

Audience Research: Delayers of Infant Immunisation

Prepared for the Ministry of Health

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Level 9, iCentre Building
50 Manners Street
PO Box 24181
Wellington 6142

TEL +64 4 473 3885

FAX +64 4 473 3884

www.litmus.co.nz

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1. Executive Summary

1.1 Audience research amongst delayers of infant immunisation

In November 2011, the New Zealand Government announced the introduction of a new immunisation health target that seeks to improve immunisation timeliness for young infants. Specifically, the target for the end of 2014 is **95 percent** of all eight-month-olds are fully immunised with the three scheduled vaccinations at six weeks, three months and five months.

The Ministry of Health commissioned audience research with parents who have delayed one or more of their baby or young infant's primary immunisations.

The research objectives were to explore parents'¹ decisions and reasons for delaying primary immunisations, and to test messages to encourage and support parents to immunise their infants on time.

Focus groups and individual interviews were conducted with **68** parents of infants aged eight to 12 months for whom one or more primary immunisations were not administered on time. Fieldwork was conducted in seven district health boards² between July and August 2012.

1.2 The world of delayers

Parents' attitudes and experiences of immunising infants

Parents who have delayed their infants' primary immunisations have a strong desire to protect them from serious illness and disease and keep them healthy and well. Parents consider serious illness and disease to have a devastating impact on infants, families/whānau and communities. Māori, Pacific and Asian parents have heightened sensitivity to the risk of their infants contracting serious disease, as they are more likely to have had first-hand experience of disease. For example, they may have experience of an infant or child in their family/whānau becoming unwell or dying from a serious disease, or being exposed to disease in developing countries.

Parents generally believe their infants are protected from disease in the home environment and become more vulnerable when they start socialising with other children. Immunisation is believed to provide infants with a 'protective blanket' when interacting outside the family/whānau. Most parents consider that getting their infants immunised is a responsible thing to do as it not only protects their child and family/whānau but protects other infants and children in their communities.

Most parents learn or start to think about immunising their infants after they are born. Most parents do their own research on immunisation (mainly around potential risks and side effects) through the Internet, reading brochures and talking to their midwife, Well

¹ References to 'parents' in this report also includes primary caregivers.

² Northland, Counties Manukau, Waitemata, Waikato, Bay of Plenty, Canterbury and Capital and Coast.

Child/Tamariki Ora provider, general practitioner (GP) or practice nurse. However, some parents (particularly Māori and Pacific parents) do not feel well informed about immunisation and often believe it is compulsory to immunise their infants.

While at a rational level, most parents have confidence in the safety of vaccines; at an emotional level, they still have fears. Some Pākehā and Māori parents have specific fears over the safety of the Measles, Mumps and Rubella (MMR) vaccine.

Mothers generally make all decisions and arrangements for their children's immunisation. Immunisation is a significant event and most mothers are usually supported by their partner (for the six-week immunisation) or another female family member when their infants are being immunised. These mothers find this support extremely valuable. However, some mothers had little or no support from a child's father or from family or friends, and these mothers tend to have a history of prolonged delays in immunising their infants.

While parents often have emotional fears over the safety of vaccines, they have real concerns over their potential side effects (eg fever, vomiting, redness, tenderness and swelling), and these concerns are exacerbated if their infant is unwell. Parents who have had low prior exposure to immunisation – first-time parents, parents who were not immunised as children or whose family/whānau tend not to immunise their children have increased anxiety over potential side effects.

Most parents fear the immunisation experience, and around half were not present for at least one of their infant's immunisations – although they comforted them in the waiting room afterwards.

While most parents find immunising their infants in a clinical setting comforting, in case of reactions to the vaccines, most do not find it suitable comforting their infants in public waiting areas. Some Māori parents have had poor experiences with health providers, both in relation to immunisation and other health matters, which impacts on their confidence to immunise their infants in these settings. There is a strong preference from parents for their infants to be immunised in more family supportive environments, and those who had in-home immunisations found this service particularly valuable.

Parents' attitudes and experiences of delaying immunisations

Parents are generally aware of the recommended ages to immunise their children, as outlined in the National Immunisation Schedule. All parents spoke of receiving information on key information dates from their midwife, Plunket Nurse or other Well Child Tamariki Ora provider. Parents recall receiving timely letters and emails from their GPs reminding them when their infant's immunisations were due, text reminders of their appointments and follow up text messages and phone calls when they missed an appointment.

Parents believe they had legitimate reasons for delaying their infant's primary immunisations (eg their child was unwell; they were not in their home location at the time of the recommended immunisations or they lacked transport to get to an appointment). Parents are more comfortable delaying their infant's immunisations in cases where they believe their reasons for delaying were in the best interest of their child (eg. in cases of unwell or premature infants). However, parents often feel guilty for delaying their child's immunisations where reasons were circumstantial (eg. not having transport to attend an appointment).

While parents are aware of the recommended ages for immunising their infants and children, they have little or no understanding of the importance of immunising at the recommended ages or the consequences of not doing so on time. Consequently, while most parents consider immunisation to be important for the overall health of their child, there is a lack of urgency to get infants immunised on time if they are largely staying within the home environment.

Most parents intend to catch up their infant's immunisations so they are fully protected from serious disease. The *tipping point* for getting immunisations up to date is before their infant or child enters early childhood education or school, and starts interacting and socialising with other children.

Typologies of parents who delay primary immunisation events

Although parents who delay their child's primary immunisations share a set of core values, there is diversity within this group. Three distinct typologies of 'delayer' parents have been identified in this research, which reflect parents' attitudes towards immunisation and their experiences of delaying:

1. **The Compromised** – support immunisation but face significant individual, family/whānau and/or environmental barriers to immunising their infant(s) on time.
2. **The Considered** – support immunisation but are concerned with the timeliness of the schedule. They therefore immunise at times that they feel are more appropriate for their child.
3. **The Conflicted** – have concerns about immunisation and immunise their infants when they feel there is a heightened risk of disease, or through a sense of pressure from their partner, family/whānau and/or health provider.

1.3 Messages to encourage immunisation timeliness

Key messages tested

The following messages, aimed at encouraging parents to immunise their infants on time at six weeks, three months and five months, were tested on parents:

1. messages on immunising to **protect infants and children** from serious diseases
2. messages on **immunisation timeliness**
3. messages to **encourage parent/caregiver communication** with GP/practice nurse when infants are unwell at times when immunisations are due
4. messages on **asking for support** from family/whānau
5. messages on **convenience**, including combining immunisation appointments with other routine appointments
6. messages on **fewer disruptions** to parents' work and children's education, if infants and children are immunised
7. messages on **vaccine safety**.

Key messages that might encourage or enable timely immunisation uptake amongst parents of infants

Overall, messages that will be more effective in encouraging immunisation timeliness tap into parents' emotions to protect their children. Therefore, messages that have greater relevance remind parents of their infant's vulnerability to serious illness and disease and that immunisation is a proven and effective way to protect their child and keep them healthy and well.

Immunisation protects infants and children

This message '*diseases don't discriminate – anyone can catch them*' and '*babies are at risk if not fully immunised*' resonates strongly with all parents because it reminds them of the presence of preventable diseases in their communities, and that all infants are vulnerable if they are not fully immunised. It also suggests that other protective factors (breastfeeding and good diet) are not sufficient alone to protect their child from serious illness and disease, and immunisation is therefore an important addition.

Immunisation timeliness

The message '*immunise on time, every time*' makes people feel pressured rather than supported to immunise on time. Parents believe that this message doesn't acknowledge there are often legitimate reasons (eg. when their child is sick) or events beyond their control (eg. lack of transportation) for not immunising their infants on time.

Communication with GP/practice nurse

The message '*if your baby is due to be immunised and is unwell, talk to your nurse or doctor before cancelling your appointment*' challenges parents' assumptions that they cannot and should not immunise their infants unless they are 100% well (feeding, sleeping and playing normally). For many parents, they feel their concerns around immunising an unwell infant are valid, and that their child may get sicker, have a greater risk of side effects from the vaccines and/or that the vaccines may not be as effective. However, their main aversion to immunising a sick infant is they do not want to cause them further discomfort. While doctors and nurses can advise whether infants can clinically undergo immunisation, only parents can make decisions around the comfort of their child.

Asking for support

All parents were receptive to the message '*ask family and friends to support you to immunise your baby*'. This message acknowledges it is both logistically challenging and emotionally stressful for parents to take their infants to their appointments and get them immunised.

Convenience

Most parents give their infants 100% focus and attention during and after immunisations. Therefore, combining their child's immunisations with other family members' regular doctor or hospital appointments is not desirable. Parents say they are very unlikely to combine their child's immunisations with their own appointments (even if routine) as they want to be well when they immunise their infants. However, this message has resonance with parents with large families in the 'Compromised' typology who find it challenging to schedule and attend medical appointments.

Fewer disruptions

The message *‘during a disease outbreak, children can sometimes be excluded from day-care, crèche, kindergarten or school if they haven’t been immunised’* resonates with parents. However, it also confronts parents’ perceptions that early childhood education centres require infants and children to be fully immunised before they are enrolled.

The message *‘immunising your baby and children will mean less time away from work as they will be protected if there is a disease outbreak’* is disliked by most parents because it conveys that they should immunise their infants against life-threatening illness and disease out of convenience rather than a desire to protect their child. However, it does resonate with the small group of working parents who have their infants in childcare. These parents are reliant on both parents’ incomes for their daily living and often lack flexible working arrangements and sick leave entitlements.

