also identify the two handbooks as the guidelines they most commonly use to guide their delivery of B4SC services (Litmus 2012f).

⁷⁷ Note that it is unclear the extent to which these protocols/guidelines are explicitly mentioned in contracts or implicit in relationships between DHBs and providers.

Other protocols and guidelines specified by DHBs in B4SC contracting are (Litmus 2012e):

1. Healthy Smile, Healthy Child (oral health)
2. PEDS pathways (development)
3. Family Violence Prevention Protocol
4. Careerforce VHT standards (vision and hearing screening)
5. Hearing/vision national guidelines
6. Outreach immunisation policy
7. DHB smoking cessation policy/procedure
8. Immunisation Handbook
9. IMAC Guidelines
10. DHB informed consent policy / procedure.

Interviews with B4SC nurses and parents indicate some variability in delivery of B4SC components. This variability was evident in two key ways:

- B4SC nurses not adhering closely to protocols for undertaking the assessment or screen e.g. not taking two height measurements and calculating the average, as specified in the B4SC Handbook; completing the PEDS questionnaire for parents; not showing parents how to conduct a LTL assessment (see also Litmus 2012c).
- B4SC nurses developing 'work-arounds' for when a child is not completely compliant e.g. if a child is reluctant to allow a nurse to 'lift the lip' for the oral health assessment, some nurses will ask the child to smile and make their assessment based on what they can see.

7.3 Adherence to referral protocols

More than half of DHBs (13 out of 20) report that they specify protocols or guidelines for 'referral to specialist or primary care services' in contracting B4SC services (Litmus 2012e).⁷⁸ The B4SC Handbook (Ministry of Health 2008a) is again identified most often as the guidelines DHBs' expect providers to use for referral processes. Four DHBs said that they did not specify protocols or guidelines in this area and the rest did not know or did not respond to the question.

Wide variation in referral rates highlights potential variability in referral practices and adherence to referral protocols. As outlined in Section 10.2, B4SC cohort data reveals that almost all children identified as having a vision or hearing issue are referred or re-screened; however, only 11 to 23% of children identified as having dental, growth, developmental or behavioural issues are referred. There is also significant variation in referral rates by ethnicity, deprivation, DHB and, for some areas, gender.

This variability and low referral rates has also been identified by the Ministry (Ministry of Health 2011 and 2012b).

⁷⁸ Note that it is unclear the extent to which these protocols/guidelines are explicitly mentioned in contracts or assumed/implicit in relationship between DHB and provider.

DHBs and providers identified several factors that may influence variable referral practices:

- Over-referral due to limited referral options e.g. some providers noted that there is an increased likelihood of over-referral to specialists for behavioural issues because the only other option is to encourage parents to attend parenting programmes; something many parents are reluctant to do.
- Under-referral due to parental reluctance e.g. some parents do not want their child to be referred for obesity because they do not believe that their child has an issue.
- Lack of clarity around how to manage high parental PEDS scores indicating a referral, when professional judgement indicates that the child is normal and does not require specialist intervention.
- Poor provider knowledge and understanding of referral protocols and pathways.
- Children already ‘under care’ so no referral required despite assessment scores indicating otherwise – whether or not a child is ‘under care’ is not currently recorded for most B4SC components; this is something the Ministry is looking at.

7.4 Cultural appropriateness of B4SC tools

The design and administration of B4SC screening tests may elicit inaccurate results for some children due to language and cultural differences. For example, VHTs in Counties Manukau indicated that the vision testing posters are not working for Pacific children because English is often a second language and they do not yet know the alphabet. As a result, they fail the vision test but it is not because they have poor eyesight.

“Confusion bars can be good, but not in Counties Manukau. They are too difficult for a child with ESOL because they are learning the alphabet. They sit there and freak out – it’s causing a higher referral rate. They miss the x and v ... That’s a stumbling block in Counties Manukau. We only use only books with confusion bars. Some know the alphabet but very few.”

Similarly, the design of the PEDS questionnaire may result in over-identification of concerns for some Pacific children because their parents want to give the ‘right’ answer so answer ‘yes’ to most questions.

“Have difficulty with ESOL and PEDs and their interpretation of it. You would normally go knowing their culture to start with. I ask if they are okay writing in English. They will circle ‘yes’, ‘yes’, ‘yes’ and there are actually no concerns. ‘Yes’ means they have a concern ... They are circling ‘yes’ because they want to be seen to give the right answer.”

See also Chapter 9 (Parents’ Views) for more on language and cultural barriers experienced by parents.

7.5 Clinical leadership, support and review structures

Most DHBs have clinical advisory groups (CAGs) in place for their B4SC service; slightly fewer have governance groups (see Table 5).

- 15 of the 20 DHBs have CAGs for their B4SC service. These are led by a range of different organisations and individuals, including DHBs (7), PHOs (6) and B4SC Coordinators (1). One DHB indicated that its CAG is not currently active but that there is an intention to reestablish it in the near future. Four DHBs did not answer this question.
- 13 of the 20 DHBs have governance groups for their B4SC service. Seven of these are PHO-led, five are DHB-led, one is Plunket-led and one DHB does not have a governance group but receives governance from senior DHB management.

Almost all DHBs have clinical support and service networks in place for the B4SC service; few have supervision arrangements (see Table 5).

- 19 of the 20 DHBs have clinical support available to B4SC services. DHBs indicated that clinical support is provided by a range of different people and organisations, including Plunket Clinical Leads, B4SC Clinical Nurse Leaders / Coordinators, CAGs and Community Paediatricians.
- 18 of the 20 DHBs have service networks to support linkages across providers of B4SC Services. Most were led or provided by the B4SC Coordinator or WCTO providers.
- 11 of the 20 DHBs indicated that they have supervision arrangements. DHBs indicated that supervision is provided by Plunket Clinical Leads, B4SC Clinical Nurse Leaders / Coordinators, DHBs for public health nurses and PHOs for primary care nurses.

Most DHBs have referral reviews in place for the B4SC service (15 out of 20 DHBs; see Table 5). Six of the referral review processes are DHB-led, one is Plunket-led, four are PHO-led, two are CAG-led and one is Paediatrician-led. Five DHBs did not answer this question.

Table 32: Clinical leadership, support and review processes for B4SC services

Clinical review / support process	Total number of DHBs with this process (n=20)	DHB-led (n=8)	Plunket-led (n=4)	PHO-led (n=8)
Clinical Advisory Group	15	4	4	7
Governance group	13	3	3	7
Clinical support	19	8	4	7
Service networks	18	7	3	8
Supervision	11	4	2	5
Referral reviews	15	7	3	5

Source: Litmus 2012e

Māori and Pacific Tamariki Ora providers also indicated that the clinical support structures outlined above are available to their WCTO team, including B4SC (Litmus 2012f). Most support structures are regularly used by WCTO teams however supervision arrangements are used less frequently.

Referral review processes are not always formal and multidisciplinary. In some DHBs referral review is a formal function of the B4SC CAG. In others, referral review is undertaken by the B4SC Coordinator as part of general monitoring of referrals. In these situations, regular meetings ('clinical updates') between the Coordinator and providers often provide the forum for discussion of referral decisions. These meetings can be an important vehicle for monitoring and review of B4SC delivery in smaller DHBs with fewer clinical review structures. Examples of two different referral review arrangements are provided below:

- In one DHB there is currently no CAG so the B4SC Coordinator undertakes all referral reviews. This includes checking all assessment scores and associated referrals and seeking explanation from the relevant B4SC nurse if it appears that a referral has not been made when it should have been (or vice versa). B4SC nurses in this DHB also informally seek advice on referral decisions from the B4SC Coordinator or paediatrician / therapist colleagues.
- In another DHB, the referral review process is undertaken by a multidisciplinary triage team in conjunction with the Clinical Nurse Coordinator. Practice Nurses submit an electronic version of all B4SCs to the B4SC Administrator, the Administrator loads the checks onto the Ministry database and reviews all checks for referrals, referrals are then forwarded, via the B4SC Clinical Nurse Coordinator, to a multidisciplinary triage team who meet fortnightly. The team, as a collective, determine the most appropriate referral service(s) for a child based on existing services that may already be in place for a child or the child's family (if known) and the referral information provided.

Only two DHBs emerged in this review as having locally developed referral pathways (Litmus 2012e).⁷⁹ One DHB has their own B4SC Clinical Practice Manual, which includes referral pathways specific to their local population needs. The other DHB has a flow chart for clinical referrals arising from B4SC and a specific flow chart for referral of preschool children with developmental and/or behavioural concerns. Four DHBs mentioned that providers are expected to adhere to local DHB protocols for referral review, including for example, discussion of referrals at multidisciplinary team (MDT) meetings. One DHB indicated that local referral pathways are in development.

Small Tamariki Ora providers often lack B4SC clinical leadership. In this situation, B4SC Coordinators / Clinical Leads and CAGs can play an important role in providing clinical guidance and support. However, as mentioned previously, some smaller providers may struggle to make the most of wider clinical support and review opportunities due to limited capacity.

One DHB is setting up an overall WCTO Clinical Lead role (0.5 FTE for core contacts one to seven and 1 FTE for B4SC) in an effort to address this clinical leadership gap. The person in this role will also take a lead on B4SC training and referral monitoring.

⁷⁹ Note that DHBs were not specifically asked whether they had local referral pathways for B4SC, however, they were asked to specify which referral protocols/guidelines they used in contracting B4SC Services. In this context, Hawke's Bay DHB identified its Clinical Practice Manual; Counties Manukau DHB provided copies of its referral pathways during case study site visits.

7.5 Quality considerations

Variability in delivery of B4SC components

There is some evidence of poor adherence to delivery protocols. This may be an important quality issue, depending on what the deviation is and how, if at all, this deviation impacts on assessment scores and intervention responses (e.g. taking only one height measurement rather than taking two and generating an average, may not make a material difference to the overall assessment of whether a child has a growth issue). In principle, however, all assessment and screening tools should be delivered consistently by all practitioners (as noted in the B4SC Service Specifications). Quality checking of B4SC delivery will assist in identifying delivery variation and where additional training may be required.

Variability in adherence to referral protocols

Analysis of B4SC data has revealed considerable variation in referral rates and overall, low referral rates for dental, growth, developmental and behavioural issues. The Ministry, DHBs and B4SC service providers have made considerable progress in identifying and addressing causes of variation. However, there is an ongoing need to focus on referral processes and adherence to protocols in order to minimise over-referral (which can result in an overburdening of specialist services and cause undue anxiety to families), and under-referral (which may represent missed opportunities to improve a child's health and wellbeing outcomes).

Inaccurate results due to language and cultural barriers

Interviews with B4SC providers in Counties Manukau DHB indicate that some of the screening tests may elicit inaccurate results due to language barriers and cultural differences. This appears to be an issue for Pacific families in particular. It is essential that steps be taken to ensure the B4SC is effective for Pacific children and parents. This might include increasing the number of Pacific B4SC provider organisations and nurses who speak Pasifika languages, reviewing the cultural relevance of B4SC tools, translating B4SC tools into Pasifika languages and developing Pacific language B4SC resources.

Consideration should also be given to how language and cultural barriers to B4SC effectiveness can be minimised for other minority ethnic groups.

Local referral pathways

Local referral pathways are not consistently available across all DHBs. This review process identified only two DHBs with local referral pathways for B4SC referrals and a further four DHBs with local DHB protocols that included multi-disciplinary review of referrals. The development of local referral pathways represents an opportunity for key B4SC stakeholders, including a range of local health, social and education services, to get together and identify what specialist services are available locally, what capacity they have, and which providers should be referred to and in which circumstances. Use of agreed pathways can support consistent and quality referral practices and assist with the management of referral services workload.

Referral reviews

Most DHBs have referral review arrangements in place but not all of these arrangements are formalised, multidisciplinary processes. Like local referral pathways, formalised multidisciplinary referral review processes can support consistent and quality referral practices, and assist with the management of the referral services workload. Formalised referral review processes also provide an important vehicle for shared learning and professional development, with practitioners able to jointly reflect on challenging cases and collaboratively agree, with the guidance of senior clinicians, the best referral approach.

Clinical accountability

Clear accountability is a key element of quality improvement for any system. This review has identified a lack of clarity regarding clinical accountability for B4SC, with accountability attached to a range of different roles, whether individual (e.g. B4SC Coordinator) or forums (e.g. CAGs). It is important to identify who is accountable in each DHB for the clinical quality of the B4SC service and to clarify how this accountability manifests. For example, does clinical accountability mean reviewing every check and referral decision? Or does it mean ensuring processes are in place to support high quality B4SC delivery as 'business as usual' with mechanisms for case review and senior clinical support?

Linked to this system level need for clinical accountability is the need for organisational level clinical accountability and leadership. The absence of B4SC clinical leads in some smaller Tamariki Ora providers may mean that no single person is responsible for ensuring high quality and consistent delivery of checks across that organisation's B4SC team.

Clinical Quality: Summary

- A range of clinical leadership, support and review structures are available for B4SC services:
 - most DHBs have CAGs, clinical support, service networks, and referral review arrangements
 - a smaller number have governance groups
 - few DHBs have supervision arrangements or local referral pathways.
- Small Tamariki Ora providers often lack B4SC clinical leadership. B4SC Coordinators / Clinical Leads and CAGs can play an important role in providing clinical guidance and support. However, some smaller providers may struggle to make the most of wider clinical support and review opportunities due to limited capacity.
- A number of quality implications can be identified with regard to clinical quality:
 - There is some evidence of poor adherence to delivery protocols. Quality checking of B4SC delivery will assist in identifying delivery variation and where additional training may be required.
 - Low and variable referral rates point to considerable variation in referral practices. The Ministry, DHBs and B4SC service providers have made considerable progress in identifying and addressing causes of referral rate variation and under-referral. However, there is an ongoing need to focus on referral processes and adherence to protocols in order to minimise over and under-referral.
 - Some screening tests may elicit inaccurate results due to language barriers and cultural differences. This appears to be an issue for Pacific families in particular. It is essential that steps be taken to ensure the B4SC is effective for Pacific children and parents. This might include increasing the number of Pacific B4SC provider organisations and nurses who speak Pacific languages, reviewing the cultural relevance of B4SC tools, translating B4SC tools into Pacific languages and developing Pacific language B4SC resources.
 - Local referral pathways are not consistently available across all DHBs. The development of local referral pathways represents an opportunity for key B4SC stakeholders to get together and identify what specialist services are available locally, what capacity they have, and which providers should be referred to in which circumstances. Use of agreed pathways can support consistent and quality referral practices and assist with the management of referral services workload.
 - Most DHBs have referral review arrangements in place but not all of these arrangements are formalised, multidisciplinary processes. Formalised multidisciplinary referral review processes can support consistent and quality referral practices and assist with management of referral services workload. Formalised referral review processes also provide an important for shared learning and professional development, with practitioners able to jointly reflect on challenging cases and collaboratively agree, with the guidance of senior clinicians, the best referral approach.
 - Clear clinical accountability is a key element of quality improvement for any system. It is important to identify who is accountable in each DHB for the clinical quality of the B4SC service and to clarify how this accountability manifests.

