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Practice nurse cost benefit analysis: report to the Ministry of Health

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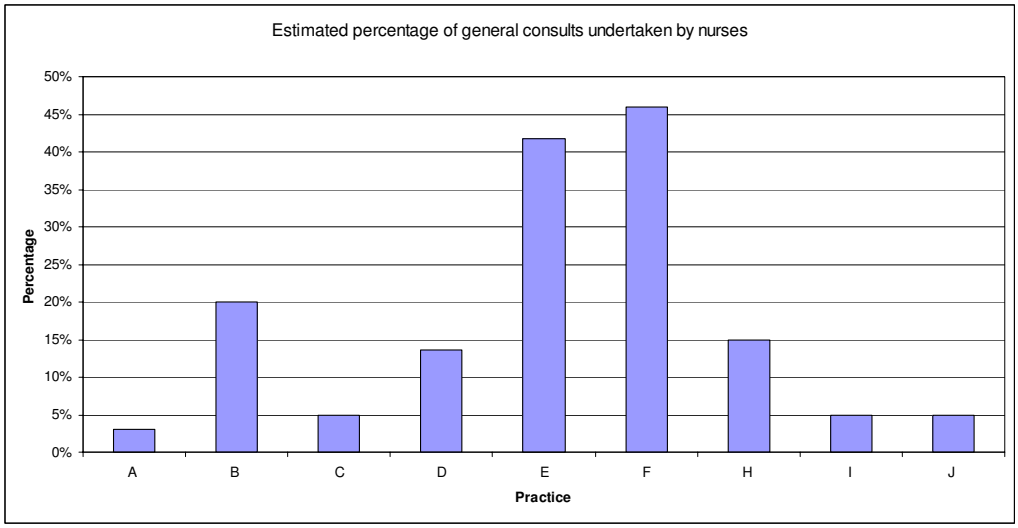
Executive Summary

This study uses the results of a literature review and data from nine NZ primary care practices, including GP and nurse diaries recording details of more than 2,000 consultations, to develop a model estimating the financial impact of task substitution between nurses and GPs. Data were collected between July and November 2009. In this Executive Summary we summarise our results from the nine practices, including reporting on data from a composite practice which provides findings for a typical practice in NZ.

Nurses can provide a broad scope of services

It is clear that practice nurses can, and in some practices in NZ, do provide a broad set of primary care services, including undifferentiated general consultations. Robust data from two practices (E & F in the graph below) show that nurses there are providing in the order of 40 – 50% of the total clinical consultations. Actual nursing roles in primary care vary markedly between practices as indicated both in the proportion of nurse consults and in the breadth of the nursing role revealed in interviews. The graph below shows nurse consults as a percentage of total consults by practice.



We have no information from this study on the relative quality of nurse versus GP consultations, but the most recent Cochrane review indicates equivalent or superior outcomes for nurse consults in primary care.

Noted barriers to a broader scope of practice include insufficient facility space, insufficient nurses, insufficient nursing experience/skills and interest, and consumer expectations about seeing a GP. The expectations and assumptions of the GPs in the practice are also likely to play a significant role.

Financial impact is variable

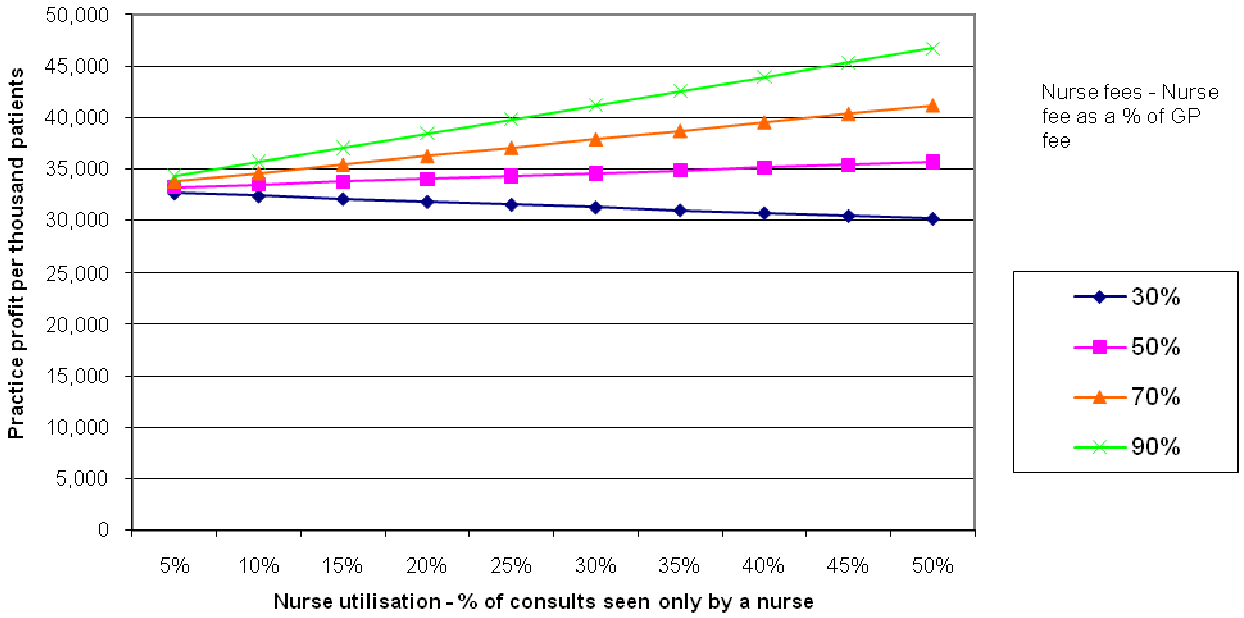
The actual financial impact for a practice owner of substituting more nursing time for GP time is highly dependent on a small number of variables, specifically:

- nurse cost per minute relative to GP cost minute
- nurse consult duration relative to GP consult duration
- nurse consult revenue relative to GP consult revenue
- percent of nurse consults requiring GP time

For some practices, increasing the proportion of nurse consults, and reducing GP consults, without changing other parameters, would result in significantly reduced profitability. For others the opposite applies.

One of the variables most amenable to practice control is the ratio between nurse consult revenue and GP consult revenue. That is, practices can increase their copayment fees for nurse consults (and/or reduce their fees for GP consults) in order to improve the cost effectiveness of task substitution. In many cases nurse fees need to be at 50% or more of GP fees for substitution to be worthwhile. This is shown below for the composite practice – a construct based on typical practice parameters. The practice is financially better off substituting nurse for doctor time provided the activity based fee for nurse consults is around 50% or more of the fee received for GP consults.

Practice profit per thousand patients under nurse fee and utilisation scenarios



Funding policy implications

Service funding arrangements that involve the same remuneration for the same task regardless of who provides the service are most likely to result in increased use of nurse time. This can be seen in:

- immunisations, which are paid at a constant rate regardless of provider, and which are mainly provided by practice nurses;
- careplus/chronic condition management, which (depending on the PHO) are often paid at a fixed price per visit and are often provided by practice nurses;
- telephone calls / recalls / lab results calls, which are usually not specifically remunerated on a fee-for-services-basis, and which are often provided by practice nurses;
- acute / on-the-day face to face consults in very low cost access practices, where the average per episode fee is low and which are likely to be provided primarily by practice nurses with support from GPs as required.

Therefore policies to increase utilisation of nurses, in a for-profit environment, could include a same-fee-regardless-of-provider policy - which can also be achieved by a no fee (capitation only) approach.

Increased awareness of the financial contribution of nursing might also be useful in changing perceptions and assumptions. We note that in some practices nurses made a greater contribution to practice activity based revenue than GPs, through co-payment fees paid by patients being similar for both GPs and nurses.

Limitations & opportunities for further development

This study suffered from a number of limitations, including:

- Inability to distinguish between different types of 'both' consults – i.e. those that commenced with a GP review and went on to require nursing support (e.g. for a wound dressing) versus those that commenced with a nursing consult and went on to require GP input to, say, a prescription. More accurate understanding of the duration of these two different pathways would allow more accurate modelling of task substitution effects.
- Limited sample – replication with a larger group of practices would improve ability to generalise findings. This would also allow regression analyses to identify the key contributing factors to profitability.
- Further activity differentiation – the current model bundles minor surgery, maternity, occupational health, etc into a residual 'other' category – ability to differentiate these based on duration, fee, etc would improve modelling accuracy.
- Fixed population – the current model assumes the population is fixed and labour flexible. In some areas of NZ GP numbers are relatively fixed but the ability to increase enrolled population exists – hence the ability to model this would be useful.

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1 Introduction

The section describes the purpose, scope and context for the study.

1.1 Purpose

The major aim of the study as set out in the Request For Quotations document is:

> *"to explore the financial benefits to Primary Health Organisations (PHOs) and general practices (GPs) of employing practice nurses. To achieve this, the project will explore how, or whether, improved practice nurse utilisation can increase general practice cost effectiveness and value for money."*

Specific objectives included:

1. to develop an activity based costing model for NZ general practice using NZ practice data
2. to use the model to show the financial impact of different ways of utilising practice nursing skills in primary care settings
3. to identify how primary care providers can get maximum value from practice nursing.