Vaccine safety

Providing evidence around the robustness of clinical trials and continued safety monitoring of vaccines makes parents feel more reassured about their decision to immunise. Parents in the ‘Conflicted’ typology felt mostly comfortable about the science and safety of immunisation, but wanted more information about the likelihood of side effects and the balance of risk. While messages around vaccine safety provide reassurance, it is unlikely to impact on immunisation timeliness.

Discussing the discredited link between the MMR vaccine and autism introduces or reactivates concerns for parents who were either not aware of the past publicity or did not believe it to be credible. For the few parents who hold concerns about the safety of the MMR vaccine, this message only reinforces their view that the Ministry of Health does not always provide ‘balanced information’ (ie, is ‘pro immunisation’ and ‘covers up’ the risks).

1.4 Conclusions

This research, which explores parents’ decisions and reasons for delaying the primary course of immunisations and tests messages to encourage and support parents to immunise their infants on time, draws the following conclusions.

- Motivations and enablers for parents to immunise their infants, on time, as scheduled

Parents who have delayed one or more of their infant’s primary immunisation events have a strong desire to protect them from serious illness and disease and keep them healthy and well throughout their lives. The tipping point for immunising their infants and children is around socialisation.

- Barriers to parents delaying immunising their infants on time

While parents are aware of the recommended ages for immunising their infants, they have little or no understanding of the importance of immunising their infant at the recommended ages or the consequences of not doing so on time

- Role of individual factors when immunisation is delayed

Parents believe they had legitimate reasons for delaying their infant’s immunisations (eg. their child was unwell, or they lacked transport to get to appointments). Parents are more comfortable delaying their infant’s immunisations in cases where they believe their reasons

for delaying are in the best interest of their child (eg. in cases of unwell or premature infants). However, parents often feel guilty for delaying their infant's immunisations where reasons are circumstantial (eg. not having transport).

- Role of family/whānau and others when immunisation is delayed

Immunisation is a significant event and most mothers are usually supported by their partner or another female family member when their infants are being immunised. These mothers find this support extremely valuable.

- Role of environmental factors (such as access to transport, health services) when immunisation is delayed

Environmental factors, such as access and cost of transportation to get to health services, have a significant role in timeliness of immunisation for low-income families. While most parents find immunising their infants in a clinical setting comforting, in case of reactions to the vaccines, most do not find it suitable comforting their infants in public waiting areas.

- Key messages that might encourage or enable timely immunisation uptake amongst parents of infants

Key messages that might encourage or enable timely immunisation uptake tap into parents' emotions to protect their children. These messages include the **vulnerability of infants to serious illness and disease**, and that **immunisation is a proven and effective way** to prevent serious illness and disease and keep children healthy.

Recommendations for practices to improve the immunisation experience include supportive and accurate information about immunisation at all stages (such as calling ahead to seek advice about whether to delay an appointment if their child is unwell), and a supportive environment (such as a comfortable waiting area after immunisation is administered, where they can settle their child, breastfeed, and/or have other children with them during the required waiting time). In addition, having practice staff who acknowledge that it is a distressing event and take steps to reduce anxiety and answer questions would also work to empower parents.

2. Introduction

2.1 Background

Immunisation is one of the most cost effective of all health interventions and is an essential component of both Well Child/Tamariki Ora and adult preventative health services. Increasing child immunisation in New Zealand has been a government priority in New Zealand for several years.

In 2009, immunisation was made one of the New Zealand Government's six health targets. Specifically, the Ministry of Health, district health boards and the health sector were committed to reaching a goal of having **95 percent** of all New Zealand two-year-olds fully immunised by 2012. Recent immunisation coverage data shows that national coverage is now at **93 percent**, and eight district health boards have met or exceeded this target for two-year-olds.

In November 2011, the Government announced the introduction of a new immunisation health target that seeks to improve immunisation timeliness for young babies and infants. Specifically, the new target is that, by the end of 2014, **95 percent** of all eight-month-olds are fully immunised with the three scheduled vaccinations at six weeks, three months and five months. Recent immunisation coverage data at the six-month milestone shows that **72 percent** of Pākehā and 'Other' infants and **58 percent** of Māori infants have completed their primary course overall (Ministry of Health, 2012).

The rationale for the National Immunisation Schedule is related to the efficacy and practicality of vaccine delivery in the first year of life.

Delaying childhood immunisation events has implications for an infant's individual risk of illness during a key period of vulnerability and contributes to a population 'reservoir' of disease in the unvaccinated group. The immunisation pathway also shows that a delay at the first event is the strongest and most consistent predictor of subsequent incomplete immunisations and lower overall immunisation coverage later in life (Petousis-Harris, 2012). The 'on time' definition of immunisation is that being received within four weeks of the scheduled time, with appropriate interval adjustment for subsequent doses (Ministry of Health, 2007).

Table 1: Primary course of infant vaccinations – National Immunisation Schedule

Age of infant	Disease covered
Six weeks	Diphtheria/Tetanus/Pertussis/Polio/Hepatitis B/Haemophilus influenzae type b
	Pneumococcal
Three months	Diphtheria/Tetanus/Pertussis/Polio/Hepatitis B/Haemophilus influenzae type b
	Pneumococcal
Five months	Diphtheria/Tetanus/Pertussis/Polio/Hepatitis B/Haemophilus influenzae type b
	Pneumococcal

Source: Ministry of Health, 2012. <http://www.health.govt.nz/our-work/preventative-health-wellness/immunisation/new-zealand-immunisation-schedule>

2.2 Audience research amongst delayers of infant immunisation

The Ministry of Health commissioned audience research with parents who have delayed one or more of their infant's primary immunisations.

Research objectives

The research objectives were to explore parents'³ decisions and reasons for delaying any or the entire primary immunisations, with a focus on the following factors:

- motivations and enablers for parents to immunise their infants, on time, as scheduled
- barriers to parents immunising their infants on time
- the role of individual factors when immunisation is delayed
- the role of family/whānau and others when immunisation is delayed
- the role of environmental factors (such as access to transport, health services) when immunisation is delayed
- key messages that might encourage or enable timely immunisation uptake amongst parents of infants.

Research approach

The research was conducted in two phases.

1. **Exploratory research**, which looked at factors that result in delayed immunisation in the primary series, key motivations, enablers and barriers, and the role of the individual, family/whānau and environmental factors in the delay.
2. **Message testing**, which explored a range of messages designed to encourage and support parents to immunise their infants on time.

Fieldwork was conducted between July and August 2012. The following activities were completed for both stages of the research:

- development of research tools such as recruitment specifications, interview guides, participant information sheets and consent forms
- recruitment of parents from target groups – purposive methods, such as community networks, recruitment through early childhood centres, were used
- informed consent processes were followed, and focus groups and interviews were audio recorded with parents' permission
- two-hour focus groups were conducted in qualitative research rooms and in local community rooms, involving four to six people
- one hour individual interviews were conducted in participants' homes
- parents received a \$60 koha in recognition of their time and contribution to the research.

³ References to 'parents' in this report also includes primary caregivers.

Sample

The research was conducted with parents of infants aged eight to 12 months for whom one or more primary immunisation events were delayed for at least four weeks from the scheduled age. The recruitment had a particular focus on Māori and Pacific parents and those from low income households.⁴ Participants were recruited from seven District Health Board areas (Northland, Counties Manukau, Waitemata, Waikato, Bay of Plenty, Capital and Coast, and Canterbury). Fieldwork was mainly undertaken with mothers, given their primary role in looking after infants of this age.

Participants were grouped by ethnicity for focus groups in the first stage, and by reason for delaying immunisation in the second stage.

Table 2: Sample description across both stages

	Participant number
District Health Board	
Northland	4
Waitemata	12
Counties Manukau	12
Waikato	9
Bay of Plenty	2
Canterbury	10
Capital & Coast (message testing)	19
Ethnicity	
Māori	24
Pacific	12
Pākehā	25
Asian	7
Gender	
Women	63
Men	5
TOTAL	68

Analysis and reporting

A series of analysis workshops was conducted by the research team for both stages of the project. Preliminary analysis of the exploratory research was undertaken before message testing, and early findings were shared with the Ministry of Health to guide message development for the second stage.

This report reflects the synthesis of findings from both research stages. The qualitative data were analysed to find patterns and themes relating to the research objectives, and any wider contextual issues relating to delay of primary immunisation events.

Caveats

The information contained in this report represents the views of 68 parents whose infants had delayed immunisations in their first year, interviewed in Northland, Auckland, Bay of Plenty, Waikato, Capital and Coast, and Canterbury areas. Given its qualitative nature, the findings of this report cannot be generalised to the wider population of parents whose infants have had delayed immunisation events. However, key research themes described here were consistent across interviews and different groups of parents, increasing the dependability and rigour of the findings.

⁴ Those with a household income of less than \$70,000 per annum before tax.

3. The World of Delayers

The first research phase was to explore the world of parents who delay their infant's primary immunisations at six weeks, three months and/or five months. This included looking at parents' key motivations, enablers and barriers for immunising their infants on time, and the role of family/whānau and environmental factors when immunisation is delayed.

Parents who have delayed one or more of their infant's primary immunisations come from all walks of life. Some parents were immunised as infants while others were not. Some parents' sisters, cousins and other family/whānau members routinely immunise their infants on time, while others have a family or household history of not immunising their infants or delaying immunisation. Some parents have been up-to-date with their older children's immunisations, while others have a history of delays with any and all of their children.