8. Information Management

This section provides an outline of Ministry requirements regarding B4SC information reporting, describes current use of reporting to inform quality improvements and identifies key information management issues and quality implications.

8.1 Ministry of Health specifications

The B4SC Service Specification (Ministry of Health/DHBNZ 2011) requires that B4SC service providers must:

- Ensure the minimum data requirements are entered into the national B4SC information system, for all B4SCs provided, as per the B4SC minimum information requirements.
- Ensure that all B4SCs are closed in the B4SC information system. For a child to exit the B4SC service, their check must have been completed and closed -
 - A B4SC is recorded as 'completed' in the B4SC information system once the minimum information requirements have been fulfilled.
 - A B4SC is recorded as 'closed' once it has been completed and all referrals have been accepted and commenced by the referral service, and the referral outcome information has been stored and entered into the information system.
- Ensure that all B4SCs are, at a minimum, entered and completed in the B4SC information system no later than seven days after the child's fifth birthday.
- Provide quarterly reports on percentage targets for the population and percentage targets for children in high deprivation (quintile 5) populations.

Although there is a requirement that B4SC service providers 'monitor the appropriateness and timeliness of referrals and the impact on referral pathways', there is no explicit requirement that providers use this or any other information to inform quality improvements to service delivery.

8.2 Adherence with information requirements

DHBs report that all B4SC providers use the B4SC information system and almost all meet the B4SC minimum information requirements.

8.3 Use of reporting to inform quality improvement

Most DHBs rate themselves as average to excellent for use of provider reporting to inform improvements to B4SC services (Litmus 2012e). Four of the five DHBs that rate themselves as 'excellent' have primary care-led delivery models. Of the four DHBs with Plunket-led delivery models, three rate themselves mid-range to poor for use of provider reporting to inform improvements.

Most B4SC providers (27 of the 42) have not submitted a quality plan to their DHB (Litmus 2012e). All those that have submitted a quality plan (11 providers) are required to report against this plan. One DHB, a primary care-led delivery model, requires all its providers to report against an overall quality plan.

In relation to use of provider reporting for quality improvement, DHBs commented that:

- Information reported by providers is mainly used to assess coverage; provider information does not usually include quality information.

“Figures are used to indicate to providers % of high dep, and other statistics.”

“Provider reports mainly used for coverage”.

“The provider report provides high level information on outputs achieved and clinic information; but lacks in terms of quality processes and assurance of ongoing service development.”

- The monthly report provided to the Ministry is not broken down by providers.

“The Ministry monthly report is unable to provide provider-specific reporting.”

“The database doesn’t allow us to run provider performance reports.”

“[Ministry report] useful for comparing overall performance to other DHBs, and performance against Ministry targets, but ... we also needed to develop other reports for more detailed analysis by practice and nurse providers.”

Suggestions for how current reporting processes could be strengthened to improve quality delivery of B4SC services reflect the above feedback:

- Provider reporting needs to include quality improvement information.

“Further information on what quality improvement processes are happening and assurance of ongoing service development.”

- DHBs need to be able to look at B4SC data at a provider level (not just overall DHB level).

“The database enabling the DHB to run provider performance reports. The current database does not allow the DHB to create any useful operational reports.”

- Greater DHB access to B4SC data would enable more detailed analysis.

“Better access to data for detailed analysis.”

- A shorter timeframe for reporting would enable timely feedback on the impact of any quality improvements.

“Present reporting reflects 13 month data therefore quality improvements are still affected by old data. Opportunity for shortened timeframe for reporting would reflect quality improvements.”

8.4 Information management issues

DHBs and providers are largely positive about the B4SC information system. In particular, many note the value of having an eligible population base and a centralised system that all DHBs use.

DHBs and providers consistently identify two key information management issues:

1. **Duplication of data entry:** B4SC nurses may need to record information from a check in up to four places: B4SC documentation (questionnaires etc) at the time of the check; child's WCTO Health book if the parent has brought it along; organisational client / patient management system; and the DHB's reporting template. All information submitted by providers is then entered by the B4SC Coordinator or Administrator into the DHB's monthly report to the Ministry. DHBs and providers note that there is plenty of opportunity to reduce duplication of data entry work, freeing up time for delivering the actual checks.

"Need to reenter some data multiple times."

"Smaller providers record check info manually, at time of check, then enter into own client management system, then into Ministry/DHB reporting (also Well Child books) – duplication?"

"Double handling of some info because providers have own systems as well as B4SC reporting – duplication of data entry time – one provider estimates one day/week spent on data entry."

"VHTH - have to data enter into B4SC and Ministry of Education database - duplication?"

2. **B4SC information system integration with other information systems.** While acknowledging the advantage of having a standalone information system for B4SC, DHBs and providers identify the need for this information system to be integrated with other health information systems.

"B4SC data doesn't link to any other data sets."

"Data sets need to talk to each other e.g. Imms, B4SC, WCTO – Plunket Plus will also be standalone."

The standout issue here is the lack of integration with WCTO information, meaning that providers that have not delivered WCTO core contacts one to seven do not have access to information from previous checks (this would represent most B4SC providers, given the predominance of general practices and DHB providers in B4SC delivery). This has significant issues for providers' ability to make referral decisions that are informed by the child and family's health and intervention history. Lack of integration with the National Immunisation Register presents a similar challenge, with B4SC providers unable to access up-to-date information on a child's immunisation status, a core component of the B4SC.

"DHBs/B4SC providers have no information about previous contacts and outcomes of those contacts."

"Future focus – linking data sets so nurses better informed as to which checks have been done."

Another issue is integration with Ministry of Education information systems. As discussed in Chapter 9, parents and caregivers expect B4SC information to be provided to their child's school, in order to assist the school in catering to their child's needs. Currently only vision and hearing information is being shared with Education.

8.5 Quality considerations

The B4SC information system is a strength of the service

Overall, and in comparison to information management for the WCTO programme, the B4SC information system is a valued element of the B4SC service. DHBs and providers support having a national information system that all providers use. This review did not identify any major issues with use of the B4SC information system.

Quality reporting by providers

There is no requirement that providers report on quality assurance or improvement processes. Few providers submit a quality plan for their B4SC service delivery. Building quality assurance and improvement requirements into contract monitoring (e.g. client feedback mechanisms, professional development and clinical supervision arrangements) would be a significant step towards embedding a quality improvement approach across the B4SC system.

Capability to analyse B4SC data at a provider level

Improved capability in the B4SC information system to drill down into B4SC data at a provider level would assist DHBs to assess variability in provider delivery, thereby informing quality improvement actions.

Duplication of data entry

As previously identified, the requirement to meet targets is already placing pressure on some providers to limit the amount of time they spend undertaking individual checks; in particular, the amount of time they have available to talk with parents and address their concerns or any wider household concerns that may present. Minimising double handling of data would free up B4SC Nurses and Coordinators to focus on reaching families and engaging in high quality interactions with parents and children. Some possible ways to minimise double handing of data include:

- mobile technology, allowing direct entry of B4SC results into the B4SC information system
- providing parents with online access to B4SC results, reducing the need for completion of the WCTO Health book (recognising that physical completion of the WCTO Health book will still be important for some families and this option should be retained)
- integration of the B4SC reporting system with client/patient management systems so that B4SC nurses only need to enter information into one information system.

Integration of the B4SC information system with other systems

Surveillance components of child health programmes are based on a principle of regular data collection and monitoring of results and change over time. With the current disconnection of information collected at the B4SC from information collected at previous WCTO core contacts, this principle is currently not being realised. Assessment and referral decisions are often being made in the absence of any information about the child's health history and any previous interactions with specialist services. Ensuring all B4SC providers have access to children's previous WCTO information is a key process for supporting high quality assessment and referral decisions.

Information Management: Summary

- DHBs and providers are largely positive about the B4SC information system; in particular, they note the value of having an eligible population base and a centralised system that all DHBs and providers use.
- Most DHBs rate themselves well for use of provider reporting to inform improvements to B4SC services. However, few B4SC providers submit quality plans, providers are not generally required to include quality information in their reporting, and DHB B4SC reporting does not facilitate analysis at a provider level.
- The two key information management issues identified by DHBs and providers are:
 1. duplication of data entry effort
 2. B4SC information system integration with other information systems – the key issue here is the lack of integration with WCTO information.
- A number of quality implications can be identified with regard to information management:
 - There is no requirement that providers report on quality assurance or improvement processes. Building quality requirements into contract monitoring would be a significant step towards embedding a quality improvement approach across the B4SC system.
 - Improved capability in the B4SC information system to enable DHBs to drill down into B4SC data at a provider level would assist DHBs to assess variability in provider delivery, thereby informing quality improvement actions.
 - Minimising double handling of data would free up B4SC Nurses and Coordinators to focus on reaching families and engaging in high quality interactions with parents and children.
 - Surveillance components of child health programmes are based on a principle of regular data collection and monitoring of results and change over time. With the current disconnection of information collected at the B4SC from information collected at previous WCTO core contacts, this principle may not be being realised. Further, assessment and referral decisions are often being made in the absence of any information about the child's health history and any previous interactions with specialist services. Ensuring all B4SC providers have access to children's previous WCTO information is a key process for supporting high quality assessment and referral decisions.

9. Parents' Views

This section describes parents' and caregivers' views and experiences of the B4SC. Information is based on focus groups undertaken with Māori, Pacific and European/ Other parents and caregivers in Taranaki, Counties Manukau and Canterbury DHBs. All participants had children who had recently completed the B4SC and around half had used a Tamariki Ora provider.

In this section, Ministry of Health requirements with regard to child and family/ whānau experiences of the B4SC are first outlined. Parents' and caregivers' (henceforth referred to as 'parents') overall views on the B4SC are then described (Section 9.2), followed by their views on, and experiences of, PEDS, Lift the Lip and WHO Growth Charts (Section 9.3). Section 9.4 outlines parents' feedback on delivery aspects of the check. A summary of key quality considerations is provided in the final section, with a particular focus on cultural relevance for Māori and Pacific children, families and whānau.

9.1 Ministry of Health specifications

As outlined in Section 4.1, the key service requirements relevant to child, parent and family/ whānau experiences of the B4SC are that (Ministry of Health/DHBNZ 2011):

- The B4SC service provider must deliver the B4SC in a clinically, culturally and socially appropriate manner and setting that respects the privacy and development needs of the children and their families.
- B4SC services must acknowledge the cultural beliefs of Māori and Pacific populations and provide effective service delivery models for Māori and Pacific families and whānau.

In addition B4SC providers are expected to undertake checks in a manner that promotes and sustains a working relationship between the health practitioner, families and whānau being assessed (Ministry of Health 2008a). This is broadly referred to as a partnership approach.

9.2 Overall views on the B4SC

Value and relevance

Parents' views on the B4SC were mixed. Some parents, predominantly European/ Other parents, saw little value in the B4SC. These parents could not see the point of the assessments and the 'failure' of the check to identify any concerns reinforced their view that the various assessments were pointless.

"Both got tested at preschool. What colour is this, what is that. I found it was a waste of space. The doctor's nurse did it. It was like – can you hold a pencil, recite the alphabet...?"

"The hearing and sight checks I'm happy to do. But the other bits aren't doing anything."

“I don’t think the check really picked up anything. It was just a ‘tick tick tick’, here’s a toothbrush and that’s it.”

Some parents felt that the B4SC was not there to assist them and respond to their concerns, but instead to tick boxes for the B4SC provider.

“There was no reassurance of my issue – temper tantrums. They just recorded it, and didn’t talk about it. I really wanted to get some information.”

“She did ask me my concerns but it wasn’t a big discussion. I didn’t think it was helpful. It was just ‘what are the issues’ and nothing more. My concerns weren’t addressed.”

“Lack of empathy – just felt like a number.”

A small number of European/ Other parents in Counties Manukau DHB felt that the B4SC was not targeted at them and their families.

“I had the feeling that the people they are aiming it at are not they people they are naming it at.”

“The staff there are talking about [the B4SC] is for the lower class of children.”

For some parents, particularly Māori parents, the B4SC was reassuring. It was viewed as a welcome opportunity to identify and address any developmental issues that may not have been picked up, to check that their child will be ready for school and to reassure them that their child is normal.

“I like the Before School Check, that they check a whole range of things.”

“I liked the test because we found out about the ear check and that he is half deaf in one ear.”

“The checks give you relief that you know they are alright.”

“I think it was good because it gave you an idea as to whether your kids were normal.”

“I’ve had sick children so I’m neurotic, but it’s good to get a check to see if something is normal or just me being paranoid.”

Pacific parents’ views on the B4SC were less clear, although in the main, they appeared relatively positive.

“Yes. It’s good to know they’re growing okay.”

“It’s good. My girl has a problem with blocked ears so it was good to get it checked.”

Views on the value and relevance of the B4SC were, for some European/ Other and Māori parents, situated in a wider context of diminishing relevance of WCTO checks and connection to WCTO providers. For these parents, the perceived importance of WCTO checks decreased as their child got older and they become more confident in their child’s health and wellbeing and their own parenting. This was particularly evident in families with more than one child and was often associated with lower uptake of later WCTO checks.

“I had [WCTO checks] with my first two and not with my last four ... But I don’t need them. My children are still thriving. The difference is I don’t know how much they weigh on a regular basis.”

“I wasn’t as pedantic with my youngest as I figure she’s healthy, she’s fine.”