The overall approach to achieving these objectives was to:

1. conduct a brief literature review to inform the study (reported in section 3)
2. select a purposeful sample of 8 – 10 practices (9 practices were included in the end) (method outlined in section 2)
3. conduct a case study of each practice to:
    a. review the practice finances
    b. understand the way GPs and nurses work together (model of care) in the practice through
        i. interviews with practice staff
        ii. nursing and GP diaries
    c. review utilisation of services at the practice through information on clinical consults numbers and types (section 4 describes the results of the case studies)
4. develop a time-driven activity-based costing model to simulate the financial impact of different practice nurse model of care parameters (the model is described in section 5)
5. identify potential policy implication so of the findings (see section 6).

1.2 Scope

This study is focused on the financial contribution practice nurses make to primary care practices form a practice owners perspective. It does not address issues of quality of care, or of the possible downstream affects of alternate models of primary care provision (such as through increased or decreased utilisation of hospital services). Nor does this study consider workforce availability or process management issues. The study is restricted to nursing and GP services only and is concerned with practice nurses rather than nurse practitioners. This latter group remain rare in NZ, though they are likely to grow in importance in future.

1.3 Context

1.3.1 Primary health care strategy

The NZ Primary Health Care Strategy 2001 articulated a new vision for primary care including that:

> *"People will be part of local primary health care services that improve their health, keep them well, are easy to get to and co-ordinate their ongoing care."*[1]

The primary care strategy used the following table to describe the paradigm shift sought.

Table 1: Primary Health care strategy vision

Old	New
Focuses on individuals	Looks at health of populations as well
Provider focused	Community and people-focused
Emphasis on treatment	Education and prevention important too
Doctors are principal providers	Teamwork - nursing and community outreach crucial
Fee-for-service	Needs-based funding for population care
Service delivery is monocultural	Attention paid to cultural competence
Providers tend to work alone	Connected to other health and non-health agencies

The table describes a shift away from thinking of doctors as the principal care providers toward a more team based approach.

[1] http://www.moh.govt.nz/primaryhealthcare

1.3.2 Nursing Implications

The implications of the primary health care strategy for nursing workforce development are not articulated, but the move to capitation-based funding associated with New Zealand's (NZ's) primary health care strategy has created both risks and opportunities for primary health care practice nurse roles. The opportunity is that Primary Health Organisations (PHOs) and general practices, freed from fee-for-service funding, can use practice nurses to their full potential, without patients having to see the GP in order to qualify for general medical service (GMS) funding. The risk is, that with the removal of targeted nursing subsidies, general practice owners might see nursing costs as an overhead cost to be minimised (Hefford, Crampton et al. 2005), rather than as an opportunity to improve services.

One consideration in studying the cost effectiveness of practice nurses is the issue of task substitution. Task substitution refers to a situation where task(s) formerly performed by one type of professional (i.e. general practitioner) are transferred to a different type of professional (e.g. nurse), usually with the intention of reducing cost or addressing workforce shortages or improving access to care. For instance, a GP may employ a nurse to (among other duties) follow up on anticoagulation laboratory results and to contact patients if their results are outside safe ranges. Alternatively, the GP may perform this task.

Substitution differs from supplementation; which refers to the situation where a nurse supplements or extends the care of the doctor by providing a new or enhanced primary health care service. The aim of supplementation is generally to improve the quality or comprehensiveness of care rather than to reduce cost or address workforce shortages. Employment of a nurse to run a cardiac rehabilitation clinic in a primary health care setting is an example of supplementation.

In practice, expanding the hours of work or scope of a practice nurse might involve aspects of both substitution and supplementation. For instance, a large primary health care practice may employ a practice nurse with specific skills in diabetes to run a diabetes clinic in which the nurse will do the diabetes 'Get Checked' annual reviews. The GPs already provide a diabetes 'Get Checked' service – hence the nurse is substituting for medical time, but the clinic now runs with a proactive reminder service and hence sees a much greater proportion of people with diabetes than were previously checked – hence also providing supplementary care.

2 Method

This section outlines the approach to practice selection and data collection.

2.1 Literature review

We conducted a brief review of peer reviewed and relevant grey literature using pub med and Google scholar in July 2009. Search terms used included variations on 'primary care nursing', practice nursing, and 'cost benefit' or 'cost effectiveness'. The literature review was not comprehensive. The grey literature search focused on relevant New Zealand studies.

2.2 Practice case study selection

Through our personal and professional networks, and via discussions with the Ministry of Health, we identified a purposeful sample of general practices to request involvement in the study. We aimed to achieve a balance of:

- size: large (>3 GPs) & small (< 3 GPs) practice
- rurality: urban & rural practices
- business model: salaried vs. partnership
- fee structure: very low cost access vs. standard capitation.