3.1 Parents' attitudes and experiences of immunising infants

Summary

- Parents have a strong desire to protect their children from serious illness and disease, and most generally support immunisation.
- Immunisation is a significant event for new parents, and mothers value partner and family/whānau support.
- At a rational level, parents generally have confidence in the safety of vaccines, but at an emotional level, they still have fears.
- Parents have concerns over potential side effects of vaccines.
- Parents fear the immunisation experience.
- Parents find the immunisation environment in GP clinics disempowering.

1. Parents have a strong desire to protect their infants from serious illness and disease, and most generally support immunisation

All parents have a strong desire to protect their infants from serious illness and disease and to keep them healthy and well throughout life. Serious illness and disease is considered to have a devastating impact on children, families/whānau and communities. Most Māori, Pacific and Asian parents have heightened sensitivity to the risk of their child contracting serious disease. Some Māori and Pacific parents have had experience of an infant or child in their family/whānau becoming unwell or dying from a serious disease, and Asian-born parents have first-hand experience of disease before arriving in New Zealand. Parents living in locations that have experienced recent outbreaks of serious disease (eg. Northland) also have a heightened sensitivity of risk.

Our risks are higher in Northland. Being a Northlander I feel very much inclined to keep on top of things. If they offered a new one I would race down and get it. I'm a germ-a-phobe. (Annie, Pākehā, Northland)

Parents generally believe their infants are protected from disease in the home environment and become more vulnerable to disease when they start socialising with other children. While breastfeeding, good diet and warm and dry homes, are considered strong protective factors, immunisation provides infants with a 'protective blanket' when interacting with others outside the family/whānau during play, sport, social gatherings, education and travel.

Most parents therefore believe in the efficacy of vaccines and that immunisation protects their children from contracting a serious disease or more harmful strains of the disease.

I know that the babies can still get the diseases that they're trying to protect them against, but hopefully not as bad. I just think they are going to be that much safer, when it comes to disease. Even though I know it's not 100%. (Linda, Māori, Canterbury)

It's good that they have to get them done. It will probably save their lives if any of that stuff happens. I'd rather him be safe than in the hospital. (Rachel, Māori, Waikato)

It is something that is going to help my son and protect him against harmful infections and disease. I feel as though it is something that must be done because it is going to help. (Matt, Pākehā, Capital and Coast)

Most parents consider getting their infants immunised a responsible thing to do because it not only protects their child and family/whānau but protects other infants and children in their communities. Most, therefore, distance themselves philosophically and politically from parents who oppose infant immunisation.

While a few parents were told about infant immunisation by their midwife or learnt about it in antenatal classes before their child was born, most did not learn, start thinking about or planning their infant's immunisations until after they were born. Most parents do some research on immunisation (mainly around potential risks and side effects) through the Internet, reading brochures and talking to their midwife, Plunket Nurse, GP or practice nurse; however, they often do not feel well informed. A few Pākehā parents consider there is a lack of *balanced information* on immunisation and feel that most information is either pro immunisation or anti immunisation. Other parents (particularly Māori and Pacific parents) do not feel well informed at all about immunisation. While most know they have a choice whether or not to immunise their children, some (particularly Māori and Pacific parents) believe immunising their infants is compulsory.

It's weird how you want your kids to be vaccinated against these things but you actually don't really know anything about them. I do it because everyone, well all of the health professionals, say you should do it, because they are the professionals, and they say you need to do it, so you do it. (Linda, Māori, Canterbury)

They [health providers] are still wanting kids to get immunised but they don't actually talk about the risks. I still would have got my kids immunised anyway but I was angry that it wasn't talked about, those risks were just brushed under the mat. When I went in to get the jabs not once did they say 'Do you understand there is a slight risk?' Obviously the good outweighs the bad, but there is still a risk. It would have not changed my opinion. (Annie, Pākehā, Northland)

2. At a rational level, parents generally have confidence in the safety of vaccines, but at an emotional level, they hold fears

At a rational level, most parents have confidence in the safety of vaccines, while acknowledging that with any medical interventions there are inherent risks. However, at an emotional level, most parents fear that their infant could be the 'one in x million' who has a serious adverse reaction to the vaccines.

Some Pākehā and Māori parents have specific fears over the safety of the Measles, Mumps and Rubella (MMR) vaccine. While these parents are generally aware that it has

been proven that there is no scientific evidence linking the MMR vaccine to the development of autism, they still have lingering doubts over the safety of this vaccination.

I don't think the documentaries and research are true, but some parents feel strongly that the Menz B made their babies slow and put them in wheelchairs. There is no hard evidence to say it is true but the parents still feel strongly about it. (Cheryl, Māori, Capital and Coast)

A few Māori parents who have had a child or family member become seriously ill or die following a vaccine often hold deep-seated beliefs about vaccine safety. While the family member's illness or death was not proven to be linked to the vaccine, parents continue to be suspicious of vaccine safety.

My little girl didn't settle for six weeks after her imms. When she was two-and-a-half she passed away. When she was six weeks she broke into a rash and I thought it must have been her imms and the doctor said she had had a bad reaction to the imms, but did not realise something else was going on. So with my son I didn't take him to get his imms. It took me a while to realise it wasn't the imms that caused her death but something else. (Rachel, Māori, Waikato)

My brother's girlfriend is the only person I know who immunises her kids. My mum put a bad thought into my head due to Aunty's baby passing away not long after she was immunised. (Mary, Māori, Waikato)

3. Immunisation is a significant event for new parents, and mothers value partner and family/whānau support

Immunisation is a significant event for new parents. At the time of the recommended six-week immunisations, infants are still the centre of their parents' universe and most parents want to give their child 100% focus and attention during immunisations.

For many Pākehā and Asian parents, taking their infants for their first immunisation is the first or one of the few times their infants have been outside of their home since coming home from hospital, and parents are still establishing their infant's sleeping and feeding routines. Consequently, parents want to feel prepared and supported for this significant event.

Mothers are mainly responsible for all decisions and arrangements for their infant's immunisations. They find it valuable to have their partner or another family member (mother, mother-in-law, sister, aunty, cousin or friend) attend their infant's immunisations and provide practical and emotional support during this time. This support includes providing transportation, holding and comforting infants during and after immunisations, keeping a watch for potential side effects and caring for older children. Most partnered mothers were supported by their partners when immunising their infants for the first time, and often by female relatives for later primary immunisations. Most single mothers were also supported by female relatives during immunisation visits.

However, some mothers received little or no support from partners, family/whānau or friends during this time. Partnered mothers say their partners were not interested in attending or couldn't get time off work, and these mothers (partnered and single) did not feel like burdening their family/whānau or friends for support, particularly if they had large families of their own. These mothers were more likely to have a history of missed immunisations or prolonged delays in immunising their infants.

Sometimes they [fathers/partners] are supportive. They'll push you to go to the doctors, but they aren't going to help you to get there. (Suzy, Māori, Counties Manukau)

My siblings live in another area, and I have no one to turn to. (Piki, Māori, Counties Manukau)

4. Parents have concerns about the possible side effects of the vaccines

While parents often have *emotional fears* over the safety of vaccines, they have *real concerns* over their potential side effects (eg. fever, vomiting, redness, tenderness and swelling) when they immunise their infants for the first time. These concerns are exacerbated if their child is unwell. In most cases, infants were checked over by their GPs before receiving their first immunisations, which helped alleviate parents' concerns.

Parents who have had low prior exposure to immunisation – first-time parents, parents who were not immunised as children or whose family/whānau do not routinely immunise their children – have increased anxiety over potential side effects. Parents who have experienced immunisation with their older children have greater confidence, however, they still have concerns over potential side effects when immunising their new babies. Parents with more than one child recall 'the luck of the draw', with some infants becoming unwell while others 'sailed through' their immunisations.

He was grizzly and sleepy after the imms. He started getting a temperature and didn't want to eat that night. You hear of babies that get them and then die or get serious side effects. I was freaking out. I rang my partner's mum and she told me to ring the Healthline and they told me to go to hospital. I waited a little bit and watched him. His temperature started to come down after four hours. (Ainsley, Pākehā, Northland)

5. Parents fear the immunisation experience

Most parents fear the immunisation experience, and around half of all parents were not present for at least one of their infant's immunisations – although they comforted them in the waiting room afterwards. Parents acknowledge that they probably find the immunisation experience more 'painful' and distressing than their child does.

Parents find it particularly hard immunising their 'fragile' six-week-old infants and hate the thought of causing them pain and distress at this young age. However, parents still find it distressing immunising their infants at three and five months because at that age they are more mobile and aware of what is about to happen to them.

I was a wreck with the immunisations. The first jabs – the six week ones – broke my heart. They are so vulnerable at that stage. What mother wouldn't be upset by that? But I still wanted to do it and be the one that comforted them afterwards. I just wanted to get it over and done with. (Annie, Pākehā, Northland)

You hate seeing them going through that, I know it's only a little prick, but it's traumatic for you when they are really little. I think it's more traumatic for the parents. His dad came with me for one of them which was good but it was weird me not being in the room. I couldn't handle seeing him if he cried. I was there afterwards to comfort him and I was glad he was there for me on that day. It was the first and only time though. (Linda, Māori, Canterbury)

6. Parent/caregiver experience of the immunisation environment in GP clinics

Most parents acknowledge that the main benefit of having their infant immunised at their GP is if their infant has a reaction to the immunisations and there is someone to call on. However, many of the parents find the immunisation experience distressing, both in terms of the event itself and the clinic environment.