“I’d be the same. The older ones yes. But with the youngest, hardly any [WCTO checks]. It’s because I feel more comfortable and they haven’t got in contact with me.”

For some parents, non-participation in later WCTO checks reflected dissatisfaction with the WCTO provider relationship at earlier contacts. For these parents, quality and continuity of the relationship with their WCTO provider appeared to be a key driver of their disengagement with the WCTO programme.

“The [WCTO] nurse came a couple of times and it was impersonal and I didn’t enjoy it so I cut it off.”

“My first time I went once or twice [to WCTO] and then I didn’t bother anymore. It was pointless for me. There was no relationship, I got a different nurse every time and they did the same thing as my doctor.”

Timing

Many parents, Pacific, European/ Other and Māori, questioned the timing of the B4SC, suggesting that it needed to take place earlier than four years old. The long gap between WCTO core contact seven (undertaken between two and three years) and the B4SC was noted. Some parents expressed concern that problems could emerge in this time that would not get picked up until the child turned four.

“There’s so much in the first six months, but from then until the B4SC, there’s nothing to check hearing, sight etc. So, if there’s a problem, it’s not picked up.”

“There’s a big gap after 15 months. I think they should come in between.”

Others felt that a check at four years old does not allow enough time for problems to be addressed and, ideally, resolved before the child starts school.

“I feel like the B4SC would have been good around three and a half years, because I was sending my five year old to get ear implants but now she is behind because of her hearing difficulties. So if you do the test beforehand, then it would get checked and corrected earlier, and would not disrupt their learning.”

“I think the hearing / eyes/speech thing should be tested at two to three years, not four. If they do have a problem, the earlier the better. To solve the problem before they start school, not as they start school.”

“I wish we had it earlier, but he ended up getting speech therapy, etc. before school.”

The education connection

The positioning of the check as ‘before school’ caused some confusion. Some parents understood the name to mean that the check should be undertaken just before

school (not when a child turns four). This meant that some parents delayed doing the check until just before their child turned five as they perceived this to be the intended timing.

“I didn’t understand why they wanted a check for Before School when [my child] was four years.”

Parents often expected the check outcomes to be passed on to school. For some parents, the whole point of the B4SC is to identify issues so that schools can be better prepared to address them when the child starts school.

“I think the information should be passed directly to the school. I thought that was the point.”

Parents generally valued the role and contribution of preschools to the B4SC. They liked that someone with child development expertise and who knew their child well, was providing a formal assessment of their child to contribute to the overall assessment.

“I thought it was good that the preschool had a form to fill out, it gives another professional opinion.”

“[Kindy] know the children and the family background, and they know what should be of concern and what isn’t.”

9.3 Views and experiences of B4SC components

Reflecting the focus of the overall programme of quality reviews on the three new assessment tools (PEDS, Lift the Lip and WHO Growth Charts), parent feedback on these tools was specifically sought in focus groups. Key findings from parent interviews are summarised below. Detailed findings can be found in the report on the Quality Review of the Three New Assessment Tools (Litmus 2012c).

PEDS

Parents had mixed experiences with PEDS. Some parents found PEDS a useful tool to reflect on their child’s development. These parents wanted more time to consider their responses to the questionnaire. Writing down their responses and comments formalised the process and prompted greater consideration of their child’s development. Other parents were indifferent to the process, and did not consider PEDS to be either useful or challenging.

Some parents experienced difficulty using the tool because English was not their first language or because they had no frame of reference to assess concern.

“It’s hard to know if my child is normal, I only know my kids.”

Some Pacific and Māori parents were uncomfortable with and anxious or whakamā about potential developmental problems with their child. These parents were worried they may be viewed as a bad parent if their child had a developmental issue, and therefore, were frightened about identifying something wrong with their child.

“I know there’s no wrong or right – I don’t want to answer because I think with some of the questions – is he retarded? I know he has a bad temper – is that ok?”

“I think the [PEDS] questions are very good ... Some of us ... don’t seek medical help in such situations. Whether your child is autistic you have the signs but you’re too proud. You think ‘oh no, they’ll grow out of it’. With these questions it’s good that we put it out there. It is really important to be honest as you can instead of having your pride get in the way. It opens the door to seek help.”

“Quite proud, so there is a sense of shame when you hear your child has issues.”

Some parents also indicated that questionnaires were not the preferred form of engagement and there was a mix of responses as to whether parents found the process to be useful.

“Nah it wasn’t really useful. I don’t think you need forms to talk about concerns.”

Lift the Lip

Parents’ experiences and recall of the oral health assessment was varied. Some parents recalled the B4SC nurses looking at their child’s teeth.

“Actually, at Before School Check they did look.”

“They did lift his lip and look at his teeth. How to help with the brushing and not to give them juice.”

“They tell you what to feed them and what not to. She taught me that a little bit of toothpaste is ok to use with the small kids.”

However, most parents’ recalled only the enrolment with a community dental service and receiving free toothpaste and brush and messages on good oral health practices, and not the B4SC nurse checking the teeth. No parents recalled being shown how to check their child’s teeth.

“Yes. We got a toothbrush and toothpaste. That was it. I don’t think she looked at the teeth.”

“They didn’t tell me how to check the teeth, but she did ask me if she was enrolled in the dentist”

“I just sat in the corner, they don’t teach you how to do it.”

There was no parent feedback to indicate substantive differences in how Māori, Pacific and European/ Other parents experience LTL and oral health promotion in the B4SC (Litmus 2012c).

Growth measurements

Parents generally liked the growth measurements being undertaken, to see how their child was growing, whether their growth was normal, and how it compared to other children. The value parents placed on the measures varied. Some parents found the measures reassuring.

“It tells me how their growth is and that they’re growing to what they’re meant to be. I like it, because I never do it.”

“It really put my mind at rest with how ... [my child] was growing.”

Other parents were more indifferent to the measures. They considered them a ‘nice to have’, rather than an essential part of a WCTO check, or a driving reason to attend. There

was a view from these parents that the growth measures may be more relevant for parents with children with growth problems.

“There must be some that are underweight or overweight, so it’s important for them.”

Parents had different experiences of conversations with WCTO providers about growth and healthy nutrition. Some parents found the conversation useful as it provided them with tools to address any weight issues. Other parents found the conversations unsettling and unsympathetic towards their child.

“I found that helpful though, because mine slipped under the average so I changed diet, etc. We could identify what we could change.”

“I don’t like the emphasis the [WCTO] nurses put on the growth chart. My children have all been completely normal but at certain times were called ‘underweight’ ‘short’ etc, saying there’s something wrong compared to the ‘normal’ graph. They need to just look at how they’re growing.”

“To us she looks normal. But they told me she was fat in front of her.”

There was no parent feedback to indicate substantive differences in how Māori, Pacific, and European/ Other parents experience growth measurements. Māori and Pacific were perhaps more likely to consider the growth monitoring as an important part of the WCTO core contacts.

9.4 Delivery

Time and place

Some working Pacific parents felt that they had not been well informed about B4SCs taking place at their child’s kindy or preschool, and that there was limited opportunity for them to be involved. This was particularly an issue for families where grandparents or other caregivers took children to and from preschool, and these caregivers were not always able to explain what had taken place to parents. Parents emphasised the importance of parental involvement in the B4SC and suggested that there needed to be more flexibility around when B4SCs are undertaken so that working parents can attend.

“Getting the parents to be directly involved in checks that happen at preschool. Important for parents to understand what’s going on, whether they are there or not.”

“A lot of young kids are at kindy. Parents that work can’t be involved.”

“Do they do visits on the weekend? Maybe if you could [do the] visit weekends or after hours?”

There was a strong preference for home visits. Parents also valued the convenience of the Plunket bus.

“Having a more mobile service. So they come to the family.”

Language

Language barriers are a key issue for Pacific families. Parents noted that children for whom English is a second language did not always understand the B4SC nurse and the assessment instructions for particular tools.

“Difficulty for my kids is that they’re exposed to three languages ... the check is done in English so they struggle a bit. Would be good to have the checks in Samoan or Tongan.”

Pacific parents valued being able to undertake the B4SC with a Pacific provider who spoke their language.

“[Having a Pacific provider is] good for Pacific people because a lot don’t speak English.”

Quality of interaction

Parents valued B4SC nurses taking the time to explain the check and the various assessments, to them and to their children.

“The [WCTO provider] lady was good because she spent a bit of time and chatted with the kids to make them feel okay about doing the test, and it was in the home, so it wasn’t scary and it was a bit more relaxed than being in a hospital or other environment.”

“I found it good. She interacted with my daughter and made her involved in the visit.”

“At the end of the Before School Check she went through it all with us, question by question, and went through where you had questions or worries. It was alright. She was just getting more in-depth information about what you had put on the form.”

Communications

Many parents were unaware of the B4SC until they received an appointment invitation. Māori parents, in particular, indicated a desire for more information and better communication about what WCTO checks to expect, when to expect them, and who to expect them from.

“It would be good to have a timeframe that you understood. You never know what’s happening until someone calls.”

“It would be nice to know when the check was going to be, so I could bring things to their attention that I was concerned about.”

9.5 Quality considerations

Effectiveness of B4SC for Pacific families

Feedback from Pacific parents reveals several significant barriers to B4SC effectiveness. These include language barriers (the check is undertaken in English, presenting a barrier for Pacific children and parents for whom English is a second language), cultural barriers

(reluctance to identify children as having a developmental problem) and flexibility of service models (to accommodate different caregiving arrangements common in Pacific families). These issues have implications for uptake of the B4SC among Pacific populations and quality of assessment. As a priority population, it is critical that DHBs, especially those with significant Pacific populations, strengthen their ability to deliver this check effectively for Pacific families. This may include ensuring more Pacific providers in the contracting mix, strengthening the cultural competency of non-Pacific providers, reviewing the cultural relevance of some tools (such as PEDS), translation of assessment tools and development of Pacific language B4SC resources.

Effectiveness of B4SC for Māori families

Barriers to B4SC effectiveness are also evident for Māori families, particularly with regard to comprehension of, and accurate response to, assessment questions. As for Pacific populations, DHBs need to consider mechanisms to ensure B4SC assessment tools are relevant and comprehensible for parents and families, particularly those with lower levels of literacy.

Integration with the education sector

The name of the check – ‘Before School Check’ - creates an expectation of a stronger link between the check and the school than there actually is. Many parents assume that information collected will be provided to their child’s school. Some parents do not bother organising a B4SC until just before their child turns five because they believe it does not need to be done until just ‘before school’. It is important to be clear about the purpose of the check, the need for it to take place close to the child’s fourth birthday and what information will and will not be provided to schools. Misconceptions about the school linkage may act as a barrier to timely uptake, as well as create false expectations about what information schools will have about a child and how that information will be used.

Parents value the involvement of early childhood education in the B4SC. There is a risk however that conducting the B4SC, or vision and hearing components of the check, through early childhood education settings reduces the ability of working parents to be involved. This appears to particularly affect Pacific parents. B4SC providers and early childhood education settings need to ensure that parents are well informed about checks undertaken through preschools, including what it involves, when it will be undertaken, and what other options there are for undertaking the check at a different time.

Focusing on parents’ needs

The B4SC is not just a health and development check for four year olds, it is primarily an opportunity for parents and caregivers to discuss parenting issues and concerns with a nurse. Feedback from parents suggests that this opportunity is not always available and that the focus may sometimes be on getting through a long list of required assessments. Not allowing time for discussion of parental concerns may pose a threat to parental support for the B4SC, risking a decline in uptake – if parents and caregivers do not feel that the check meets their needs, as well as the needs of the health and education sector, there may be little incentive for parents to participate. Furthermore, finding out parental views on a child’s development is not just a ‘nice to have’; it offers genuine value to the overall quality of the assessment process and outcomes.

B4SC communications

Many of the concerns raised by parents in this review relate to a lack of awareness, knowledge and understanding of the B4SC. Although this is understandable given the newness of the check (it was introduced in 2008), it is important that the purpose of the check, including how it links with education settings and why it needs to take place at four years old, when to expect the check and who will provide it, is better communicated to New Zealand parents. This may require a nationwide, Ministry-led communications approach.

Parents' Views: Summary

- Parents' views were mixed on the value of the B4SC. Some parents, predominantly European/ Other, saw little value in the B4SC. Other parents, Māori and Pacific in particular, valued the opportunity to have their child checked before they started school.
- Many parents thought the B4SC should be undertaken earlier.
- There was considerable confusion around the name of the check, the implied link to school and the implied timing of the check. It was common for parents to assume that B4SC results would be sent to their child's school. Parents valued the contribution of preschool teachers via the SDQ-T.
- Interviews with parents identified significant barriers to B4SC effectiveness for Māori and Pacific families and whānau. These included:
 - language barriers for Pacific parents and children, in terms of communication with non-Pacific B4SC nurses and comprehension of the English language tools (PEDS in particular)
 - cultural barriers to answering questions in a way that may identify their child as having a problem
 - logistical barriers to parental participation in the B4SC due to caregiving arrangements and the timing of B4SCs (daytime, while parents work)
 - comprehension of tool purpose and question meaning.
- Pacific parents highlighted the importance of having Pacific B4SC providers available and Pacific language speaking nurses.
- A number of quality implications can be identified from parental feedback:
 - Barriers to B4SC effectiveness for Pacific children and families have implications for uptake of the B4SC among Pacific populations, and the quality of assessment. As a priority population, it is critical that DHBs, especially those with significant Pacific populations, strengthen their ability to deliver this check effectively for Pacific families.
 - Barriers to B4SC effectiveness are also evident for Māori families and whānau, particularly with regard to comprehension of, and accurate response to, assessment questions. As for Pacific populations, DHBs need to strengthen mechanisms to ensure B4SC assessment tools are relevant and comprehensible for Māori parents and children, particularly those with lower levels of literacy.
 - The name of the check – 'Before School Check' - creates an expectation of a stronger link between the check and schools than there actually is. Misconceptions about the school linkage may act as a barrier to timely uptake, as well as create false expectations about what information schools will have about a child and how that information will be used.
 - Parents value the involvement of early childhood education in the B4SC. There is a risk however that conducting the B4SC, or vision and hearing components of the check, through early childhood education settings reduces the ability of working parents to be involved. B4SC providers and early childhood education settings need to ensure that parents are well informed about checks undertaken through preschools, including what it involves, when it will be undertaken, and what other options there are for undertaking the check at a different time.
 - The B4SC is not just a health and development check for four year olds, it is also an opportunity for parents and caregivers to discuss their concerns with a nurse. Not allowing time for discussion of parental concerns may pose a threat to parental support for the B4SC, risking a decline in uptake. Furthermore, finding out parental views on a child's development offers genuine value to the overall quality of the

10. Completion and Outcomes Data

This section presents an analysis of B4SC completion and outcomes data. As noted previously, in this context 'outcomes' refers to assessment and referral outcomes recorded in the B4SC information system. Completion data includes completion and consent rates and inferred information regarding children not engaged with the B4SC.