It is important to note that the case study methodology is not a standard sampling methodology and not intended to be representative of the general practice population.

We chose a case study approach in order to obtain sufficient information for financial modelling, and to allow triangulation of the GP and nursing diary data with GP practice information extracts and interviews to improve data accuracy. We wanted to gain enough of an understanding to develop a general financial model, which could then be customised to reflect the specific parameters of any particular practice. Hence in this case representativeness was not an important element in the study design. We deliberately chose some practices that we thought might represent the current 'frontier' in terms of using practice nurses to deliver a broad range of clinical services.

Ten practices originally participated in the research. One small practice (the missing 'G') withdrew – leaving us with nine practices in the sample and a greater preponderance of larger practices than intended.

One of the practices is owned by a 'chain' medical services provider, one is DHB owned and two are community owned. The remainder are GP owned,

Table 2: Case study practice characteristics					
Practice	**Enrolled Population**	**Very Low Cost access?**	**free < 6**	**Urban / rural**	**District**
A	1,427	n	Y	Urban	Auckland
B	16,630	n	Y	Urban	Dunedin
C	9,992	y	Y	urban	Auckland
D	10,500	n	Y	Urban	Wellington
E	5,500	y	Y	Urban	Wellington
F	7,228	y	Y	Rural	West Coast
H	7,559	y	Y	Rural	Northland
I	10,065	n	Y	Urban	Auckland
J	10,644	n	Y	Urban	Lakes

2.3 Data collection

The general approach to data collection was that researchers approached the practice manager or owner, provided information about the study, visited the practice, interviewed staff, requested financial and utilisation data, and explained how to complete the GP and nurse diaries. Subsequently a standard Medtech query was developed and practice managers were asked to run the query and email the resulting file to the researchers. Data was collected between July and November 2009.

2.3.1 Practice interviews

Semi structured interviews were held with the following where available:

- Practice owner (GP, Partner or member of board)
- GP – representative
- Practice Nurse – representative
- Practice manager (where such exists)
- Clinical nurse manager (where this role exists)

Annex 3 shows the question line used. The objective of the interviews was to understand the way in which nurses and GPs share clinical tasks in the practice.

2.3.2 Collecting diary information

One nurse and one GP per practice were asked to complete a standard daily activity diary every day for 1 week. In larger practices this was done by the nurses and doctors taking turns so that 5

doctors/nurses might keep a diary for 1 day each in a week. In larger practices there was significant variation in nursing roles on any given day. Our aim was to select nurse/days typical of that practice.

The diary collects information on the time spent per activity (divided into face to face and non-face to face activity). For face to face interactions GPs and nurses were asked to record:

- the start and finish time of the consult
- consult types (enrolled or casual, adult or child, ACC or non-ACC, chronic care related or not, and, for nurses but not GPs, whether it involved an immunisation or not)
- whether the patient also saw the nurse/GP,
- and for GPs but not nurses, whether they believed that the consult could have been provided by a practice nurse alone.

The diary instrument was amended after being piloted at two practices. Copies of the finalised diary forms are attached as Annex 4.

2.3.3 Practice utilisation and financial information

The practices were asked to supply:

- practice revenue and expense report for a 12 month period.
- practice consultation report (Medtech 32 extract).
- total enrolled population and enrolled population under 6
- standard patient copayment fees
- current FTEs of medical nursing and administrative staff.

All practices provided some of the above information, some were not able or willing to provide all the information requested.

3 Literature review

3.1 International Literature

Task substitution is possible

A recent Cochrane study (Laurant, Reeves et al. 2005) of task substitution of doctors by nurses in primary health care settings reviewed the available empirical evidence in three types of substitution situations:

- first contact and on-going care for undifferentiated patients
- first contact care for patients wanting urgent attention during office hours or out-of-hours
- routine management of patients with chronic conditions.

The review of 16 studies found few significant differences between nursing care and medical care for these patient groups. In particular, cost and outcomes were not significantly different, although there was some evidence that nurses provided more comprehensive information to patients, were more thorough in relation to disease management processes, and achieved higher patient satisfaction. The lower salary costs of nurses were generally offset by longer consultation times.

The authors concluded:

> *"The findings suggest that appropriately trained nurses can produce as high quality care as primary care doctors and achieve as good health outcomes for patients. Indeed nurses providing first care for patients needing urgent attention tend to provide more health advice and achieve higher levels of patient satisfaction compared with doctors."*

However, studies of task substitution are likely to be highly sensitive to salary ratios, role scope and the specific cultural context, so that we cannot assume that the same results would be observed in New Zealand.