While some parents found the nurses who administer the immunisations to their infants professional and supportive, others found that at times they seemed to be rough and uncaring, or unnecessarily drew out the process (eg. looking for a plaster to cover one leg before injecting the other).

Many of the parents who were interviewed had negative experiences in the public clinic areas after the immunisation event, where they were asked to wait for the required time after the immunisation was administered. Mothers often feel uncomfortable or embarrassed comforting a distressed or crying infant by breastfeeding them in front of sick patients, many of whom are older, and a few parents did not breastfeed their infants for this reason. A few Māori and Pacific parents felt they were not allowed to breastfeed their infant in the public waiting area. Stress and discomfort during the wait time is greatly enhanced if parents are also dealing with older, restless children on their own.

There was once when I had to wait in the waiting room for an hour before I was seen. I had to leave because I needed to breastfeed and I didn't have a cloth to cover. It makes you less want to go next time. They say 'sorry', but you can't get that time back. It puts you off. The next time you are there you feel negative....The next time you are in there they think 'That's the chick that always cancels'. You feel stink about doing it in the first place. (Katie, Māori, Waikato)

I want privacy to breastfeed and calm my baby down after the imms, but the nurse sends you to the waiting room straight away. The last thing you want to do when you have a baby crying is to turn around and breastfeed when everyone is looking. (Annie, Pākehā, Northland)

Some Māori parents are more likely to feel uncomfortable and disempowered immunising their infants at their GPs. These parents noted having poor experiences with health providers, both in relation to immunisation and other health matters. These experiences included difficulties getting appointments, being made to wait a long time before seeing a GP, not feeling their concerns are being listened to, not feeling that diagnoses had been adequately explained and being made to feel bad and pay for missed appointments.

Most parents interviewed have a strong preference for immunisations to occur at home or in a more 'family friendly' clinical environment. This was seen to be particularly important for first-time parents, parents with limited family support, and for the first six-week immunisation event. Some parents suggested these immunisations could be undertaken by their Plunket Nurse or other Well Child provider. GP clinics could provide separate waiting areas for parents to comfort their infants. A few parents with older children recall in the past being able to wait in a more comfortable area during the recommended wait time, away from the public waiting room. They were either allowed to remain in the nurse's room or moved to a parents' room that had DVDs, books and other entertainment.

Some parents, who had a history of delaying their child's previous immunisation appointments, were referred to, and received, outreach in-home immunisation services. Not only did parents feel more comfortable having their infants immunised in their home environment, it also overcame the need to arrange childcare for older children and to arrange or pay for transport.

I wouldn't be able to take my son to the doctor because he has ADHD and he climbs the wallsso what do I do? I just leave it until they are at school. I know that it is wrong but there is no other way for me to do it. I can't really rely on my family to come and watch him while I take her for the immunisations. (Mary, Māori, Waikato)

I've had them come here [home] before, which made it easier. I was grateful at the time, being a new mum with other things to do. It was a time-saver, all the stuff I'd have to take out when they are babies. It definitely saves you petrol and it makes them feel more comfortable in their own home, so that's a good thing. (Annie, Pākehā, Northland)

It's better at home, and nicer and more comfortable for the kids. Rather than carrying them everywhere and hoping they won't touch things. She's more settled since she's gotten her last two at home. When she finished getting her jabs she was up and away. (Katie, Māori, Waikato)

It would be helpful having the immunisation van. My sister had her boy done through this. You feel more comfortable at home. But when you are at the doctors and something happens you feel safer as there are doctors around. (Rachel, Māori, Waikato)

Parents were asked specifically about measures other than outreach or home visits that might help to overcome the major barriers to getting to an immunisation appointment. Almost all parents dealing with challenges like transport and caring for several children felt that these were out of their control, and that they were doing as best as they could to meet their children's health needs. In many cases, more urgent health issues took priority over immunisation, and it was hard enough to access health services when their infant or child had an acute illness, let alone preventive health care like immunisation.

This is consistent with findings from a longitudinal study showing the link between intent and action is particularly blurred for those in low socioeconomic groups; Morton and colleagues found that expectant mothers in the most deprived areas had the highest level of intention to have their child fully immunised, but by nine months of age this group had the lowest rate of five-month immunisation coverage (Morton et al, 2012).

3.2 Parents' attitudes and experiences of delaying immunisations

Summary

- Parents are aware of the recommended ages to immunise their infants.
- Parents believe they had legitimate reasons for delaying their infant's immunisations.
- Parents believe that delaying their infant's immunisations is okay.
- Parents intend to catch up their child's immunisations when they start interacting with other infants and children.

1. Parents are aware of the recommended ages to immunise their infants

Parents are generally aware of the recommended ages for immunising their infants, as outlined in the National Immunisation Schedule.

All parents spoke of receiving information on key information dates from their midwife, Plunket Nurse or other Well Child provider. Parents also comment that the Well Child Health Book is a useful reminder for when their infant is due for their immunisations. Other parents spoke of fridge magnets, calendars and bibs prompting key immunisation dates.

Parents recall receiving timely letters and emails from their GPs reminding them when their infant's immunisations were due, text reminders of their appointments and follow up text messages and phone calls when they missed an appointment.

You know when they are due. You know when they are about to turn that age that you need to make an appointment. (Linda, Māori, Canterbury)

However, there is confusion around the recommended intervals between immunisation visits, in cases where immunisation has been delayed. Some parents believe if they delay an immunisation then later visits must also be delayed, while others believe there is no impact on later immunisations.

2. Parents believe they had legitimate reasons for delaying their child's immunisations

Parents believe they had legitimate reasons for delaying their infant's immunisations. Parents are more comfortable delaying their infant's immunisations in cases where they believe their reasons for delaying were in the best interest of their child (eg. in cases of unwell or premature infants). However, parents often feel guilty for delaying their infant's immunisations where reasons were circumstantial (eg. not having transport to attend an appointment).

Circumstances that parents believe are in their child's best interests

The belief that infants need to be 100% well before they are immunised is a universal theme for all parents. Almost all parents had delayed at least one of their infant's primary immunisations because their infant was unwell. These delays tended to occur at the three- and five-month immunisations. While a few infants were very unwell and required hospitalisation before or at the time of the recommended dates, most sickness involved coughs, colds and mild to moderate fevers.

Some parents had scheduled their infant's immunisation and were told by their GP or nurse at the time of appointment that their child was not well enough to be immunised. However, most parents made their own decisions to phone and postpone their child's appointment or to delay making an appointment.

The main concern for parents who have unwell infants is that they do not want to cause further discomfort and/or distress by immunising them. Another concern for parents is not being able to tell whether their infant has had a reaction to the immunisation from their child's other symptoms (eg. fevers, loss of appetite and rashes). Others fear that their child's immune system is already compromised and that there may be a greater risk of side effects or the immunisations may not work or be as effective.

The doctor advised not to do it because he wasn't well enough. I knew to take him when he was normal again, playing. If you immunised them when they were sick I think they would definitely get worse. I actually don't know, maybe the vaccinations wouldn't work, maybe, probably. (Linda, Māori, Canterbury)

My child has had two of his immunisations delayed due to sickness. I did not talk to the doctor before I cancelled his appointment. I myself made this choice as I did not want to add to his discomfort. (Macey, Māori, Capital and Coast)

I think it is really important to have a routine established before the first jabs. You can see if anything is going wrong. It's important to know the difference between being sick and having a reaction to the immunisations. (Annie, Pākehā, Northland)

Some parents believe the National Immunisation Schedule starts too early at six weeks. They believe immunising infants when their immune system is still developing is not in the best interest of their child. Therefore, they choose to delay starting their child's immunisations until they are at least a couple of months old. A few parents whose infants were born premature also delayed starting their immunisations for similar reasons.

Circumstances believed to be outside of parents' control

Parents prefer to immunise their infants when they have a settled routine, and this includes a settled living situation. With the exception of some Māori parents, most parents remain fairly sedentary during the first six weeks of their child's life. However, as their children got older, some parents travelled both domestically and internationally around the time that their child's immunisations were due. They were often Asian parents who travelled to their country of birth to visit close family members (usually the woman's mother). A few parents also took their family on holiday to Australia, the Pacific Islands or accompanied their partner on a business trip.

Most of these parents delayed their infant's immunisations because they were worried that their child may have side effects to the immunisations while they are away or the immunisations would further put out their feeding and sleeping routines. However, a few Asian parents who planned on being out of the country for several weeks, visited or talked to their GP about getting their child's immunisations done at their local clinic before the scheduled dates and say they were advised against this.

Parents generally didn't get their infants immunised while they were offshore because of the different schedules that operate between countries, the cost of immunisations to non-residents and a lack of trust in overseas health systems.

We were traveling to Malaysia for about a month around the time that her five month one was due. I just thought I would get it done when I got back. I got my older child's five month immunisation done overseas last time we travelled but they charged me and it was very expensive. (Jan, Asian, Canterbury)

Some parents moved unexpectedly and at short notice (often more than once) in the first six months of their child's life. These were mainly temporary moves ranging from a week to a few months. Parents in this typology move to support or to receive support from a family member or friend in time of need, or to escape their living situation (eg. an abusive relationship).

Given the semi-permanent nature of their moves, these parents tend not to enrol with a GP in their new areas and have to pay casual rates for going to the doctor (for this reason, they tend to go only for urgent matters). While their child's immunisation is on their minds, it is often not as high a priority as other issues these parents are dealing with.