The figures are based on data exported from the B4SC information system in March 2012, and more specifically on children born from July 2005 to February 2007 (the last twenty months for which the children's eligibility for the B4SC would have finished before the data was exported). Denominators for the completion rates are taken from the PHO enrolment demographics database for 2011 quarter 3 (i.e. the most recent database covering this time period).

10.1 Completion rates

This section presents an analysis of B4SC completion data, including full and partial completion and closure patterns.

Overall, 68% of children in the cohort had completed all the B4SC checks; 58% of children had completed all the checks and their record was closed,⁸⁰ 10% of children had completed all the checks but their record was not closed (Table 6). Another 9% of children had completed only some of the checks (partial completions).

Table33: B4SC completion outcomes

	Percentage of children
All checks complete, closed	58.3%
All checks complete, not closed	9.6%
Some checks complete	9.2%
Assigned, but no checks conducted	5.5%
Consent refused	3.4%
Not assigned	14.0%

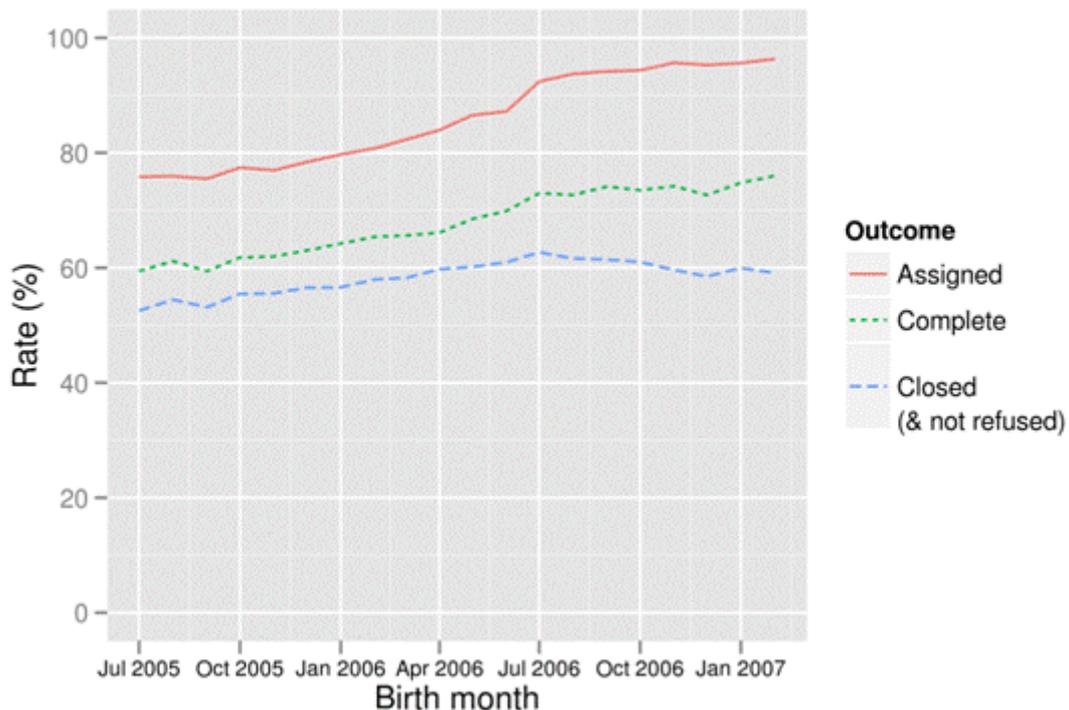
In most of the partial completions (67%), only the vision and hearing checks were completed. Of the remaining 33% of partial completions, three quarters had omitted only the vision and hearing checks. Some partial completions were due to the caregiver withholding consent after some checks had been completed, although this accounts for only a minority of partial completions. Refusals have been removed from the other categories where there was overlap.

6% of children were 'assigned' in the B4SC information system but did not receive any of the checks. The final 'not assigned' figure is the residual after the other categories have been totalled, i.e. it is determined by subtracting this total from the overall population figure.

⁸⁰ A B4SC is recorded as 'closed' once all components have been completed and all referrals accepted and commenced by the referral service, and the referral information has been stored and entered into the information system.

The rate of full completion (all checks completed) has improved substantially over time, although it may have begun to plateau in the last several birth month cohorts (see Figure 9). It has roughly paralleled the increase in the assignment rate (the total of all checks completed, some checks completed, assigned but no checks conducted, and assigned but consent refused), which has plateaued at around 95%, although the curves have diverged somewhat in more recent cohorts. This divergence has reflected an increased number of children assigned but with no checks conducted (up from around 4% to 8%). Among full completions, both closures and non-closures have increased in later cohorts, although non-closures have increased the most (from around 6% to 17%). Their increases also occurred at different times, with most of the increase in closures evident among children born by April 2006, while the increase in non-closures was mainly among children born after that. One result of these differing trends is that the percentage of children with complete and closed (but not refused) checks initially increased from 53% in early birth cohorts to 62% for children born in July 2006, then fell slightly in more recent birth cohorts. Partial completions have continued at a fairly steady rate, as have refusals.

Figure 17: Percentage of children assigned, completed, and closed by birth cohort



Completion rates by DHB

Substantial variation in full completion rates can be seen between DHBs (see Table 7). The DHBs with the most room for improvement were Counties Manukau, Auckland, Waitemata, and to a lesser extent Capital and Coast, Bay of Plenty, Northland, Hutt, Midcentral, Otago, Lakes, and Canterbury.

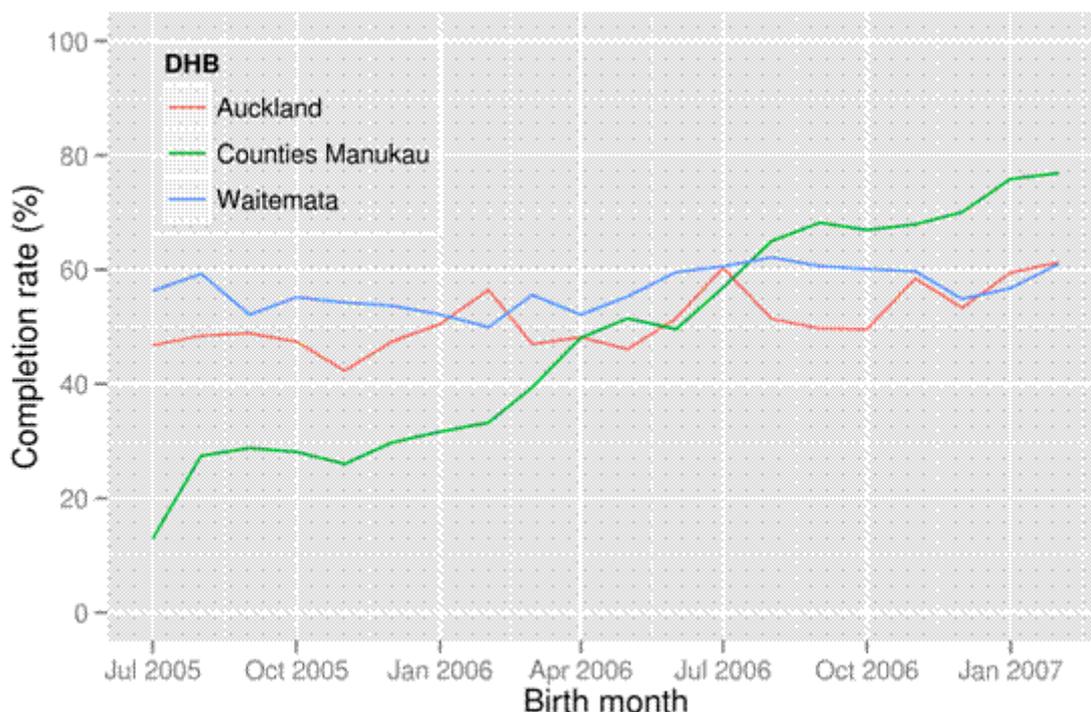
There were also substantial differences between DHBs on partial completion, assignment and refusal rates (Table 7). Partial completion rates were highest in Counties Manukau and also high in Bay of Plenty, Lakes, Hutt, Capital and Coast, and Waitemata DHBs. Consent was refused most often in Capital and Coast, Whanganui, and Canterbury DHBs. The proportion of unassigned children, derived by subtraction, was highest in Auckland, Waitemata, Northland, Counties Manukau, and Otago DHBs. In three DHBs, marked as * in the following table, there were slightly more children assigned than the population figure used.

Table 34: Completion rates by DHB (February-June 2012)

DHB	All checks complete	Some checks complete	Assigned but no checks conducted	Consent refused	Not assigned
Auckland	51%	7%	13%	0.9%	28%
Bay of Plenty	69%	17%	10%	5.7%	*
Canterbury	76%	4%	4%	7.1%	10%
Capital and Coast	65%	13%	1%	7.7%	14%
Counties Manukau	48%	23%	10%	0.0%	19%
Hawkes Bay	83%	0%	0%	1.7%	15%
Hutt	71%	14%	0%	4.1%	11%
Lakes	75%	14%	10%	5.8%	*
Midcentral	72%	1%	11%	4.1%	12%
Nelson Marlborough	80%	0%	0%	3.2%	16%
Northland	70%	0%	5%	2.4%	22%
Otago	73%	2%	1%	6.0%	18%
South Canterbury	89%	1%	5%	2.6%	2%
Southland	92%	1%	1%	2.1%	3%
Tairāwhiti	83%	0%	1%	3.5%	12%
Taranaki	94%	0%	3%	2.9%	0%
Waikato	83%	9%	7%	3.4%	*
Wairarapa	89%	0%	0%	0.1%	10%
Waitemata	57%	12%	2%	2.2%	26%
West Coast	86%	0%	2%	4.6%	7%
Whanganui	80%	0%	0%	7.6%	12%

Of the three DHBs with lowest completion rates, Counties Manukau has improved most markedly over time (Figure 10).

Figure 18: Completion rates over time in the Auckland, Waitemata and Counties Manukau DHBs



Completion rates by area deprivation

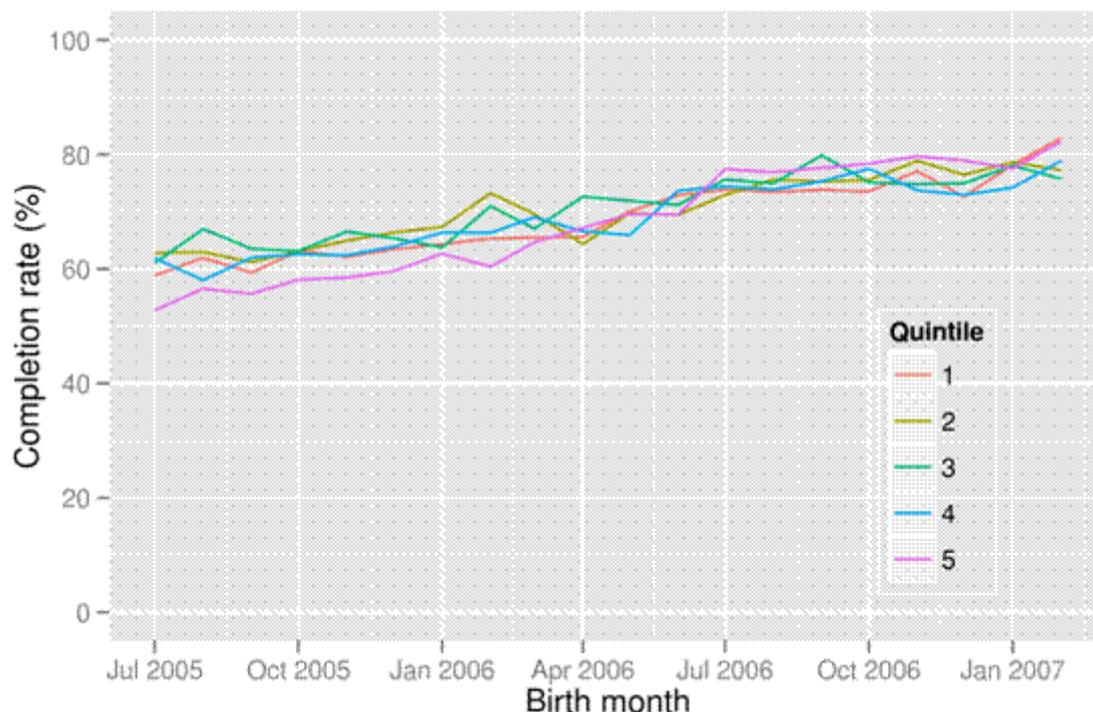
More deprived areas saw somewhat lower closure rates, but higher rates of completion without closure, resulting in full completion rates not varying greatly across deprivation quintiles (Table 8). There was some tendency for assignment rates to be slightly higher in more deprived areas, with the exception of quintile 4, but this was outweighed by higher percentages of children being assigned but having no checks done. There were only minor differences in partial completion and refusal rates.

Table 35: Completion rates by area deprivation quintile (1=least deprived, 5=most deprived) – February – June 2013

Deprivation quintile	All checks complete, closed	All checks complete, not closed	All checks complete (previous 2 columns combined)	Some checks complete	Assigned but no checks conducted	Consent refused	Not assigned
1	60.2%	8.5%	68.7%	9.8%	3.5%	3.6%	14.3%
2	60.8%	9.6%	70.4%	9.9%	4.6%	3.2%	12.1%
3	61.0%	9.7%	70.7%	9.3%	5.3%	3.3%	11.5%
4	58.5%	10.6%	69.1%	9.0%	6.1%	2.8%	13.0%
5	57.5%	10.9%	68.4%	9.2%	7.7%	3.7%	11.1%

The most deprived quintile had lower completion rates than the rest over a year ago, but this difference has since been overcome (Figure 11).