One study, (Fall, Walters et al. 1997) published in the British Journal of General Practice in 1997 compared the outcomes and resource use in patients with hearing or ear related problems who received treatment in a general practice. The study compared two providers of care, nurses specially trained in ear care in Barnsley, and standard general practice care providers. The study found that the use of nurses specifically trained in ear care significantly reduced overall treatment costs, increased patient satisfaction and had no effect, positive or negative, on patients perceived health status.

A similar study (Cox and Jones 2000) investigated the effectiveness of the management of sore throats, this time comparing GPs and practice nurses (PNs). The study acknowledges the focus of PNs on minor illnesses and attempts to evaluate the quality of the service that PNs offer in this area. The study found that the patients of PNs were likely to have better outcomes than patients of GPs. However, the study notes, that patients chose whether to attend a GP or PN and so might have been self-selecting based on the seriousness of their complaint. They conclude that PNs are can safely treat sore throats in primary care, and their use is cost effective, providing GPs more time to tend to more serious cases.

Expansion of the nursing role has occurred across the United Kingdom (UK) and the United States (US), with shopping chains offering customers flu vaccinations.[2] The service appears to have been popular, and the number of supermarkets offering the service has been expanding since the original service was pioneered in 2002 in the UK. In the US, many States have changed their laws to allow pharmacists to administer vaccines, taking the role away from nurses altogether. Shortages of the flue vaccine have raised concerns in that the retailing of the vaccine in supermarkets undermines the provision of the vaccine to those who needed it most.

This Flu service is a specific example of a more wide spread US phenomenon – the growth of clinics run by nurses, pharmacists or physician assistants based in retail areas providing high volume low complexity diagnosis and treatment of common conditions. One example of this approach is the 'Minuteclinic', which now provides these services in some 500 retail areas in 25 US states.[3]

Developing team based models of care

An article published in the British Medical Journal (Kernick 1999) suggests a teamwork approach to the provision of medical care is more appropriate than a model of care where the GP provides medical continuity and nursing is an additional rather than integral part of the service. Three types of relationships within a team identified were:

- co-active – where one member of the team is in a dominant position and delegates to the others
- competitive – where parties are competing for similar roles
- interactive – where there is shared responsibility and equality underpins collaboration

The historical role of nurses is argued to be holding back the profession from reaching its full potential in medical practice, and the authors suggest that the preferred model is an interactive approach.

A discussion paper, created in 2008 at the request of the Australian Government's National Health and Hospitals Reform Commission (NHHRC) (Chiarella 2008), suggests that Australia needs to move away from models of care based on GP led services towards trans-disciplinary models of care, with nurses taking a more significant role. Nurse led models of care are often home based or community, for example, some nurses in Australia work primarily in schools, with a focus on healthy living and self-management, potentially creating a more efficient use of resources in the provision of primary care.

Nurse practitioners

Much recent literature has focused on the potential of nurse practitioners to supplement or substitute for GP time. We note that the Nurse Practitioner role is different to that of a practice nurse. The Nurse Practitioner in a primary care setting is more likely to be acting as a substitute for a GP, whereas practice nurses are probably more likely to be supplementing the work of GPs. Nurse Practitioners receive additional training and are able to act more independently than Practice Nurses. In NZ Nurse Practitioners may have prescribing rights, and are paid at a higher rate than practice nurses. However some of the information gained through nurse practitioner focused studies may be relevant to practice

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[2] http://news.bbc.co.uk/2/hi/health/2321685.stm and http://www.heartkent.co.uk/article.asp?id=501058 and http://www.retail-week.com/asda-to-offer-cut-price-flu-jabs/1871870.article and http://www.nytimes.com/1993/10/23/us/attention-shoppers-in-aisle-1-flu-shots-supply-is-limited.html?pagewanted=all

[3] http://resources.bnet.com/topic/minuteclinic.html

nurse issues. There are currently 16 nurse practitioners employed by District Health Boards in New Zealand.[4]

A British study (Hollinghurst, Horrocks et al. 2006) compared the cost of Nurse Practitioners (NPs) and General Practitioners (GPs) in primary care. The study used data from two previous systematic reviews as input into a model designed to compare resource use between GP's and NP's for a typical same day primary care consultation. The focus of the study was on the marginal benefit of employing an additional GP or NP, and so only considered variable costs. Table 4 below shows a breakdown for these results.