My baby was born in Auckland and then we moved to Te Kuiti when she was four weeks. Got engaged with the Plunket staff down there and they made sure I kept up to date with immunisations. I was late for the five month one as I was having second thoughts about living down there. Then I would move and forget. I have moved four times since the baby was born. (Jackie, Māori, Counties Manukau)

Canterbury parents commented that the earthquakes impacted on their ability to immunise their infants on time. Some parents were displaced and moved to another Christchurch suburb or location in New Zealand to receive water, sanitation and other essential services and/or to be with family. These parents also talked about shortages of GPs and difficulties in getting appointments.

My three month imms was quite late because of the February earthquake and I was away in Fielding at the time. The day I was supposed to come back was the day of the earthquake. In Fielding they charge casual rates even for children. (Jane, Māori, Canterbury)

Some parents also find it challenging attending immunisation appointments because of a lack of affordable, reliable and efficient transport, and distance from the GP. A few also don't have landlines or sufficient credit on their cellphones, making it difficult to book or change immunisation appointments.

I do not have a landline to make the appointments so I have to wait until the next time I am at someone's house. And then you never know when the appointments are available. (Mary, Māori, Waikato)

Some parents also talked about 'bad days' or periods of significant difficulties. These times of personal and family difficulty resulted in significant barriers to parents prioritising immunisation over other crisis matters.

When you are sick you can't take them, or even if you are sick. Even if you have just had a bad day. You are ready and rearing to go and then something happens and you are like 'Stuff it...' (Katie, Māori, Waikato)

3. Parents believe that delaying their infants' immunisations is okay

While parents are aware of the recommended ages for immunising their infants, they have little or no understanding of the importance of immunising at the recommended ages or the

consequences of not immunising on time. Consequently, while most consider immunisation to be important for the overall health of their infant, there is a lack of urgency to get their infant immunised on time.

4. Parents intend to catch up their infant's immunisations when they start interacting with other infants and children

Most parents intend to catch up their infant's immunisations so they are fully protected from serious illness and disease. The *tipping point* for getting immunisations up to date is before their infants or children enter early childhood education or school and start interacting and socialising with other children and becoming exposed to serious illness and disease.

My kids have gone through preschool. They need to be immunised when they are going to places like that. I felt they were getting exposed to more germs than stay-at-home kids. I sent them to preschool to get them socialising. They can offer them things like play-dough and paint. I can only offer them a certain amount at home. It gives me a break, too. (Annie, Pākehā, Northland)

3.3 Typologies of parents who delay immunisations

Summary

Three delayer typologies are evident.

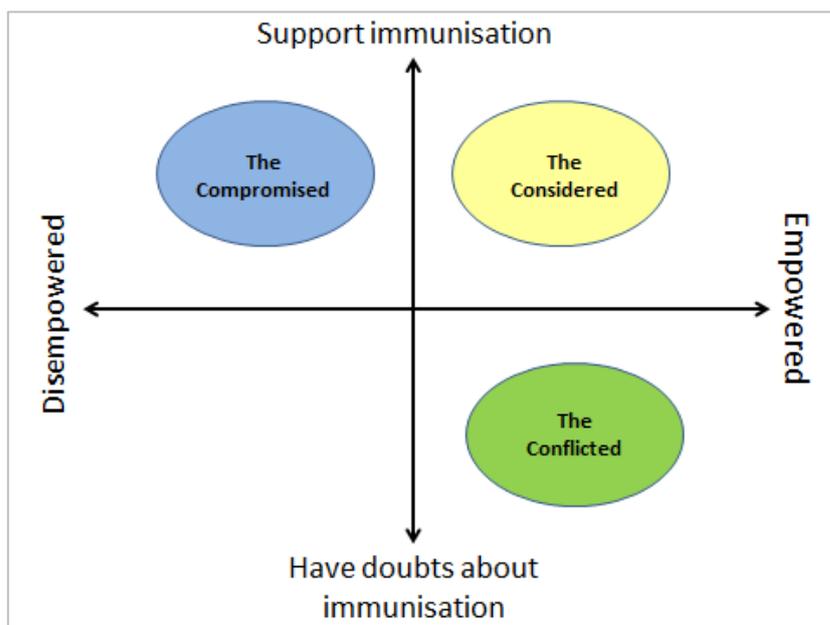
1. **The Compromised** – support immunisation but face barriers to immunising their infants on time.
2. **The Considered** – support immunisation but are concerned with the timeliness of the schedule. They therefore immunise their infants at times when they feel are best for the child.
3. **The Conflicted** – have concerns about immunisation and immunise their infants when they feel there is a heightened risk of disease or through a sense of pressure from their partner, family/whānau and/or health provider.

Parents who delay their infant's primary immunisations share many core values, however there is diversity in the barriers and motivations they experience to immunise on time. Three distinct typologies of 'delayer' parents have been identified in this research, which reflect parents' attitudes towards immunisation and their experiences of delaying. The three typologies are mapped using factors that influence immunisation timeliness:

1. Parents' openness to immunisation – that is, whether they support or have doubts about immunisation
2. The nature of the parent's relationship with the health system – that is, whether they are empowered or disempowered in navigating their own and their children's health care

Some parents may move between different typologies between immunisation events or children. Each of the three typologies is discussed below.

Figure 2: Parent/caregiver immunisation ‘delayer’ typologies



NB: Size of the circles does not represent the relative size of each typology group

1: The Considered

The Considered support immunisation but are concerned with the timeliness of the schedule. These parents believe New Zealanders start immunising children too early, compared with other countries. They feel that immunisation is better started later than six weeks because the infant’s immune system is ‘better able to cope with it’. Parents who delay their child’s immunisations because they are premature, have allergies or are ‘sickly’ also fall into this typology. Parents in this typology are mainly Pākehā.

These parents feel informed about immunisation, are confident in their decisions to delay and are generally supported by their partners, family members and doctors as they have a plan for getting their infants immunised.

A typical delaying pattern for these parents would be to start immunisations around three to six months and complete the first three immunisations by 12 to 18 months.

I didn’t immunise any of my children at six weeks, but made a conscious decision to get them done two months later. They were too little. My youngest has just had her five months immunisations at nine months. The length of time between them remains the same. I felt that putting that many foreign elements into their bodies at six weeks was too early. (Lucy, Pākehā, Canterbury)

My one-year-old was prem[atature] so we put off her imms. They [doctors] mentioned it was a good thing as she didn’t have much meat on her. We gave her some time to catch up. We talked to the nurse and then after that it was business as usual. (Ken, Pākehā, Capital and Coast)

2: The Compromised

The Compromised **experience significant barriers to immunising their infants on time**. These barriers include lack of reliable **transport** and the **cost** of getting to their GP, lack of a landline to make immunisation appointments and lack of support to care for older children when their infants are due for their immunisations. The Compromised are mainly Māori, Pacific and/or sole parents who experience high deprivation. Parents belonging to the Compromised typology experience a greater number of missed appointments and feel some regret at not getting immunisations done on time.

Most parents in this typology may also have had poor past experiences with health providers. Consequently, they often do not feel comfortable or empowered when dealing with health providers.

The Compromised generally believe immunising their infants is compulsory and a requirement for enrolment in early childhood education and schools. Immunisation reminders and outreach services have been effective with these parents.

Despite a range of household and environmental barriers, the Compromised feel that immunising their infants is a positive achievement and will help their children be free from serious disease. Most of these parents are from families and communities with first-hand experience of preventable diseases, such as pertussis and meningitis, and some know of infants who have been seriously ill or died from these diseases. Consequently, Compromised parents often feel guilty and bad for missing appointments and not keeping up to date with their infant's immunisations.

All of them were late for their immunisations. We didn't have a car so we had to take two bus trips to get there. When it got down to the third child the older two had to come with me and they caused a ruckus. The only one that wasn't late was the oldest as we lived just down the road from the doctors....When my son got the mumps I felt really bad. People said to me 'It's free, don't you know?', but I was like 'It is not free to get there.' You feel like you have to explain yourself. They don't realise it takes two bus trips with three kids. (Kaitlyn, Māori, Waikato)

I was two months late in immunising my daughter each time. We weren't in a stable house, living with the in-laws at the time. I weren't keen on having people come round that the in-laws didn't know. Just thought I would wait until I got settled and then start getting people round. It just wasn't my place to be doing that. I would never take them to that place [the GP]; prefer them to come to me. (Vanessa, Māori, Northland)

Afterwards it feels good to get them finished. I get really nervous and jittery. But afterwards there is a relief. When he is good, I am good. (Rachel, Māori, Waikato)

3: The Conflicted

The Conflicted have reservations about immunisations and are particularly **worried about the long-term side effects** of immunisation. With the exception of Asian, all ethnicities that delay immunising are in this typology.

Making an informed choice on immunising their infants is important for this typology. Consequently, **these parents research immunisation** by reviewing websites, talking to parents who both immunise and don't immunise their children and talking with their GP.

These parents say there is a **lack of balanced information on immunisation** and it is either strongly pro or anti-immunisation.

Generally, parents consider immunisation to be the lesser of the two evils (their child having a reaction to the vaccine, compared to their child becoming disabled or dying from a preventable disease).

The Conflicted generally immunise their children out of pressure from partners, family members and their GPs, particularly when their child starts socialising with other infants and children, or when there has been an outbreak of disease in their area. After parents have caught up with their infant's immunisations, they don't feel entirely comfortable with their decision.