Figure 19: Completion rates over time by area deprivation quintile (1=least deprived, 5=most deprived)



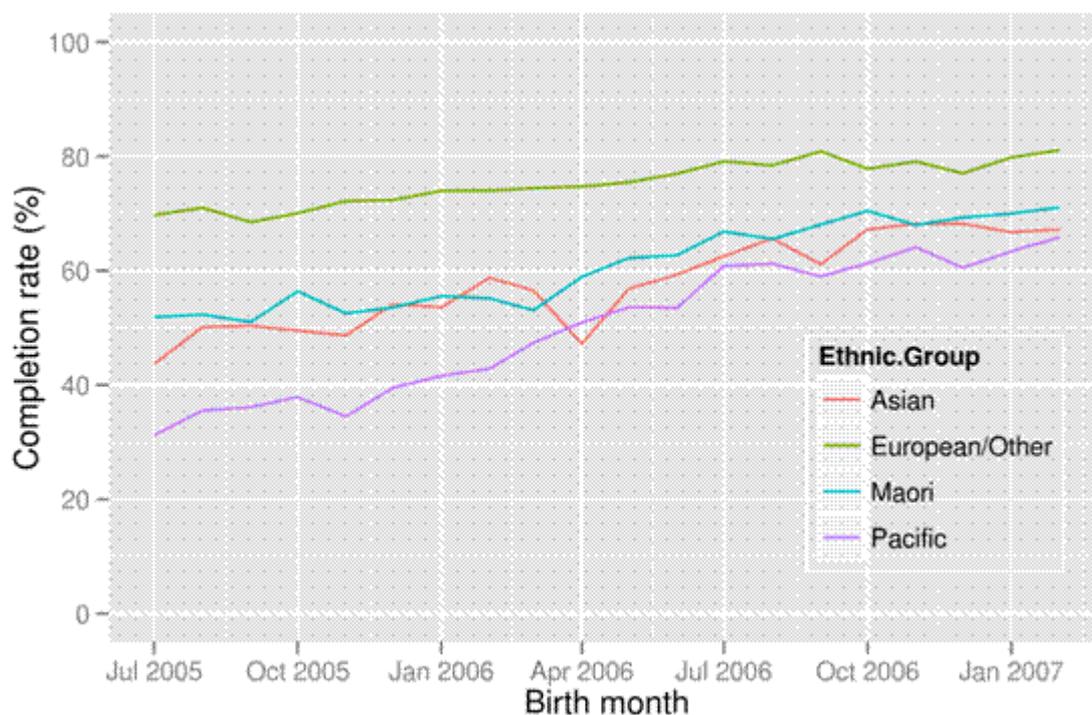
Completion rates by ethnicity

Substantial differences in completion rates can be seen between ethnic groups, with Pacific children being least likely to complete all the B4SC checks (50%) and European/ Other children (75%) being most likely (Table 9). This was mainly due to differences in closure rates. Assignment rates show a similar pattern, with Pacific children (27%) most likely to be not assigned and European/ Other children (9%) least likely. Māori and Asian children also had high percentages of not assigned (around 20%). There were smaller differences in non-closure, partial completion and refusal rates.

Table 36: Completion rates by ethnic group – February – June 2013

Ethnic Group	All checks complete, closed	All checks complete, not closed	All checks complete (previous 2 columns combined)	Some checks complete	Assigned but no checks conducted	Consent refused	Not assigned
Asian	47.1%	10.8%	58%	12.3%	7.4%	2.2%	20.1%
European/ Other	66.3%	9.0%	75%	8.2%	3.9%	3.9%	8.7%
Māori	51.0%	9.8%	61%	9.9%	7.0%	3.1%	19.1%
Pacific	38.8%	11.3%	50%	11.1%	9.7%	1.9%	27.2%

These disparities have reduced over time, however, with completion rates improving especially strongly among Pacific children (see Figure 12).

Figure 20: Completion rates over time by ethnic group

Completion rates by gender

Males and females both had completion rates of 68%, with no overt difference in trend. There were only minor gender differences in degrees of completion, and in refusal and assignment rates.

Completion rates for individual checks

Overall, 69% of children in the cohort had completed the general health questionnaire, the dental assessment, growth measurements, PEDS. SDQ-P, SDQ-T and been assessed for immunisation status (Table 10). A larger percentage of children, 78%, had completed vision and hearing checks. The same pattern of higher vision and hearing check completion is evident across all key demographics.

Consistent with full completion rates, substantial differences in completion of individual checks can be seen between ethnic groups, with Pacific children being least likely to complete each of the checks and European/ Other children being most likely. Māori and Asian children also had lower completion rates for individual checks than European/ Other children.

Considerable variation is also evident between DHBs, with the lowest completion rates for individual components in Auckland, Waitemata and Counties Manukau DHBs. Midcentral and Northland DHBs had low completion rates for vision and hearing checks but completion rates for other components were little different to total rates.

Table 37: Completion rates for individual checks by key demographics – February – June 2013

		Vision	Hearing	General	Dental	Growth	Immuni sation	PEDS	SDQ. P	SDQ.T
All	All	77.6 %	77.7%	68.9%	68.9 %	68.9%	68.9%	68.9 %	68.9 %	68.8%
Deprivat -ion quintile	1	79.5 %	79.5%	69.7%	69.7 %	69.7%	69.7%	69.7 %	69.7 %	69.6%
	2	80.8 %	80.9%	71.4%	71.4 %	71.4%	71.4%	71.4 %	71.4 %	71.2%
	3	80.6 %	80.7%	71.6%	71.6 %	71.6%	71.6%	71.6 %	71.6 %	71.4%
	4	78.2 %	78.3%	70.1%	70.1 %	70.1%	70.1%	70.1 %	70.1 %	70.0%
	5	77.7 %	77.7%	69.4%	69.4 %	69.4%	69.4%	69.4 %	69.4 %	69.3%
	Ethnic Group	Asian	70.0 %	70.0%	59.1%	59.0 %	59.0%	59.0%	59.0 %	59.0 %
European/ Other		84.5 %	84.5%	76.2%	76.2 %	76.2%	76.2%	76.2 %	76.2 %	76.1%
Māori		70.7 %	70.7%	62.0%	62.0 %	62.0%	62.0%	62.0 %	62.0 %	61.8%
Pacific		60.8 %	60.8%	51.2%	51.2 %	51.1%	51.2%	51.2 %	51.2 %	51.1%
Gender	Female	77.4 %	77.4%	68.8%	68.7 %	68.7%	68.8%	68.7 %	68.7 %	68.7%
	Male	77.8 %	77.8%	69.0%	68.9 %	68.9%	68.9%	68.9 %	68.9 %	68.8%
DHB	Auckland	58.7 %	58.8%	51.4%	51.4 %	51.4%	51.4%	51.4 %	51.4 %	51.4%
	Bay of Plenty	89.3 %	89.4%	70.2%	70.2 %	70.2%	70.2%	70.2 %	70.2 %	70.2%
	Canterbury	81.3 %	81.4%	77.3%	77.2 %	77.2%	77.2%	77.2 %	77.2 %	77.2%
	Capital and Coast	78.3 %	78.3%	67.1%	67.1 %	67.1%	67.1%	67.1 %	67.1 %	66.9%
	Counties Manukau	69.8 %	69.8%	49.2%	49.2 %	49.2%	49.2%	49.2 %	49.2 %	49.2%
	Hawkes Bay	84.3 %	84.3%	83.4%	83.4 %	83.4%	83.4%	83.4 %	83.4 %	83.4%
	Hutt	85.3 %	85.4%	72.2%	72.2 %	72.2%	72.2%	72.2 %	72.2 %	72.0%

		Vision	Hearing	General	Dental	Growth	Immuni sation	PEDS	SDQ. P	SDQ.T
	Lakes	87.0 %	87.0%	78.7%	78.7 %	78.7%	78.7%	78.7 %	78.7 %	77.8%
	Midcentral	72.8 %	72.8%	72.3%	72.2 %	72.2%	72.2%	72.2 %	72.2 %	72.1%
	Nelson Marlborough	81.8 %	81.8%	79.8%	79.8 %	79.8%	79.8%	79.8 %	79.8 %	79.8%
	Northland	69.9 %	69.9%	69.9%	69.9 %	69.9%	69.9%	69.9 %	69.9 %	69.9%
	Otago	79.6 %	79.7%	74.2%	74.2 %	74.2%	74.2%	74.2 %	74.2 %	74.1%
	South Canterbury	92.1 %	92.1%	90.6%	90.6 %	90.5%	90.5%	90.5 %	90.5 %	90.5%
	Southland	94.7 %	94.7%	92.6%	92.6 %	92.6%	92.6%	92.6 %	92.6 %	92.5%
	Tairāwhiti	83.2 %	83.2%	83.2%	83.2 %	83.2%	83.2%	83.2 %	83.2 %	83.2%
	Taranaki	94.4 %	94.4%	94.2%	94.2 %	94.2%	94.2%	94.2 %	94.2 %	94.2%
	Waikato	91.8 %	91.8%	83.7%	83.7 %	83.7%	83.7%	83.7 %	83.7 %	83.1%
	Wairarapa	89.5 %	89.5%	89.4%	89.4 %	89.4%	89.4%	89.4 %	89.4 %	89.3%
	Waitemata	69.1 %	69.1%	58.0%	57.9 %	58.0%	58.0%	57.9 %	58.0 %	58.0%
	West Coast	86.5 %	86.5%	86.2%	86.2 %	86.2%	86.2%	86.2 %	86.2 %	86.0%
	Whanganui	82.5 %	82.5%	80.0%	80.0 %	80.0%	80.0%	80.0 %	80.0 %	80.0%

Among the 9% of partial completions, 72% of children had completed vision and hearing checks, 32% had completed the general health questionnaire, the dental assessment, growth measurements, PEDS, SDQ-P, and been assessed for immunisation status. A substantially smaller percentage (24%) had completed the SDQ-T.

10.2 Assessment and referral for each B4SC component

This section presents an analysis of assessment scores and referral rates for each B4SC component.

Vision checks

Overall, 2% of children checked were found to have poor eyesight (6/12 or worse in either eye), and a high percentage (95%) of these children were given a referral (Table 11). A slightly higher proportion of boys than girls were found to have poor eyesight, and to be referred.

Table 38: Vision problems and referrals by gender (ever checked)

	Number checked ⁸¹	Either eye 6/12 or worse		
		%	n	Referred (%)
Female	96653	2.1%	2052	94.0%
Male	102261	2.2%	2224	95.1%

Pacific children were most likely to have poor eyesight (34%), followed by Asian children (3%), while European/ Other children were least likely (2%) (Table 12). Referral rates were well above 90% for all ethnic groups, with Asian and Pacific children being referred somewhat more often than others.

Table 39: Vision problems and referrals by ethnic group (ever checked)

Ethnic group	Number checked	Either eye 6/12 or worse		
		%	n	Referred (%)
Asian	15094	3.3%	500	96.6%
European/ Other	133925	1.7%	2329	94.1%
Māori	36658	2.5%	927	93.6%
Pacific	13371	3.9%	523	96.6%

A greater percentage of children from more deprived areas were found to have poor eyesight (3% in the most deprived quintile, versus 2% in the least deprived), but they were generally slightly less likely to be referred (Table 13).

Table 40: Vision problems and referrals by deprivation quintile (ever checked)

Deprivation quintile	Number checked	Either eye 6/12 or worse		
		%	n	Referred (%)
1	39655	1.7%	685	95.2%
2	36288	1.9%	675	95.1%
3	36273	2.0%	719	94.3%
4	36963	2.3%	866	94.8%
5	42265	3.0%	1273	94.0%

⁸¹ The 'number checked' column excludes children whose caregivers declined to give consent, even if they were checked, for all tables in this 'Vision' section of the report. Children already under care are also omitted.

Counties Manukau DHB had much the highest percentage (7%) of children with poor eyesight, with other DHBs ranging from less than 1% (Nelson Marlborough) to 3% (Lakes) (Table 14). Referral rates ranged from under 85% (Northland, Bay of Plenty) up to 100% (Hutt, Nelson Marlborough). The referral rate in Counties Manukau DHB was almost as high, at 99%.

Table 41: Vision problems and referrals by DHB (ever checked)

DHB	Number checked	Either eye 6/12 or worse		
		%	n	Referred (%)
Auckland	13161	2.4%	314	94.9%
Bay of Plenty	11840	1.8%	212	84.9%
Canterbury	20542	2.3%	482	97.7%
Capital and Coast	11453	2.5%	284	95.1%
Counties Manukau	14811	7.2%	1070	99.0%
Hawkes Bay	8952	1.7%	152	92.8%
Hutt	10256	1.9%	196	100.0%
Lakes	6064	2.8%	170	98.2%
Midcentral	9214	1.8%	167	94.0%
Nelson Marlborough	5086	0.5%	23	100.0%
Northland	7185	1.7%	119	84.0%
Otago	6301	1.1%	68	97.1%
South Canterbury	2760	2.5%	70	92.9%
Southland	10013	0.9%	93	87.1%
Tairāwhiti	2602	0.7%	19	94.7%
Taranaki	6295	1.5%	93	91.4%
Waikato	22264	1.2%	275	89.1%
Wairarapa	2830	2.2%	63	88.9%
Waitemata	22198	1.5%	341	90.6%
West Coast	1523	2.6%	39	89.7%
Whanganui	3698	0.8%	29	89.7%

Hearing checks

Hearing problems are more common than vision problems, with 16% of children failing the audiometric check in one ear or the other (Table 15). Almost 99% of these children were rescreened or given a referral. While girls were slightly more likely to have a hearing problem than boys, there was little gender difference in rescreen/referral rates.

Table 42: Hearing problems and rescreens/referrals by gender (ever checked)

	Number checked ⁸²	Failed audiometry in either ear		
		%	n	Rescreened or referred (%)
Female	96209	16.6%	15976	98.9%
Male	100685	16.1%	16198	98.8%

There were substantial differences between ethnic groups, with Pacific children being more than twice as likely to have hearing problems as European/ Other children (29% vs 14% respectively; Table 16). Māori children were also at elevated risk of hearing problems (21%). Rescreen/referral rates were high (over 98%) in all ethnic groups.