Table 3: Baseline results: estimated cost of a typical GP and nurse practitioner consultation

	GP Consultation (£) n=1367		NP Consultation (£) n=1293	
Practice Perspective	**Mean (SD)**	**95% CI**	**Mean (SD)**	**95% CI**
GP time	8.97 (4.84)	8.72 to 9.23	2.84 (4.47)	2.60 to 3.09
NP time	0.32 (0.57)	0.29 to 0.35	6.61 (2.96)	6.45 to 6.77
Cost per Consultation	**9.30 (4.89)**	**9.04 to 9.56**	**9.46 (5.41)**	**9.16 to 9.75**

Source: Hollinghurst et al 2006.

Results from the study suggest that employing an additional NP is likely to cost the same, or slightly more than employing an additional GP. A component of the cost difference was the requirement for a percentage of the nurse practitioner visits to also require GP input. The study notes difficulties comparing the relative efficiency of Nurse Practitioners to General Practitioners. The training, knowledge, skills and typical work of Nurse Practitioners varies considerably between individuals, creating difficulties with accurately assessing standard activities. The study concludes that decision to employ a NP or a GP be based on the needs of the specific primary care practice, rather than cost.

Barriers to more clinically autonomous nurse practice

A study (Wilson, Pearson et al. 2002) explored the potential barriers to NPs becoming integral parts of General Practice in Great Britain in 2002. The study used a focus study group of GPs from four practice groups in Yorkshire, selected so that the attitudes of doctors with range of experiences working with NPs in different roles could be analysed.

There were four main themes arising from the research. The first was a concern, expressed by GPs from all of the practices, that the mix of consultations was likely to change if NPs are given greater roles. GPs would only receive the complex and difficult cases, increasing their stress levels. Doctors without experience of working with NPs were also concerned that they may become deskilled if they did not continue to do simple medical work on a regular basis. The increasing involvement of NPs in General Practice was seen as a potential threat to the role of the GP including loss of status and self-esteem.

[4] http://www.moh.govt.nz/moh.nsf/indexmh/nursepractitioner-case-studies

A second theme was a concern that nurses may not be capable of providing adequate care, either due to lack of sufficient training or through lack of intelligence. Doctors expressed reluctance to delegate responsibilities to nurses, particularly when they are responsible for the final patient outcome.

Thirdly, constraints within the system were perceived as a potential issue. NPs earn a higher salary than PNs and there was concern 'that this will put significant pressure on the staff budget.'

Finally, some doctors felt that patients prefer their consultations to be with GPs and that there would be considerable resistance to NPs from patients. There was a surprising consistency in the issues raised by the GPs, suggesting that these are significant and systemic issues throughout the medical service.

A recent study of 25 practices in Victoria and New South Wales (Phillips, Pearce et al. 2009) identified six roles of nurses in general practice: patient carer, organiser, quality controller, problem solver, educator and agent of connectivity. The authors note that the number of practice nurses in Australia nearly doubled between 2003 and 2007, while the general nursing workforce increased by only 6.6%. They attribute this increase to in part to the number of Medicare rebate-able items for nurses. They found that 43.5% of the observed nurse time was spent on clinical activities, of which 21% were funded through Medicare.

3.2 New Zealand Studies

IPAC 2002 study

In January 2002, the IPA Council of New Zealand published a report determining the 'sustainable cost' for a specific range of services provided by GPs (IPAC 2002). A survey of 15 practices was used to give an indication of sustainable costs, however, a range of results were given on the basis that 'there are a number of confounding factors in comparing the actual costs to sustainable costs'. These factors included 'that the salary levels of GPs at present may not be high enough to maintain an adequate workforce long term, the current rates of return may not compensate GPs adequately for business risk, and the number of hours worked by GPs may not be sustainable in the long term; in short, the healthcare sector in New Zealand is not in a long term equilibrium at the time of the survey'.

Data collected included service volumes, consultation length, practice costs and FTE staff numbers. The study used an ABC methodology, and splits up the data into different activity based categories. The study indicated that GPs spent on average 36% of their time on non-patient tasks (administration, phone calls, practice management etc) and that Practice nurses spend an average of 65% of their time on non-patient tasks.

The average length of consultation time is shown below:

Table 4: Average length of consultation time		
Medical Service	**Average Length of GP Consult (minutes)**	**Average Length of Practice Nurse Consult (minutes)**
Standard Medical Consultation	14.5	13.1
ACC Consultation and treatment	14.0	15.8
Immunisation Treatment	7.8	11.2
Maternity Consultation	18.3	15.0
Other	20.3	17.8

Source: IPA Council of New Zealand (2002)

IPAC 2006 survey

The IPAC 2006 General Practice Business Study (IPAC 2006) examined the structure, organisation and finances of 36 General Practices throughout New Zealand using a survey methodology with follow up telephone interview follow up for a subset. The study practices provide care to approximately 5% of New Zealand's population, or 223,369 patients. The results included descriptions of the age and sex of patients, the services provided by each practice, the facilities available, the programmes available, the average number of staff, expenditures, business structure and descriptions of the most commonly raised issues by GPs and NPs in the surveys and interviews.