It is very hard to find a balanced perspective; there are both sides of the fence that are very pro or anti. It is a very emotional issue. Each side is very passionate; it is hard to see the middle ground. (Elsie, Pākehā, Capital and Coast)

With my five-year-old my mum took him to get imms on time. Because he turned out fine my mum encouraged me to take my baby. My mum sort of guilt tripped me into it. I'd rather do it despite not having much information on it. I didn't want it to fall back on me if I didn't do it. (Valerie, Pacific, Capital and Coast)

I was late with all of them because I was humming and herring, then I thought I suppose they do need it. People put me off getting the meningococcal ones. They were saying 'Oh, you know it doesn't happen around here [Hastings] so you don't really need to immunise him against meningitis'. I did get them immunised in the end as I thought it would be bad if they got whooping cough or another disease. And some early childhood centres request immunisation forms when enrolling your child. (Cheryl, Pacific, Capital and Coast)

4. Messages to Encourage Immunisation Timeliness

The second phase of the research tested messages designed to encourage and support parents to immunise their infants on time. Participants were grouped by reason for delaying immunisation in the message testing phase.

The wording and intent of the messages tested was based on past research with parents and caregivers, current Ministry of Health immunisation messages and the first phase of this project with parents who had delayed one or more primary immunisation events.

4.1 Messages tested

The following messages, aimed at encouraging parents to immunise their infants at six weeks, three months and five months, were tested on parents:

1. **immunising to protect infants and children from serious diseases**, including:
 - 'diseases don't discriminate – anyone can catch them'
 - 'babies are at risk of serious diseases if they aren't fully vaccinated'
 - 'immunisation helps keep families healthy'
 - 'immunisation helps to protect everyone in the community – the more babies who are immunised the better the protection for them and others'
2. **immunisation timeliness**, including:
 - 'to protect your baby from vaccine preventable diseases, immunise on time, every time'
 - 'it's never too late to immunise your baby'
3. **encourage communication with GPs**, including:
 - 'if your baby is due to be immunised and is unwell, talk to your nurse or doctor before cancelling your appointment'
4. **parental support** during immunisation, including
 - 'ask family and friends to support you to immunise your baby'
 - acknowledging the need for practical and emotional support
5. **convenience**, including:
 - 'save time combining visits by immunising your baby when you go to a regular doctor or hospital appointment'
6. **fewer disruptions** if infants are fully immunised, including:
 - 'during a disease outbreak, children can sometimes be excluded from day-care, crèche, kindergarten or school if they haven't been immunised'
 - 'immunising babies and children will mean less time away from work as they will be protected if there is a disease outbreak'
7. **vaccine safety**, including:
 - information about clinical trials and continued safety monitoring of vaccines
 - discrediting the link between the MMR vaccine and autism.

4.2 Message resonance

Overall, messages that will be more effective in encouraging immunisation timeliness tap into parents' emotions to protect their children. Therefore, messages that have greater relevance remind parents of their infant's vulnerability to serious illness and disease and that immunisation is a proven and effective way to protect their child and keep them healthy and well.

The critical call to actions are around socialisation, when the risk of serious illness and disease heightens as children come into contact with other infants and children in early childhood education or caregiving settings, or when there has been a disease outbreak in their local area.

1. Immunising to protect infants and children from serious diseases

This message '**diseases don't discriminate – anyone can catch them**' and '**babies are at risk if not fully immunised**' resonates strongly with all parents because it reminds them of the presence of preventable diseases in their communities, and that all infants are vulnerable if they are not fully immunised. It also suggests that other protective factors (breastfeeding and good diet) are not sufficient alone to protect their child from serious illness and disease, and immunisation is therefore an important addition.

I agree with this statement. Make sure your babies are immunised and gives them a lesser chance of catching these diseases. (Macey, Māori, Capital and Coast)

Good - even if you do look after your baby perfectly in every other aspect they can still catch a disease. (Lucy, Pākehā, Capital and Coast)

I like this statement and agree it makes people aware and reminds people about diseases and the effect of babies not being fully immunised. (Kelly, Māori, Capital and Coast)

While parents like the message '**immunisation keeps your family healthy**', it doesn't instil urgency or action. The message '**immunisation helps to protect everyone in the community – the more babies that are immunised the better the protection for them and others**' signals to parents that their decisions to immunise their infants has an impact on the health of the community. This message is less clinical than standard 'herd immunity' messages.

I like that they put it in a community perspective – your choice to immunise can make an impact on other people. (Lucy, Pākehā, Capital and Coast)

Agree with this statement completely. It is a positive choice. We want our children to be healthy. (Kelly, Māori, Capital and Coast)

If I didn't have my children immunised, I would after reading this. (Valerie, Pacific, Capital and Coast)

I agree with all this. Everyone has responsibilities. Help a child who can't help themselves. (Tony, Māori, Capital and Coast)

- These messages around immunisation to protect child, family and community resonated with all parent typologies, particularly with the Conflicted and the Compromised groups.

2. Immunisation timeliness

The message **'immunise on time, every time'** makes people feel pressured rather than supported to immunise on time. Parents believe that this message doesn't acknowledge there are often legitimate reasons (eg. when their child is sick) or events beyond their control (eg. lack of transportation) for not immunising their infants on time. Most parents also challenge this message by asking for further information on the importance of immunising on time, every time.

Given that parents believe they have legitimate reasons for delaying, this message would have minimal impact. However, it may instil action for those in the 'Compromised' typology who often feel guilty about not immunising their infants on time.

The message **'it's never too late to immunise your baby'** gives parents permission to delay their child's immunisations, so long as they intend to catch up.

Pressure, more information is needed on why we have to immunise so early. (Valerie, Pacific, Capital and Coast)

If my child is unwell I am not going to get his immunisation done. Whether he is early or on time or late the important thing is he gets done. (Macey, Māori, Capital and Coast)

A good reminder to parents that it's better getting it done late than never. It would be effective in 'guilting' parents who postpone them. (Natasha, Pākehā, Capital and Coast)

The first part [immunise on time, every time] says "don't miss it or else". The second part [it's never too late to immunise your baby] says "hey, it's all OK whenever". Why these times? Why is the protection reduced? (Matt, Pākehā, Capital and Coast)

- These messages around immunising on time, every time resonated most with the Compromised parent typologies. For the Considered and Conflicted typologies, it does not provide information about reasons for the current schedule, or acknowledge their parental right to delay immunisation for reasons that they see as legitimate.

3. Encouraging communication with GPs before delaying

As discussed earlier, almost all parents have delayed one or more immunisation events because their infant was unwell around the dates of the recommended immunisations. These delays tended to occur at the three and five month immunisation visits.

The message **'if your baby is due to be immunised and is unwell, talk to your nurse or doctor before cancelling your appointment'** challenges parents' assumptions that they cannot and should not immunise their infants unless they are 100% well (feeding, sleeping and playing normally). For many parents, they feel their concerns around immunising an unwell infant are valid, and that their child may get sicker, have a greater risk of side effects from the vaccines and/or that the vaccines may not be as effective. However, their main aversion to immunising a sick infant is they do not want to cause them further discomfort. While doctors and nurses can advise whether infants can clinically undergo immunisation, only parents can make decisions around the comfort of their child.

Parents were receptive to the suggestion to speak with a nurse, doctor or medical professional (eg. Healthline) before postponing their child's immunisation appointment. At a

rational level this message conveys there is no clinical reason for not immunising a mildly unwell infant. It does not overcome the emotional barriers to immunising an unwell infant and, therefore, this message is likely to have minimal impact for those parents who feel strongly about not causing further discomfort to their already unwell child.

Deciding on whether or not your child shouldn't be immunised would definitely fall on the parents. Deciding if that child is up to or OK to get immunised depends on how sick they are. Doctors and nurses know best. But you also have to feel comfortable going through it. (Tony, Māori, Capital and Coast)

I would still always wait until my child is 100% well before being immunised. I think before all children get immunised they should have a quick temperature, throat and ear check before anything is done. (Amber, Pākehā, Capital and Coast)

- These messages around talking with a health professional before delaying immunisation for illness resonated most with the Compromised and Considered parent typologies.

4. Messages around parental support during immunisation

All parents were receptive to the message '**ask family and friends to support you to immunise your baby**'. This message acknowledges it is both logistically challenging and emotionally stressful for parents to take their infants to their appointments and get them immunised.

This message affirms current knowledge and practice. Most mothers know from experience that having their partner or another family member (mother, partner's mother, sister, cousin or aunty) attend their child's immunisations is hugely beneficial and helps them to 'get through' the experience. Having someone attend their child's immunisations is highly valued by first-time parents. It is also valued by all parents for the six weeks immunisations.

Most mothers are accompanied and supported by their partner or family member at the six weeks event, and some mothers receive support at all three immunisation events. This support includes holding or distracting their child while they receive the injections, comforting their infant after the immunisation, looking after older children in the waiting room and providing transportation to and from the appointment.

Given that most mothers know from experience that having support during their child's immunisations is beneficial, and are still delaying, this message is likely to have minimal impact on immunisation timeliness.