Table 43: Hearing problems and rescreens/referrals by ethnic group (ever checked)

Ethnic group	Number checked	Failed audiometry in either ear		
		%	n	Rescreened or referred (%)
Asian	15059	16.5%	2479	99.4%
European/ Other	132798	13.7%	18254	98.6%
Māori	35998	21.2%	7649	98.9%
Pacific	13174	28.9%	3801	99.6%

Children from the most deprived areas (quintile 4 and especially 5) were more likely to have hearing problems, while children from quintiles 1 and 2 shared a lower prevalence of hearing problems (Table 17). Rescreen or referral rates were high throughout.

Table 44: Hearing problems and rescreens/referrals by deprivation(ever checked)

Deprivation quintile	Number checked	Failed audiometry in either ear		
		%	n	Rescreened or referred (%)
1	39277	13.6%	5345	99.0%
2	36097	13.8%	4976	98.6%
3	36046	15.2%	5485	98.9%
4	36614	17.6%	6444	98.6%
5	41442	21.2%	8782	99.0%

Hutt DHB had the highest prevalence of hearing problems, at 32%, while Capital and Coast, Counties Manukau, South Canterbury and West Coast DHBs also had a prevalence of over 20% (Table 18). This compares to only 6% with hearing problems in Tairāwhiti DHB and 8% in Waikato. Rescreen/referral rates were generally very high, with only Northland DHB (at 84%) falling below 94%.

⁸² The 'number checked' column excludes children whose caregivers declined to give consent, even if they were checked, for all tables in this 'Hearing' section of the report. Children already under care are also omitted

Table 45: Hearing problems and rescreens/referrals by DHB (ever checked)

DHB	Number checked	Failed audiometry in either ear		
		%	n	Rescreened or referred (%)
Auckland	13184	13.1%	1730	99.9%
Bay of Plenty	11882	12.2%	1447	99.9%
Canterbury	20383	19.6%	4000	99.7%
Capital and Coast	11273	22.7%	2561	100.0%
Counties Manukau	14646	22.4%	3277	100.0%
Hawkes Bay	8928	19.6%	1752	99.9%
Hutt	10099	32.4%	3275	99.9%
Lakes	6051	9.9%	602	99.3%
Midcentral	9179	12.6%	1154	99.9%
Nelson Marlborough	5010	9.2%	462	98.3%
Northland	6905	18.8%	1301	84.2%
Otago	6259	16.3%	1019	96.1%
South Canterbury	2696	22.1%	597	100.0%
Southland	9585	9.7%	933	99.0%
Tairāwhiti	2553	5.6%	142	100.0%
Taranaki	6277	15.2%	955	100.0%
Waikato	21806	7.5%	1637	99.2%
Wairarapa	2753	24.5%	674	100.0%
Waitemata	22287	17.7%	3953	98.8%
West Coast	1534	20.9%	321	100.0%
Whanganui	3739	10.5%	391	94.1%

Although the rate of rescreens or referrals was high among children with hearing problems, 9% of children who passed the audiometric check were then given tympanometry, which is generally not necessary (Ministry of Health 2008a). Māori and European/ Other children were more likely to have this done (11% and 10% respectively). The sharpest contrasts, however, were between DHBs. In most DHBs, less than 10% of children who passed audiometry were given tympanometry, but in South Canterbury and Southland, more than 20% were. This rose to 55% in Nelson Marlborough, 72% in Otago, and 88% in Tairāwhiti.

Table 46: Tympanometry on children who passed audiometry, by DHB (ever checked)

DHB	Number checked	Passed audiometry in either ear		
		%	n	Tympanometry check (%)
Auckland	13184	86.9%	11454	4.1%
Bay of Plenty	11882	87.8%	10435	1.0%
Canterbury	20383	80.4%	16383	1.5%
Capital and Coast	11273	77.3%	8712	1.8%
Counties Manukau	14646	77.6%	11369	6.5%
Hawkes Bay	8928	80.4%	7176	1.8%
Hutt	10099	67.6%	6824	2.3%
Lakes	6051	90.1%	5449	0.7%
Midcentral	9179	87.4%	8025	8.0%
Nelson Marlborough	5010	90.8%	4548	54.7%
Northland	6905	81.2%	5604	5.3%
Otago	6259	83.7%	5240	72.3%
South Canterbury	2696	77.9%	2099	20.4%
Southland	9585	90.3%	8652	29.9%
Tairāwhiti	2553	94.4%	2411	87.8%
Taranaki	6277	84.8%	5322	0.2%
Waikato	21806	92.5%	20169	1.1%
Wairarapa	2753	75.5%	2079	0.6%
Waitemata	22287	82.3%	18334	4.0%
West Coast	1534	79.1%	1213	0.5%
Whanganui	3739	89.5%	3348	5.4%

Dental checks

In the dental check, 16% of children were found to have a decay level of 2 or more (Table 20). Only 18% of these were referred.⁸³ Boys were a little more likely than girls to have this level of decay, and to be referred if they had it.

Table 47: Dental problems and referrals by gender (ever checked)

	Number checked	Decay level 2-6		
		%	n	Referred (%)
Female	95277	15.9%	15118	17.7%
Male	100307	16.7%	16787	18.4%

European/ Other children were the group least likely to have such decay (10%), while Pacific (35%) and Māori children (28%) were the most likely (Table 21). Pacific and Asian children were the most likely to be referred if they had decay, and European/ Other children the least.

⁸³ Dental data does not exclude 'children under care'. This may be a contributor to the seemingly low referral rates for children with Decay level 2-6 i.e. children with decay level 2-6 who are already receiving dental care, do not need to be referred.

Table 48: Dental problems and referrals by ethnic group (ever checked)

Ethnic group	Number checked	Decay level 2-6		
		%	n	Referred (%)
Asian	14704	22.6%	3322	24.9%
European/ Other	131412	10.5%	13745	11.6%
Māori	35713	28.1%	10025	20.0%
Pacific	13861	34.9%	4831	27.8%

Children living in more deprived areas were much more likely to exhibit tooth decay (28% in quintile 5, vs 9% in quintile 1) (Table 22). Referral rates also generally rose in more deprived areas, although not quite as sharply.

Table 49: Dental problems and referrals by deprivation (ever checked)

Deprivation quintile	Number checked	Decay level 2-6		
		%	n	Referred (%)
1	38252	8.8%	3349	12.3%
2	35338	10.4%	3688	13.8%
3	35555	13.5%	4792	17.1%
4	36467	19.5%	7126	15.3%
5	42577	27.6%	11753	22.8%

South Canterbury DHB stands out as having much the lowest rate of observed decay (3%) (Table 23). Other DHBs range from 9% (Midcentral, Nelson Marlborough) up to 25 to 26% (Northland, Counties Manukau). Referral rates were even more diverse, ranging from less than 3% (Southland, Taranaki) up to 56% in Capital and Coast.

Table 50: Dental problems and referrals by DHB (ever checked)

DHB	Number checked	Decay level 2-6		
		%	n	Referred (%)
Auckland	13979	15.9%	2228	24.8%
Bay of Plenty	9631	13.9%	1343	26.9%
Canterbury	22217	10.8%	2391	26.9%
Capital and Coast	11890	14.7%	1750	55.7%
Counties Manukau	13375	25.5%	3411	16.3%
Hawkes Bay	10616	16.9%	1792	16.3%
Hutt	9639	13.2%	1274	18.8%
Lakes	5734	20.2%	1159	20.0%
Midcentral	9503	9.0%	854	8.8%
Nelson Marlborough	4900	9.4%	461	11.3%
Northland	7371	25.3%	1867	19.1%
Otago	6107	11.1%	678	22.4%
South Canterbury	2737	2.8%	77	28.6%
Southland	10437	19.4%	2029	1.6%
Tairāwhiti	2617	17.7%	464	10.3%
Taranaki	6565	12.2%	798	2.6%
Waikato	20202	23.3%	4707	9.5%
Wairarapa	2948	22.8%	672	7.1%
Waitemata	19737	14.9%	2940	18.6%
West Coast	1552	12.6%	196	6.6%
Whanganui	3933	21.2%	832	11.7%

Growth checks

Overall, 2% of children measured had a body mass index (BMI) over 21, categorised as extremely obese (Table 24). Of these, only 16% were given a referral.⁸⁴ Girls were slightly more likely to be extremely obese than boys, while boys were a little more likely to be referred.

Table 51: Obesity and referrals by gender (ever checked)

	Number checked ⁸⁵	Extremely obese (BMI > 21)		
		%	n	Referred (%)
Female	95180	2.0%	1881	15.0%
Male	100169	1.8%	1839	16.0%

⁸⁴ Growth data does not exclude 'children under care'. This may be a contributor to the seemingly low referral rates for children with extreme obesity i.e. children with extreme obesity who are already receiving specialist care, do not need to be referred.

⁸⁵ BMI outliers, probably caused by data entry problems, have been omitted from the figures in this subsection. These amount to less than 1% of children checked. Refusals are also omitted, as described earlier.

Pacific children were the most likely to be classed as extremely obese (8%), followed by Māori children (3%) (Table 25). European/ Other children were the least likely; only 1% of them were extremely obese. Pacific children were also the most likely to be referred (20%), followed by Asian children (17%).

Table 52: Obesity and referrals by ethnicity (ever checked)

Ethnic group	Number checked	Extremely obese (BMI > 21)		
		%	n	Referred (%)
Asian	14707	1.8%	260	17.3%
European/ Other	131323	1.0%	1264	12.9%
Māori	35597	3.3%	1166	13.7%
Pacific	13827	7.5%	1032	20.3%

The prevalence of extreme obesity increases sharply with deprivation (Table 26). Children living in the most deprived quintile were more than five times more likely to be extremely obese than children in the least deprived quintile (4% vs 0.7%). Children from the least deprived quintile were the most likely to be referred if they were obese.

Table 53: Obesity and referrals by deprivation (ever checked)

Deprivation quintile	Number checked	Extremely obese (BMI > 21)		
		%	n	Referred (%)
1	38272	0.7%	250	7.6%
2	35217	1.2%	425	17.2%
3	35523	1.4%	504	12.5%
4	36357	2.3%	822	12.8%
5	42532	3.7%	1582	18.8%

Counties Manukau DHB has the highest prevalence of extreme obesity (4%) (Table 27). In contrast, less than 1% of children in the Otago and South Canterbury DHBs were extremely obese. Referral rates are also variable, ranging from around 1% in Wairarapa and Whanganui to 36% in Capital and Coast DHB.

Table 54: Obesity and referrals by DHB(ever checked)

DHB	Number checked	Extremely obese (BMI > 21)		
		%	n	Referred (%)
Auckland	13998	2.1%	293	26.3%
Bay of Plenty	9657	2.0%	191	5.2%
Canterbury	22190	1.5%	322	18.0%
Capital and Coast	12009	1.7%	207	36.2%
Counties Manukau	13291	4.2%	563	10.1%
Hawkes Bay	10579	2.0%	215	35.8%
Hutt	9659	2.0%	194	23.2%
Lakes	5751	1.7%	95	24.2%
Midcentral	9490	2.0%	192	2.1%
Nelson Marlborough	4888	1.1%	55	23.6%
Northland	7390	1.9%	139	15.1%
Otago	6131	0.8%	50	12.0%
South Canterbury	2752	0.9%	25	12.0%
Southland	10443	1.8%	190	24.2%
Tairāwhiti	2610	3.0%	79	19.0%
Taranaki	6542	1.2%	77	10.4%
Waikato	19952	1.7%	333	7.2%
Wairarapa	2887	3.0%	86	1.2%
Waitemata	19658	1.5%	301	4.0%
West Coast	1547	2.5%	39	2.6%
Whanganui	4030	1.9%	76	1.3%

Developmental surveillance (PEDS) checks

Children scoring as pathway A (high risk of developmental delay) account for 6% of those taking the PEDS test (Table 28). Only 23% of pathway A children were given a referral.⁸⁶ Boys are much more likely than girls to score as pathway A (8% vs 5%), and somewhat more likely to be referred when they do.

Table 55: PEDS pathway A and referrals by gender (ever checked)

	Number checked	PEDS Pathway A		
		%	n	Referred (%)
Female	95560	4.5%	4333	20.2%
Male	100553	8.2%	8241	24.5%

Māori children are more likely than others to score as pathway A (9%), and Asian children are less likely (5%) (Table 29). This also holds true for referrals; i.e. Māori pathway A children are more likely than average to be referred, and Asian children are less likely.

⁸⁶ PEDS data does not exclude 'children under care'. This may be a contributor to the seemingly low referral rates for children scored as Pathway A i.e. children scored as Pathway A who are already receiving specialist care, do not need to be referred.

Table 56: PEDS pathway A and referrals by ethnic group (ever checked)

Ethnic group	Number checked	PEDS Pathway A		
		%	n	Referred (%)
Asian	14762	4.5%	665	14.7%
European/ Other	131762	6.1%	8028	21.5%
Māori	35794	8.6%	3063	29.0%
Pacific	13901	5.9%	827	21.3%

Children from more deprived areas score as pathway A more often, although the percentage in quintiles 1 and 2 are very similar (Table 30). This suggests that deprivation is more critical than affluence here. Referral rates are higher in more deprived areas, except that the rate for quintile 2 is as high as that for quintile 4.

Table 57: PEDS pathway A and referrals by deprivation (ever checked)

Deprivation quintile	Number checked	PEDS Pathway A		
		%	n	Referred (%)
1	38339	5.1%	1955	18.6%
2	35412	5.2%	1834	24.5%
3	35666	6.5%	2319	19.1%
4	36510	7.1%	2606	24.6%
5	42725	7.9%	3379	26.8%

Tairāwhiti DHB has the highest prevalence of pathway A children (11%), followed by Hawkes Bay (10%) and West Coast (10%) (Table 31). Auckland and Wairarapa DHBs have the lowest (4%). Referral rates are more variable, ranging from 9% in Counties Manukau up to 43% in Hawkes Bay and 50% on the West Coast. (Hawkes Bay is known to have recorded self-referral and advice from a nurse as referrals).