The proportion of total income by source is given below. At that time patient fees were the largest single source of income, but the rollout of universal capitation as not complete at the time of the survey, and therefore capitation as a percentage of income is now likely to be significantly higher.

Table 5: Proportion of total income by source		
Income source	**Mean % of total Income**	**Range in % of total income***
Patient fees	39.9%	8.7% - 69.8%
Capitation funding	32.9%	11.2% - 79.4%
Rural funding	12.2%	0.8% - 63.3%
ACC	9.5%	1.4% – 28.1%
Services to other providers	3.8%	0.1%-15.1%
Other income sources	3.3%	0.03% – 13.5%
Immunisation	3.2%	0.6%– 7.5%
Casual GMS	3.1%	0.25% – 20.2%
Special PHO projects	2.6%	0.01% – 14.0%
Maternity Services	1.1%	0.02%– 9.8%

Source: IPAC 2006 General Practice Business Study

Expenditures on personnel were the largest expense for the practices, accounting for 73.3% of total expenditure. Expenditure for administrative personnel accounted for 25.2% of all expenditures on

practice personnel. Of the 25 practices that provided information on administration expenditures, 9 practices spent more on administration than on nursing.

Immunisation Advisory Centre costing

A similar activity-based costing exercise was conducted in 2008 by the Immunisation Advisory Centre (IMAC 2008) to determine more accurately the cost of delivering immunisations in a primary care setting. They obtained practice data from 24 general practices.

The study detailed the average hourly paid rates by staff member, shown below.

Table 6: Average Hourly rates by staff member

Staff member	Average Hourly rate
GP	$85.39
Reception	$18.69
Nurse	$25.68
Manager	$24.43
Administration	$19.02

Source: IMAC (2008)

The study found that the cost of delivering immunisations was considerably higher than the price and that "*immunisation process delivery activities are undertaken mainly by practice nurses (90%), who spend around 12% of their total nursing time on delivery of immunisation activities*".

National primary medical care (NatMedCa) survey

In 2001 a nursing report (MOH 2002) was commissioned to describe the status of primary health care in New Zealand. The nursing report from the 2001 national primary medical care (NatMedCa) survey of 194 primary care nurses (including nurses employed in General Practice, Accident & Medical clinics, and Health Care Aotearoa centres) provided baseline information on practice nurse utilisation at that time. An extract from the report is below. At the time of the survey, the majority of general practice based nurses were available for bookable patient consultations, and had an average of 24.6 appointments per week at an average duration of 16.7 minutes each. The majority of nursing time was spent on direct patient contact.

Table 7: Nurse activities		
Nurse Activities		**N=160**
Average hours spent per week	Total	30.9
	Direct patient contact	16.3
	Patient contact by phone	5.9
	Administration	6.4
	Housekeeping	2.5
	Other duties	3.4
Patients make appointments specifically to see nurse (% yes)		87.5
If so, number of appointments in average week (mean)		24.6
Usual time allocated for nurse appointment (mean minutes)		16.7
Practice/clinic charges a fee for nurse appointment (% yes)		76.4

Source: NatMedCa Nursing report (2001)

Primary Healthcare Strategy Evaluation

Finlayson et al (Finlayson 2009) reviewed nursing developments in primary care over the period 2001 to 2007 and commented on the development of nursing in New Zealand after the introduction of the Primary Healthcare Strategy 2001. They conducted a literature review, and use information obtained from two components of the *Evaluation of the Implementation and Intermediate Outcomes of the Primary Healthcare Strategy*. The first part of the evaluation was conducted in 2004, and the second in 2006. Both involved semi-structured interviews with PNs, GPs, Practice Managers, board members and board chairs. The second part of the evaluation included interviews with an average of eight interviews per PHO. Twenty PHOs were sampled in the evaluation and surveys were sent to General Practices to be filled out by half of GPs and half of the Nurses at each practice. Additional interviews with 18 Nurse Leaders were also included in the 2006 evaluation.

Key barriers to the expansion of the nursing role were 'the employer-employee relationship between GPs and practice nurses, GP's attitudes, lack of support and motivation from GPs, the current funding structures, poor remuneration, heavy workloads, lack of educational opportunities, lack of leadership, lack of physical resources, and patients not recognising the nurses as autonomous health professionals.'

3.3 Conclusions from literature review

The available peer reviewed literature indicates that practice nurses can, at least for some consultation types, provide care of equivalent quality to that provided by general practitioners. However, task substitution is strongly influenced by consumer acceptance and the interests of the different professional groups. Medical groups, in particular, have at times been resistant to the option of substituting non-medical for medical time. For instance, the development of specific nurse roles with an extended scope in endoscopy has been resisted in NZ despite its widespread acceptance in the UK and US.