This message is good because it is exactly what I do and would feel comfortable with. (Macey, Māori, Capital and Coast)

I prefer my partner to hold my baby so I can distract her. I also appreciate having someone there with me if she is screaming and won't calm down, it's like sharing the load. (Chelsea, Pākehā, Capital and Coast)

It is helpful when someone else can come along with me either to distract them...my three-year-old freaked out when we went for my baby's six month old jab...or to hold the twins. (Kate, Pākehā, Capital and Coast)

- These messages around asking for support during immunisation events resonated with all parent typologies, and were particularly helpful for the Compromised parent group.

5. Messages around convenience and appointment scheduling

As discussed earlier, most parents give their infants 100% focus and attention during and after immunisations. Therefore, combining their child's immunisations with other family members' regular doctor or hospital appointments is not desirable. Parents say they are very unlikely to combine their child's immunisations with their own appointments (even if routine) as they want to be well when they immunise their infants.

However, this message has resonance with parents with large families in the 'Compromised' typology who find it challenging to schedule and attend medical appointments.

On a practical level, parents comment that it could be difficult combining their infant's immunisations with other family member's appointments unless they are routine and scheduled in advance. For urgent matters, parents can get same day or next day appointments. However, for immunisation appointments, the wait time is usually much longer. Parents also say combining immunisation visits for different children rarely works because of the age of the children and timing of their immunisations.

Would be great if could combine with Plunket checks. It would be nice if could combine, but it is often harder to get an immunisation appointment than a doctor's appointment. (Kate, Pākehā, Capital and Coast)

They will be getting their next imms done at the same time. Manaia Health planned is all with me. She's got one more at 15 months and when this one is due for the six week one, they'll get it at the same time. Helps me fit it all in together. (Chrissy, Māori, Northland)

If the things you are going to the doctors for are not going to influence or compromise the baby then it's a good point. Focusing on the one child at a time is better. (Nancy, Pākehā, Capital and Coast)

This message wouldn't have any effect on me to take my child in to be immunised as I wouldn't have other doctor's appointments due at the same time. (Macey, Māori, Capital and Coast)

- These messages around scheduling and combining immunisation events with other medical appointments resonated somewhat with the Compromised parent typology, however it was not realistic for almost all parents.

6. Messages around fewer disruptions if infants are fully immunised

As discussed earlier, one of the critical calls to action for parents getting their infants fully immunised is when their child comes in contact with other infants and children outside of their family. The message '**during a disease outbreak, children can sometimes be excluded from day-care, crèche, kindergarten or school if they haven't been immunised**' therefore resonates with parents. However, it also confronts parents' perceptions that early childhood education centres require infants and children to be fully immunised before they are enrolled.

The message ***‘immunising your baby and children will mean less time away from work as they will be protected if there is a disease outbreak’*** is disliked by most parents because it conveys that they should immunise their infants against life-threatening illness and disease out of convenience rather than a desire to protect their child.

However, it does resonate with the small group of working parents who have their infants in childcare. These parents are reliant on both parents’ incomes for their daily living and often lack flexible working arrangements and sick leave entitlements.

This message has greater resonance for parents who also have school-age children, particularly in relation to chickenpox and influenza – illnesses that are extremely unpleasant without being life threatening and disruptive to their working schedules.

The issue of disruption from day care is not relevant for me. I would never immunise for convenience. This doesn’t convince me to immunise. (Angela, Pākehā, Capital and Coast)

It puts things into reality. Good for people who don’t have much money and really rely on their weekly income. (Lucy, Pākehā, Capital and Coast)

This message is aimed at working parents that if their child contracts the disease that they will be asked to stay home from work and bills may not get paid because their child is not immunised. (Macey, Māori, Capital and Coast)

- These messages around immunising to reduce disruptions to childcare/education and work resonated with a small number of parents across all typology groups, however it was not relevant or helpful for most parents.

7. Messages around vaccine safety

As discussed earlier, with the exception of parents in the ‘Conflicted’ typology, most parents have confidence in the safety of vaccines while acknowledging, as with any medical interventions, there are inherent risks.

Providing evidence around the ***robustness of clinical trials*** and ***continued safety monitoring of vaccines*** makes parents feel more reassured about their decision to immunise. Parents in the ‘Conflicted’ typology felt mostly comfortable about the science and safety of immunisation, but wanted more information about the likelihood of side effects and the balance of risk. While messages around vaccine safety provide reassurance, it is unlikely to impact on immunisation timeliness.

Discussing the ***discredited link between the MMR vaccine and autism*** introduces or reactivates concerns for parents who were either not aware of the past publicity or did not believe it to be credible. For the few parents who hold concerns about the safety of the MMR vaccine, this message only reinforces their view that the Ministry of Health does not always provide ‘balanced information’ (ie, is ‘pro immunisation’ and ‘covers up’ the risks).

I am not clear of the long term effects of immunisation. There has been a rise in auto immune diseases, which may be connected to an increase in immunisation. (Elsie, Pākehā, Capital and Coast)

What jumps out is that the risk is still there. Haven’t there been batches of vaccines that haven’t been up to scratch? Choose the lesser evil, but it’s still a hard choice. (Sheryl, Māori, Capital and Coast)

Wouldn't have known there is a link between MMR and autism, if it hadn't have said. I have not seen any side effects in my kids, so what are the side effects? (Barry, Pākehā, Capital and Coast)

I don't think that there is a very big risk in vaccines otherwise I wouldn't let my son have them. I'd rather know what side effects there could be and what the risks are. (Matt, Pākehā, Capital and Coast)

- These messages around immunisation and vaccine safety resonated most with parents in the Considered and Conflicted typology groups, and was also a helpful reminder for the Compromised parents.

Table 3: Summary of message resonance with parent typologies

	The Considered	The Compromised	The Conflicted
Barriers to immunising on time	'Legitimate' reason for delay such as child illness	Transport, access to health care, more urgent priorities, disempowered	Have doubts about immunisation, including safety and side effects
Universal message	Babies are at risk if not fully immunised		
Messages with highest resonance	Talk to GP/nurse before delaying	Support from family/whānau Positive reinforcement	Diseases don't discriminate
Other supportive messages	Positive reinforcement Diseases don't discriminate More information about reasons for current schedule	Diseases don't discriminate Talk to GP/nurse before delaying	Acknowledge doubts More information about reasons for current schedule

5. Conclusions

This research, which explores parents' decisions and reasons for delaying the primary course of immunisations and tests messages to encourage and support parents to immunise their infants on time, draws the following conclusions.

Motivations and enablers for parents to immunise their infants, on time, as scheduled

Parents who have delayed one or more of their infant's primary courses of immunisation have a strong desire to protect them from serious illness and disease and keep them healthy and well throughout their lives. Parents believe their infants are vulnerable to disease when they start socialising with other children and adults outside of their home, and immunisation provides them with a 'protective blanket' from serious disease. The tipping point for immunising their infants and children is around socialisation.

Barriers to parents delaying immunising their infants on time

While parents are aware of the recommended ages for immunising their infants, they have little or no understanding of the importance of immunising their infant at the recommended ages or the consequences of not doing so on time. Consequently, while most parents consider immunisation to be important for their child's overall health, there is a lack of urgency to get their infant immunised on time, if they are largely being confined to the home environment.

Role of individual factors when immunisation is delayed

Parents believe they had legitimate reasons for delaying their child's immunisations (eg. their child was unwell, they were not in their home location at the time of the recommended immunisations or they lacked transport to get to appointments). Parents are more comfortable delaying their infant's immunisations in cases where they believe their reasons for delaying are in the best interest of their child (eg. in cases of unwell or premature infants). However, parents often feel guilty for delaying their infant's immunisations where reasons are circumstantial (eg. not having transport to attend an appointment).

Role of family/whānau and others when immunisation is delayed

Immunisation is a significant event and most mothers are usually supported by their partner (for the six weeks immunisation) or another female family member when their infants are being immunised. These mothers find this support extremely valuable. However, some mothers had little or no support from their child's father or from family or friends, and these mothers tend to have a history of prolonged delays in immunising their infants.

Role of environmental factors (such as access to transport, health services) when immunisation is delayed

Environmental factors, such as access and cost of transportation to get to health services, have a significant role in enhancing immunisation for low-income families. While most parents find immunising their infants in a clinical setting comforting, in case of reactions to the vaccines, most do not find it suitable comforting their infants in public waiting areas. Some Māori parents have had poor experiences with health providers, both in relation to immunisation and other health matters, which impacts on their confidence to immunise their

infants in these settings. There is a strong preference from parents for their infants to be immunised in more family supportive environments, and those who had in-home immunisations found this service particularly valuable.

Key messages that might encourage or enable timely immunisation uptake amongst parents of infants

Key messages that might encourage or enable timely immunisation uptake tap into parents' emotions to protect their infants. These messages include the vulnerability of infants to serious illness and disease both within and outside of the home and that immunisation is a proven and effective way to prevent serious illness and disease and keep infants healthy.

Recommendations for practice to improve the immunisation experience include **supportive and accurate information** about immunisation at all stages (such as calling ahead to seek advice about whether to delay appointment if their child is unwell), and a more **supportive environment** (such as a more comfortable waiting area after immunisation is administered, where they can settle their infant, breastfeed, and/or have other children with them during the required waiting time). In addition, having practice staff who acknowledge that it is a distressing event and take steps to reduce anxiety and answer questions would also work to empower parents.

The scope of this research was limited to potential messages for parents and caregivers (i.e. not interventions nor service responses to raising immunisation coverage). However, the delivery of immunisation services provides important context for these messages, and factors such as PHO registration and nurse attitudes and confidence have been shown to be associated with the uptake and timeliness of primary immunisation events (Petousis-Harris, 2012). There has also been some suggestion that concurrent messages targeted at those involved with the immunisation event might also be of benefit to wider efforts to improve the timeliness of immunisation.