Table 58: PEDS pathway A and referrals by DHB(ever checked)

DHB	Number checked	PEDS Pathway A		
		%	n	Referred (%)
Auckland	14015	4.2%	590	17.8%
Bay of Plenty	9728	7.3%	714	32.5%
Canterbury	22274	8.6%	1920	22.8%
Capital and Coast	12074	6.3%	765	20.9%
Counties Manukau	13409	5.2%	697	8.8%
Hawkes Bay	10579	9.9%	1045	42.8%
Hutt	9679	7.5%	730	14.5%
Lakes	5769	6.8%	392	12.5%
Midcentral	9391	5.1%	478	19.2%
Nelson Marlborough	4912	5.8%	284	23.2%
Northland	7394	6.0%	441	24.0%
Otago	6141	7.0%	431	25.5%
South Canterbury	2780	8.7%	242	19.0%
Southland	10460	5.2%	539	10.6%
Tairāwhiti	2618	11.1%	290	26.2%
Taranaki	6596	7.0%	465	25.2%
Waikato	20169	5.2%	1055	20.2%
Wairarapa	2949	4.2%	124	4.8%
Waitemata	19701	5.2%	1031	27.3%
West Coast	1547	9.8%	152	50.0%
Whanganui	4034	4.9%	198	24.2%

Strengths and Difficulties Questionnaire – Parents (SDQ-P)

Overall, 5% of children scored as abnormal on SDQ-P, and 11% of them were given a referral (Table 32).⁸⁷ Boys received abnormal scores more often than girls.

Table 59: SDQ-P and referrals by gender (ever checked)

	Number checked	Abnormal		
		%	n	Referred (%)
Female	95127	3.8%	3635	11.0%
Male	100064	5.8%	5759	11.5%

Pacific and especially Māori children were scored as abnormal more than twice as often as Asian and European/ Other children (Table 33). European/ Other children with abnormal scores were referred somewhat more often than other groups, especially Pacific children.

⁸⁷ SDQ-P data does not exclude 'children under care'. This may be a contributor to the seemingly low referral rates for children scored as Abnormal on SDQ-P i.e. children scored as Abnormal who are already receiving specialist care, do not need to be referred.

Table 60: SDQ-P and referrals by ethnic group(ever checked)

Ethnic group	Number checked	Abnormal		
		%	n	Referred (%)
Asian	14693	3.5%	520	10.4%
European/ Other	131165	3.3%	4340	12.4%
Māori	35658	9.7%	3453	10.9%
Pacific	13781	7.9%	1085	8.5%

Children from more deprived areas were more likely to be scored abnormal on the SDQ-P (Table 34). Again the differences between less deprived quintiles are smaller. There was no coherent pattern in the referral rates.

Table 61: SDQ-P and referrals by deprivation (ever checked)

Deprivation quintile	Number checked	Abnormal		
		%	n	Referred (%)
1	38188	2.3%	876	10.3%
2	35229	2.6%	921	13.2%
3	35483	3.9%	1396	9.9%
4	36394	6.0%	2195	11.9%
5	42483	8.7%	3717	11.4%

The prevalence of abnormal SDQ-P scores ranged from 1% in Wairarapa DHB up to 9% in Whanganui DHB (Table 35). Hawke's Bay had by far the highest referral rate (44%), followed by Canterbury (24%). The lowest referral rate was 2% in Taranaki, but many DHBs had lower referral rates than average.

Table 62: SDQ-P and referrals by DHB (ever checked)

DHB	Number checked	Abnormal		
		%	n	Referred (%)
Auckland	13943	3.0%	419	12.9%
Bay of Plenty	9709	6.9%	669	6.9%
Canterbury	22247	4.2%	934	23.6%
Capital and Coast	12057	3.5%	425	9.9%
Counties Manukau	13374	5.7%	762	2.8%
Hawkes Bay	10584	5.7%	600	44.2%
Hutt	9697	4.9%	474	3.6%
Lakes	5419	5.9%	321	5.0%
Midcentral	9295	5.4%	506	3.0%
Nelson Marlborough	4896	3.2%	158	4.4%
Northland	7348	6.6%	488	13.1%
Otago	6118	3.0%	184	6.0%
South Canterbury	2778	4.3%	120	6.7%
Southland	10449	3.6%	380	7.6%
Tairāwhiti	2618	6.8%	179	7.3%
Taranaki	6591	7.2%	477	2.3%
Waikato	19993	5.7%	1139	7.1%
Wairarapa	2941	1.3%	37	2.7%
Waitemata	19684	3.4%	677	10.8%
West Coast	1546	6.1%	95	16.8%
Whanganui	4010	8.8%	354	14.1%

Strengths and Difficulties Questionnaire - Teachers

Among children for whom an SDQ-T was completed, 2% scored as abnormal, and 13% of these were given a referral (Table 36).⁸⁸ Boys were much more likely than girls to receive an abnormal score (3% vs 1%), and were also more likely to be referred if they did.

Table 63: SDQ-T and referrals by gender (ever checked)

	Number checked	Abnormal		
		%	n	Referred (%)
Female	72607	1.2%	876	9.2%
Male	76296	3.3%	2496	14.5%

Māori children were more likely than other groups to receive an abnormal SDQ-T score, and were more likely to be referred if they did (Table 37). Pacific children with abnormal scores were much less likely to be referred than other groups.

⁸⁸ SDQ-T data does not exclude 'children under care'. This may be a contributor to the seemingly low referral rates for children scored as Abnormal on SDQ-P i.e. children scored as Abnormal who are already receiving specialist care, do not need to be referred.

Table 64: SDQ-T and referrals by ethnic group (ever checked)

Ethnic group	Number checked	Abnormal		
		%	n	Referred (%)
Asian	11406	1.5%	170	11.2%
European/ Other	101531	2.2%	2222	13.0%
Māori	25322	3.0%	771	16.0%
Pacific	10726	1.9%	209	5.7%

More deprived children were more likely to receive an abnormal SDQ-T score (3% in quintile 5, versus 1% in quintile 1; Table 38). There was no overt pattern in referral rates.

Table 65: SDQ-T and referrals by deprivation (ever checked)

Deprivation quintile	Number checked	Abnormal		
		%	n	Referred (%)
1	29406	1.3%	381	10.0%
2	27217	1.8%	482	15.6%
3	27244	2.0%	548	9.3%
4	27438	3.0%	828	14.6%
5	31636	3.2%	1024	14.3%

Waitemata DHB had a low prevalence of abnormal SDQ-T scores (0.1%) (Table 39). The next lowest was Midcentral DHB on 1%. The highest prevalence was 4%, for Tairāwhiti and Taranaki DHBs. Hawke's Bay again had the highest referral rate (34%), although here Wairarapa DHB had a similar rate (33%). Other DHBs with high referral rates were Auckland (27%) and Canterbury (24%).

Table 66: SDQ-T and referrals by DHB (ever checked)

DHB	Number checked	Abnormal		
		%	n	Referred (%)
Auckland	10378	2.0%	208	27.4%
Bay of Plenty	6806	2.1%	141	6.4%
Canterbury	17907	2.5%	451	23.9%
Capital and Coast	7017	2.9%	206	7.8%
Counties Manukau	12349	1.8%	223	4.9%
Hawkes Bay	8225	2.0%	166	34.3%
Hutt	6675	3.4%	224	0.9%
Lakes	3110	1.5%	48	8.3%
Midcentral	6176	1.3%	81	6.2%
Nelson Marlborough	3895	2.8%	110	2.7%
Northland	3768	2.3%	86	4.7%
Otago	5832	3.0%	175	9.7%
South Canterbury	1652	3.3%	54	5.6%
Southland	9462	3.4%	325	7.4%
Tairāwhiti	2437	3.9%	94	7.4%
Taranaki	5956	3.9%	232	12.9%
Waikato	12678	2.6%	324	11.4%
Wairarapa	1756	2.6%	45	4.4%
Waitemata	17757	0.1%	15	0.0%
West Coast	1545	1.9%	29	6.9%
Whanganui	3604	3.7%	135	32.6%

Immunisation

Analysis of immunisation outcomes for the B4SC has been excluded from this review due to data limitations.

Completion and Outcomes Data: Summary

Completion rates

- Overall, 68% of children in a recent cohort (July 2005 to February 2007) had received all checks included in the B4SC. Around one fifth of children in the cohort had not received any of the B4SC checks.
- There is variation in B4SC coverage by ethnicity. Pacific children are considerably less likely to receive all B4SC checks (50%) than European/ Other (75%) children. Māori and Asian children are also significantly less likely than European/ Other children to receive all the B4SC checks (61% and 58%, respectively).
- There is also considerable variation in B4SC coverage by DHB. The three Auckland DHBs (Waitemata, Auckland and Counties Manukau) have some of the lowest full and partial completion rates, and highest proportions of non-assigned children.
- There is some variation in completion rates by deprivation quintile but considerably less than that seen for ethnicity and DHB. There is no significant gender variation in completion rates.
- Most children who complete only some of the B4SC checks receive only the vision and hearing checks.
- Refusal to complete the entire B4SC or aspects of the check does not appear to present a major issue, with only 3% of children having consent declined.

Assessment scores and referral rates

- There is variable prevalence of identified issues (assessment scores), ranging from 2% for vision, growth and behavioural issues, to 16% for hearing issues and tooth decay. Māori and Pacific children, and children from more deprived areas, are over-represented in having hearing issues, tooth decay, obesity, developmental and behavioural issues.
- There are variable referral rates for identified issues. Almost all children identified as having a vision or hearing issue are referred or rescreened. Between 11 and 23% of children identified as having dental, growth, developmental or behavioural issues are referred. There is significant variation by ethnicity, deprivation, DHB and, for some areas, gender.
- The likelihood of being referred seems to increase with increasing risk of having an issue identified. This means that, in many areas, referral rates are highest for Māori and Pacific children and children from more deprived areas. The exception is abnormal scores on the SDQ-P – in this case, Pacific and Māori children are twice as likely as European/ Other children to be scored abnormal but European/ Other children are referred most often.
- Around 10% of children who pass the audiometric hearing test are being, incorrectly, referred for tympanometry.

11. Future Directions

This chapter draws together the findings from the quality review of the content and implementation of the B4SC. The section addresses the following key questions:

1. What is the evidence for the B4SC?
2. What is the coverage of the B4SC?
3. What are the referral outcomes for the B4SC?
4. What are the key areas for quality improvement?

The chapter concludes with suggested areas for further research.

11.1 Evidence for the B4SC

There is a strong rationale for the timing and content of the B4SC, but some gaps in the evidence base, particularly with regard to efficacy.

The B4SC is built on strong evidence that early life experiences impact on future development and achievement, and that identifying problems and intervening early is likely to be more cost-effective than remediation later in life.

There is a strong rationale for undertaking a Well Child check at or around four years old, but limited evidence that undertaking a check at this time improves health, wellbeing and educational outcomes. A critical argument for New Zealand's B4SC is that a check at four years old can act as a 'safety net', providing opportunity to identify and address problems that have been missed or not treated prior to school. This is particularly important for children in vulnerable families and whānau, who are more likely to have missed earlier WCTO contacts.

There are some gaps in the evidence base for the content of the B4SC. Overall, there is a good rationale for most components of the B4SC but not comprehensive evidence of the efficacy of the checks for improving health and wellbeing outcomes. In particular, there is some but not comprehensive evidence for the efficacy of B4SC components for vulnerable populations, including high deprivation, Māori and Pacific families and whānau. Research on PEDS highlights the need to validate the effectiveness and appropriateness of B4SC tools for vulnerable families and whānau.

The WCTO programme adopts a progressive universal approach, that is, services available to all, with additional resources and enhanced access for those with greater need. The key risk of this approach for Māori, Pacific and high deprivation families and whānau is that they do not receive the additional services and resources intended for them (an issue of reach), and that the generic services and delivery models are not effective for the diversity of these families and whānau (a delivery issue).

There is substantial New Zealand and overseas evidence of barriers to access and utilisation of child health services, particularly as experienced by vulnerable families. Barriers to access include cost, continuity of provider relationship, cultural and language barriers, clinician knowledge, skill and time, service availability, waiting times, transport and child care difficulties. New Zealand evaluations have identified the importance of WCTO nurses' community networks and relationships with families and whānau for enhancing service access and utilisation.

11.2 B4SC coverage

The B4SC is significantly less effective at reaching and engaging Māori and Pacific children than it is at reaching and engaging European/ Other children.

Analysis of data from a cohort of children born between July 2005 and February 2007 provides information on B4SC service coverage and referral outcomes.

The B4SC is a universal service, intended for all four year olds and their families. Cohort data shows that the service is engaging with 86% of four year olds overall (Table 40) and around two thirds (68%) of these are completing all components of the B4SC (this includes non-closed checks; Table 41). This means that 14% of children are not engaged with the B4SC service at all, and 32% of children are not receiving the full B4SC.

The B4SC prioritises high deprivation, Māori and Pacific children and families/ whānau. Cohort data shows that the B4SC service is significantly *less effective* at reaching Māori and Pacific children and ensuring they complete the B4SC, than European/ Other children.

- **Māori children:** The B4SC service is engaging with 81% of Māori four year olds overall; 19% are not being engaged by the service at all. Three fifths (61%) of Māori children are completing all B4SC components, meaning that around two fifths (39%) are not receiving the full B4SC. See Tables 40 and 41 below.
- **Pacific children:** The B4SC service is engaging with 73% of Pacific four year olds overall; nearly one third (27%) are not being engaged by the service at all. Half of Pacific children (50%) are completing all B4SC components, meaning that half are not receiving the full B4SC. See Tables 40 and 41 below.

Disproportionately poor coverage rates for Māori and Pacific children, as compared with outcomes for European/ Other children, presents the possibility that the B4SC service may be contributing to inequalities rather than reducing them as intended.

Coverage data also shows that Asian children are significantly less engaged with the B4SC service than European/ Other children (Tables 40 and 41).