Nursing staff

Nursing staff are the people who deliver children's vaccinations in 95% of primary health organisations (Desmond et al, 2012). Their attitudes and perceptiveness of parental fear and apathy have been linked to higher uptake and timeliness of immunisation, while knowledge gaps and low confidence are associated with lower coverage delays (Petousis-Harris, 2012).

Early enrolment in PHO/WCTO/NIR

Research with children in a general practice setting has shown that timeliness of immunisation decreases as the age of child at the time they are registered with the practice increases (Petousis-Harris, 2012). During the course of this review, the Ministry of Health announced a change to way that newborns are enrolled with a GP/PHO: "From 1 October this year, GP practices will be able to enter a newborn into their patient database as a 'pre-enrolled baby' as soon as they are nominated as the infant's GP - rather than waiting to enrol them at their first doctor's appointment." This early enrolment of newborns with a GP/PHO provides a linkage opportunity for services to make contact with parents and family/whānau about immunisation in advance of an infant's six-week check. An additional concept recently put forward by the office of the Children's Commissioner is that of 'triple enrolment', where every newborn is automatically registered with a GP/PHO, Well Child Tamariki Ora provider, and signed up to the National Immunisation Register before they leave hospital (OCC, 2012).

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Appendices

1. Information sheet

Child Health – Immunisation Research Project Information Sheet for parents/caregivers

Thank you for your interest in this project. Please read this information before deciding whether or not to take part in this project. If you decide to take part, we thank you. If you decide not to take part, we thank you for your time taken to consider our request.

What is the purpose of the project?	Litmus (a research company) has been asked by the Ministry of Health to find out what people think about child health, and how they make decisions about immunising children.
What will I be asked to do?	If you agree to participate in the research, you will be asked to take part in an interview lasting one hour, or a group discussion lasting around two hours.
What types of questions will you ask me?	We will be asking you questions about: <ul style="list-style-type: none"> ▪ Your opinions about how to keep children healthy. ▪ The decision-making process for immunisation of your children. <p>You do not have to answer any questions that you feel uncomfortable with.</p>
Why have you asked me to participate?	We are interviewing a range of parents and caregivers of children aged 8 to 12 months. Your involvement with this research will help the Ministry of Health develop information about keeping our children healthy.
	You will be given koha as a thank you for your time and contribution.
How will the researchers ensure my personal information is confidential?	To help with analysis, the interview will be audio recorded and some notes will be taken. Your name, address and other identifying information will not appear in any report.
	All data collected will be securely stored in a way that only the researchers can access it. At the end of the project any personal information will be destroyed, and raw data on which the results of the project depend may be retained in secure storage for three years, then destroyed.
Can I change my mind and withdraw from the project?	You may stop the interview at any time. You can also withdraw your information from the project at any time up until analysis begins. Please note that you do not need to give a reason to withdraw and there will be no disadvantage to you of any kind.
Who will be doing the research?	The research is being done by Litmus, a research and evaluation company (www.litmus.co.nz).
What if I have any questions?	If you have any questions about this project, please contact: Sally Duckworth, Litmus (04) 473-3883, sally@litmus.co.nz

2. Discussion guides

Child Health – Immunisation

Research Project

Discussion Guide (Exploratory Phase)

This interview guide is indicative of the relevant subject matter to be covered. It is designed to allow freedom of any additional relevant topics, which may arise during the discussion

Introductions and warm up (10 minutes)

- Thanks for coming, 2 hours
- Purpose to understand parents' perceptions and experiences of immunising 0-6 month olds
- Informed consent
- Introductions – name, number, age and gender of children

Immunisation – collage (30 minutes)

We are going to begin by making a collage. Please flick through the magazines and look for pictures, words, colours and images that we associate with immunisation for 0-6 month olds. Make this instinctive; we may not always know exactly why we have chosen an image. It is best to move through the process quickly. As soon as we have an image, get up and stick it on the sheet so the collage is built up by the group. Once all the white spaces have been filled, we'll open up for discussion.

Looking at the collage we have created:

- What are the overall themes, feelings, associations displayed by the combined images?
- How do individual images contribute to the overall immunisation story?
- What do we know about immunisation for 0-6 month's olds?
- When is it recommended that we immunise our 0-6 month olds?
- How do we know this information? Where did we learn it from – family, GP, midwife, Plunket, hospital, others? When did we receive this information?
- What diseases and illnesses are we immunising them against? What other benefits to immunisation are there?
- What worries or concerns did we have about immunising our 0-6 month olds?

Attitudes and beliefs towards immunisation at six weeks, three months and five months – bubble exercise (30 minutes)

Imagine we are talking to a friend or family member about immunising our children at **six weeks**. In the bubbles jot down what we are saying, what we are thinking and what we are feeling.

Let's do the same thing again, but let's imagine we are talking to a friend or family member about immunising our children at **three months**. Again in the bubbles jot down what we are saying, what we are thinking and what we are feeling.

Finally, do the same thing but imagining we are talking to a friend or family member about immunising our child at **five months**. Again in the bubbles jot down what we are saying, what we are thinking and what we are feeling.

- Probe thoughts, feelings and emotions about immunisation at each course, and similarities and unique features across the courses. Probe specifically around delaying.

Immunisation journey – timeline (60 minutes)

We are now going to each draw a timeline that tells the journey we took and the decisions we made about immunising our children. On your timeline jot down any decisions you made to delay your child/children's immunisations at the recommended times, or events that happened which meant immunisation didn't happen at six weeks, three months and five months. Include on the timeline all the immunisations, including those that were done later than the recommended time. Include all enablers and barriers to immunising on time.

Once participants complete their timeline they are invited to share their stories. Probe at a general level, as well as at each of the three courses.

- What has been our experience of immunisation?
- What was good about it? Why?
- What was not so good? Why?
- Who was involved in immunisation decisions? What advice/help did they provide?
- What made it difficult, challenging or got in the way of immunising our 0-6 month olds on time? (Explore knowledge, cost, transport, GP relationship, other)?
- Did we start immunisation and not complete the immunisation cycle? Why? Why not?
- What suggestions do you have to support parents to immunise their 0-6 month old children on time?

THANKS AND CLOSE

Child Health – Immunisation

Research Project

Discussion Guide (Message Testing)

This discussion guide is indicative of the relevant subject matter to be covered. It is designed to allow freedom of any additional relevant topics that may arise during the discussion.

Introductions and warm up (10 minutes)

- Thanks for coming, 2 hours
- Confidentiality/informed consent, audio-recording, observers
- Purpose to understand parents' perceptions and experiences of immunising children in their first year
- Ground rules - give it a go, respect each other, everyone contributes. Group work and individual exercises
- Toilets, fire exits, food, etc.
- Introductions – name, number, age and gender of children

Immunisation decision making (30 minutes)

Before we begin to look at some ideas for encouraging or helping parents/caregivers with their decisions around immunisation, it would be good to first get a sense of that first year of our child's life, when they had delayed immunisations, and what was the main reason for that delay?

Probe:

- Visualise a timeline – key events along the way, where information came from, who gave advice and/or help
- Whether some children were fully immunised on time and others not – what was different?
- Key barriers and any enablers
- Key influencers.

For fathers, specifically explore:

- How were immunisation decisions made for their child(ren)?
- What role they saw for themselves, and how they contributed to getting immunisation events done on time
- What they think of the main barriers identified by mothers we spoke to – mainly around life/logistics/transport, children being unwell, or making an active choice to delay for their own reasons.

Concept testing (60 minutes)

For all groups, test concepts A – H, and rotate for each within A-E, and F-H.

We are now going to share some messages and ideas that may encourage and help parents/caregivers in their decisions to immunise their children. We are going to consider each message and idea individually and then share our thoughts with the group. Is everyone clear? **(i.e. no comments from moderator, or from group participants. Participants individually complete forms and then open up for discussion.)**

Knowledge/attitude based concepts:

- How do we feel about this message?
- What are the main things it is saying? Is there anything that doesn't make sense?

- Who is this message aimed at? (family type, ethnicity, new/experienced parents/caregivers)
- How would we describe the overall tone of this message?
- Is it thought provoking? Does it make us think differently?
- Do we believe the message? What don't we believe?
- Who or what organisation would be bringing us this message?
- What effect will this message have on parents/caregivers of children up to two years old? Would it make them more or less likely to immunise their 0-1 year olds? What effect would it have on us?

Ranking:

- Which of these messages and ideas would most encourage or help parents/caregivers with their decisions and ability to immunise their children on time?
- Which of these would have the least or no effect?

Surfacing other enablers (20 minutes)

We would like to spend the rest of our time together exploring whether there are any other ideas we have to increase New Zealand's on-time child immunisation rates. Let's imagine it is our job to develop messages to help or encourage parents/caregivers to immunise their children on time. Let's work in pairs to come up with ideas and then discuss with the wider group. ***(Moderator provides some context on NZ's child immunisation rates, different immunisation rates for different DHBs and ethnic groups etc, to start discussion).***

For each idea, probe:

- Who is this idea aimed at?
- Would it make them more or less likely to immunise their 0-1 year olds on time?

Ranking:

- Thinking about our earlier ranking, where do our new ideas fit? Are they more or less likely to encourage or help parents/caregivers with their decision and ability to immunise their children on time?

THANKS AND CLOSE