Table 67: Overall engagement with B4SC, by ethnicity

Ethnic Group	Engaged with B4SC	Not engaged with B4SC
European/ Other	91.9%	8.7%
Māori	80.9%	19.1%
Asian	79.9%	20.1%
Pacific	72.8%	27.2%
TOTAL	86.0%	14.0%

Table 68: Summary of completion outcomes, by ethnicity

Ethnic Group	All checks complete, closed	All checks complete, not closed	All checks complete (previous 2 columns combined)	Some checks complete	Assigned but no checks conducted	Consent refused	Not assigned
European/Other	66.3%	9.0%	75.3%	8.2%	3.9%	3.9%	8.7%
Māori	51.0%	9.8%	60.8%	9.9%	7.0%	3.1%	19.1%
Asian	47.1%	10.8%	57.9%	12.3%	7.4%	2.2%	20.1%
Pacific	38.8%	11.3%	50.1%	11.1%	9.7%	1.9%	27.2%
TOTAL	58.3%	9.6%	67.9%	9.2%	5.5%	3.4%	14.0%

There is considerable variation in B4SC coverage by DHB, with Auckland, Counties Manukau and Waitemata DHBs having some of the lowest completion rates and highest proportions of children not engaged with the service.

The coverage data shows little differential across deprivation quintiles for overall service engagement and check completion. The B4SC service is engaging with 89% of quintile 5 four year olds and 87% of quintile 4 four year olds (see Table 8). Slightly more than two thirds of quintile 5 (68%) and quintile 4 (69%) children are completing all B4SC components (Table 8). These rates do not vary substantially from quintile 1-3 rates.

11.3 B4SC referrals

Aside from vision and hearing screening, which have high referral rates, the majority of children with identified issues are not being referred by the B4SC service.

The B4SC aims to:

- identify health, behavioural and developmental concerns that may adversely affect a child's ability to learn
- ensure appropriate and timely referrals to improve child health and education outcomes and reduce inequalities.

Cohort data shows that the B4SC service is identifying children with problems, with prevalence of identified issues (assessment scores) ranging from 2% for vision, growth and behavioural issues, to 16% for hearing issues and tooth decay. Māori and Pacific children, and children from more deprived areas, are over-represented in having hearing issues, tooth decay, obesity, developmental and behavioural issues.

Referral rates for identified issues are highly variable and, with the exception of vision and hearing, referral rates are low. Almost all children identified as having a vision or hearing issue are referred or rescreened. Between 11 and 23% of children identified as having dental, growth, developmental or behavioural issues are referred (dental: 18%; growth: 16%; PEDS: 23%; SDQ-P: 11%; SDQ-T: 13%). This means that between 77 and 89% of children with issues in these areas are not being referred. This is a significant concern.

The data indicates that, consistent with their higher rates of identified issues, Māori and Pacific children, and children from deprived areas, are being referred slightly more often.

11.4 Areas for quality improvement

This section identifies key areas for improvement.

Develop a coherent strategy for how to improve access to the B4SC service for high deprivation, Māori and Pacific families and whānau. Currently there appears to be no clear and agreed approach to improving service access. This review has identified several barriers to families accessing the B4SC and subsequent specialist services, including availability of Tamariki Ora providers, availability of flexible service delivery models that accommodate diversity of caregiving arrangements, and requirements to confirm specialist appointments and prove eligibility for specialist services. The review has also identified provider relationship continuity as a factor likely to encourage participation in the B4SC.

Increase Tamariki Ora provider involvement in the B4SC system. Interviews with DHBs, providers and parents suggest that Tamariki Ora providers provide a culturally appropriate and effective service for Māori, Pacific and high deprivation families and whānau. They are seen as better able to access Māori, Pacific and high deprivation families, meet cultural (including language) needs, and provide a holistic service. They also have existing relationships with families/ whānau through WCTO core contacts one to seven. However, Tamariki Ora providers currently represent only six of the 42 B4SC providers. Enhancing the role and availability of these providers in the B4SC system is an important pathway towards addressing known barriers and enablers to B4SC participation for priority populations.

Increased contracting of Tamariki Ora providers will also enable these providers to further develop their B4SC and Tamariki Ora services infrastructure, strengthening their ability to provide a well resourced, high quality service to high deprivation, Māori and Pacific families and whānau. Contracting over a longer term and on a bulk or combined funding basis (rather than fee for service) will also support the sustainability of Tamariki Ora providers, by enabling them to adopt a longer-term approach to their service planning, infrastructure and quality improvement structures and processes.

Investigate ways to integrate the B4SC and WCTO programme. The disconnection of B4SC services contracting from WCTO services contracting means a loss of provider relationship continuity for many families and whānau, as well as a disconnection in family/ whānau engagement with the WCTO programme as a whole. The requirement to establish a relationship with a new provider may be a barrier to B4SC participation for some families.

Assess the cultural appropriateness and effectiveness of B4SC tools for high deprivation, Māori and Pacific families and whānau. While this review did not explicitly test the use of B4SC tools with Māori and Pacific children and parents, interviews with providers and parents indicate that some screening tests may elicit inaccurate results due to language barriers and cultural differences. This appears to be an issue for Pacific families in particular. This finding highlights the importance of ensuring all tools are relevant, understood and appropriate for high deprivation, Māori and Pacific families and whānau. This has important implications for quality of assessment outcomes. It also highlights the need to ensure B4SC delivery, overall, is effective for Pacific children and parents. This includes the availability of Pacific B4SC provider organisations and nurses who speak Pacific languages, translation of B4SC tools into Pacific languages and developing Pacific language B4SC resources.

Consider undertaking the B4SC slightly earlier than four years old. B4SC data indicates that, while most children are completing the B4SC before they start school, many are not completing it until close to five years old. This makes it difficult for any referrals to be initiated, let alone any intervention completed, prior to a child starting school. There is little evidence to indicate that the B4SC should not take place slightly earlier (the Centre for Community Child Health (2009) suggests three and a half years is the ideal time). Providers and parents both suggest that the check should take place earlier to allow time for issues to be addressed before school entry.

Determine the role of the B4SC in supporting families and whānau to access specialist services, and establish clear lines of responsibility for referral follow up.

There is uncertainty among providers as to who is responsible for following up referrals, and how many follow ups are required. This presents a risk that referrals may slip through the cracks and children may miss out on specialist services. Similarly, it is not clear what role (if any) B4SC providers have in supporting families to progress through the initial stages of the referral process (agreeing an appointment time, attending appointments) and, subsequently, the ongoing interactions with specialist services. This also represents a potential system gap where children, particularly those in more vulnerable families, may end up missing out on interventions because of family and system level barriers to families accessing specialist services.

Clarify clinical accountabilities relating to the B4SC and ensure all DHBs have local referral pathways, formal referral review arrangements and multidisciplinary B4SC clinical advisory groups. The referral rates suggest issues with provider adherence to referral protocols. The Ministry, DHBs and B4SC providers have made considerable progress in identifying and addressing causes of variation and under referral. However, there is an ongoing need to focus on referral processes and adherence to protocols in order to achieve appropriate referral outcomes. Clinical leadership, review and accountability structures are key to improving referral processes. It will be particularly important to ensure that these structures are available and accessible to smaller Māori and Pacific providers, who do not always have the capacity to develop their clinical leadership structures.

Strengthen systems for monitoring and enhancing provider competency. A key strength of the B4SC programme is that all providers are B4SC trained registered nurses. However, there appear to be few firm mechanisms for ensuring providers meet competency requirements, for monitoring the quality of their service delivery and for monitoring the quality and consistency of training. Enhanced quality improvement systems for monitoring and improving workforce competency will contribute to higher quality assessment and referral decisions and reduced referral variation.

Continue to strengthen systems for monitoring and improving the effectiveness of the B4SC. The B4SC database is a great asset to the programme, enabling identification of the eligible B4SC population. However, the B4SC database is currently not integrated with any other information systems, including WCTO reporting. Integration of B4SC and WCTO databases needs to be prioritised. As a bare minimum, B4SC providers need access to a child's previous WCTO assessment and referral results.

Another important strength of the B4SC system is the Ministry's provision of regular DHB specific quality improvement information. This information appears to have significantly increased awareness of quality improvement and, in particular, the use of referrals data to inform review of practice. The momentum of this work should be continued with introduction of the WCTO Quality Improvement Framework. The quality improvement framework should be used to:

- foster inter-agency discussions about WCTO (including B4SC) programme vision and results at a local, regional and national level, to create a greater sense of a multidisciplinary team focused on population level results and not individual service delivery
- agree changes to WCTO and B4SC programmes locally and regionally to enhance families/ whānau experience of the WCTO and B4SC services and to identify ways to improve service delivery that will affect positive health and wellbeing outcomes.

Continue to develop the B4SC evidence-base for New Zealand. Continue to monitor the international evidence and seek to test in the New Zealand context. Set up a technical advisory group to review evidence and make suggested recommendations to the B4SC programme.

11.5 Further research

This review has identified a number of future research areas which if undertaken would strengthen the evidence-base for the B4SC programme. The following research areas are not a prioritised list.

- Research to explore barriers and enablers to Māori whānau participation in the B4SC programme. This could include exploration of views and experiences of Tamariki Ora providers.
- Research to explore barriers and enablers to Pacific families' participation in the B4SC programme. Recognising the diversity of Pacific communities' worldviews and experiences, this research would need to include families from different Pasifika populations. This research could include exploration of Pacific views and experiences of Tamariki Ora providers.
- Research with B4SC providers to understand service structures and delivery approaches and to identify areas for capacity development and quality improvement.
- Research on the efficacy of B4SC screening tests and assessments in improving long term health and educational outcomes.

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Annex 1: Content and delivery of overseas four year old checks

In the UK, the School Entry Review is undertaken when children start school. The content of the check aligns directly with advice provided by Hall and Elliman (2006) and includes (Department of Health and the Department of Children, School and Families 2009):

1. hearing testing
2. vision screening
3. measure height and weight (for the National Child Measurement Programme)
4. review immunisation status and offer any missed immunisations
5. review access to primary and dental care
6. provide children, parents and school staff with information on specific health issues
7. Foundation Stage Profile assessment⁸⁹
8. be alert to risk factors and signs and symptoms of child abuse and follow local safeguarding procedures where there is cause for concern.

The School Entry Review, as with other HCP checks, is offered in GP clinics or Sure Start Children's Centres⁹⁰ or, where appropriate, at home. The programme is delivered by the Healthy Child Team, which is led by a health visitor, who works closely with GPs and Sure Start Children's Centres. A broad range of practitioners, including GPs, midwives, health visitors, community nursery nurses, early years practitioners, and family support workers, contribute.

In the US, the Bright Futures programme includes a four year old visit. Bright Futures is a national health care promotion and disease prevention initiative that uses a developmentally-based approach to address children's health care needs in the context of family and community (Hagan et al 2008). The programme provides a single, uniform set of recommendations for health supervision and preventive service visits that are to be used by health professionals across the spectrum of care. Bright Futures visits include health promotion and anticipatory guidance, disease prevention and early detection of disease. The four year old visit includes:

1. a complete physical exam, including blood pressure and height and weight measurements (to calculate and plot BMI)
2. assessment of visual acuity
3. hearing screening
4. observation of fine and gross motor skills
5. assessment of language acquisition, speech fluency/clarity, thought content/abstraction
6. immunisations
7. development surveillance - questioning regarding social-emotional, communication, cognitive, physical development
8. anticipatory guidance – school readiness, developing healthy personal habits, television / media, child and family involvement and safety in the community.

⁸⁹ Teacher assessment <http://www.education.gov.uk/schools/teachingandlearning/assessment/eyfs/a00200086/early-years-foundation-stage-profile-assessment-in-2012>

⁹⁰ Sure Start Children's Centres offer child and family health services, childcare, access to specialist services, parenting advice and employment support, along with other services.

Clinicians are also expected to attain a history, observe parent-child interaction and, importantly, attend to the concerns of the parents.

Bright Futures visits are undertaken in a range of clinical settings, from private practices to school-based clinics and in-patient tertiary care facilities.

In Australia, the HKC is undertaken at four years old. The aim of the HKC, which was introduced in July 2008, is to gather health information, identify health problems and promote healthy lifestyle around the time of the four years of age vaccinations, in preparation for starting school (Alexander and Mazza 2010b). The HKC can be conducted by a GP or Practice Nurse. Mandatory requirements of the HKC, to qualify for Medicare reimbursement, include:

1. height and weight measurements (to calculate and plot BMI)
2. vision screening
3. hearing testing
4. oral health (LTL plus oral health promotion)
5. question on toilet habits⁹¹
6. note known or suspected allergies.

In addition, the general practice should ensure medical history is updated, four years of age immunisations are completed and a Get Set 4 Life health promotion booklet is given to the family.

In a review of evidence-based examinations for HKC that can be applied in general practice settings, Alexander and Mazza (2010b) identify a number of other assessments which are not required by the HKC but have some evidence for application in primary care settings (identified separately in Table 1). These include:

1. Speech and language development: Questioning for parental concern about a child's speech is equally as effective as applying formal screening instruments in the primary care setting, and more cost and time efficient.
2. Motor skills, behaviour and mood: PEDS is a good first line screen of child behaviour and development; the authors note that PEDS can be obtained from parents while they are in the waiting room, making consultation more efficient, and the checklist of ten open ended questions can be utilised informally as a prompt for parental concern or can be scored and interpreted to obtain a level of risk, with suggested management outcomes.
3. Promotion of healthy eating and physical activity.
4. Injury prevention messages.
5. Environmental tobacco smoke messages.

⁹¹ Note that Alexander and Mazza (2010b) suggest that the toileting question should be removed from the HKC as the evidence indicates that screening for problems with toileting at four years of age is inappropriate.

It is proposed that the Australian, one-off, universal child health and development check be undertaken at three years old and cover the following domains (Centre for Community Health 2009):

1. Physical health:
 - height (to identify short stature)
 - weight (to identify overweight/obese)
 - oral health (LTL)
 - sleep (single question)
 - general health (single question).
2. Language and cognition
 - parent concerns and report of child's abilities.
3. Social and emotional health and behaviour
 - PEDS
 - SDQ
 - child behaviour check.
4. Family/environment
 - plans for preschool
 - general question about family environment.
5. Health promotion messages
 - reading to children
 - positive play
 - diet and nutrition
 - oral health care
 - importance of children attending preschool.

Note that the Centre did not propose vision checks, because a proposal for an Australian national vision screening programme had identified that three years of age is too early to determine vision problems, and they did not propose hearing checks, because neonatal hearing screening programmes were considered adequate and the Centre determined that there are no adequate ways of screening hearing (for the whole population) after the neonatal period.