Plsek (Plsek and Kilo 1999) suggests that this resistance can be partially offset by the use of attractors (pull incentives) on medical staff. For clinical staff the desire for autonomy and enhancement of professional image are suggested as attractors. Financial incentives are also likely to be attractors -

hence the importance of understanding from a practice owner view point, the impact of increasing use of nurses in more comprehensive clinical roles.

Further, in assessing the financial impact of changes in the model of care, modelling will need to incorporate differences in the duration of consultation, and the likelihood that a proportion of nurse consults might need require GP involvement also.

4 Case study practice results

This section analyses the data collected from practice visits through nurse and GP diaries, interviews and other data.

4.1 Interview data

Responses by GPs, practice managers and practice nurses at each practice to a common set of interview questions were analysed to obtain a picture of the model of care at each practice. Commonalities and differences in responses are summarised below. A more complete picture of each practice can be viewed in Annex 2.

4.1.1 Decision making

Practices varied in the extent to which all staff contributed to decision making. At one extreme, in a few practices decisions were taken by the owners with only limited participation by other staff. At the other extreme, one community owned practice used a consensus model of decision making involving all staff. More commonly, a range of participative processes such as

- an annual strategic planning meeting
- clinical meetings
- a bimonthly full staff meeting
- a bimonthly nurses meeting
- a monthly Directors meeting
- a weekly planning meeting,

are used to inform decision making, but with strategic decisions taken by the practice owners.

4.1.2 General nursing role

In larger practices nursing roles were often differentiated, with nurses rostered to specific clinical duties. For instance, at one practice of 10,500 enrolled population, the general pattern is for five nurses to be rostered on each day, with two on the phones and three running acute, chronic care or practice clinics, as shown in the table below.

Table 8: Example nurse roster for a large practice

Activity	Approx number of ½ day nursing sessions per week
Phone nurse (triage, test results f/up, paper work, recalls, misc)	20
Acute clinic (on the day appointments, triage, accident, fever, etc)	10
Chronic clinic (prebooked, diabetes, CVD, ECG, dressings, smears, imms, careplus, etc)	13
Practice clinic (pre-booked, blood tests, ear syringes, immunisations),	10

The differentiation between acute/on the day clinics, chronic care/careplus clinics and general practice support (incorporating telephone and other duties) was common.

Patients at most practices could book appointments to see the nurse – particularly for chronic conditions or immunisations.

Nursing task inclusions and exclusions

The range of clinical tasks regularly undertaken by nurses varied considerably, as shown in the table below.

Table 9: Range of clinical tasks regularly undertaken by nurses

Clinical activity	Practice B	Practice D	Practice F
ECG	X	√	√
Dressings/wound care	√	√	√
Immunisations	√	√	√
Cervical Smears	X	√	√
Mental health consults	X	X	√
Phlebotomy	X	√	√
Suturing	X	X	X
Audiometry tests	X	√	√
Spirometry	X	√	√
Bone densiometry	X	X	√
Occupational health checks	X	√	√
Sexual health consults	X	√	√
Repeat scripts	X	X	√
Initiate new scripts	X	X	√
Diabetes get checked	X	√	√
Careplus consults	X	√	√
Chronic care management	X	√	√
IUD insertions	X	X	X
Liquid nitrogen application	X	√	√
Acute triage/consult	X	√	√
General clinical consults	X	X	√
IV antibiotics	X	X	X

4.1.3 Acute (unplanned care)

Acute patients, both walk in and phone calls, are often triaged by nurses designated for that role for the day or half day. Usually patients will then see the GP, but the nurse will have taken a history and observations and in some practices may suggest a diagnosis and treatment plan for consideration by the GP.

At one practice a clinical nurse manager compared their approach to the usual by saying:

> *'At most practices you see the GP and then see the nurse if you need to; here you see the nurse, and then see the GP if you need to'.*

4.1.4 Chronic care management (planned care)

Nurses in many of the practices have a major and increasing role in management of long term conditions. Key activities include the diabetes get checked programme, Careplus, CVD risk assessment and spirometry.

4.1.5 Medication management

Standing orders

Use of standing orders varied markedly. In some practices they covered ventolin administration, flu vaccinations (off schedule), UTI treatment, emergency contraception pills, vitamin b12, nicotine replacement therapy, depo-provera and others. Many practices reported an intention to expand their use. Others viewed standing orders negatively for reasons of safety and accountability. One practice that made considerable use of nurses does not tend to use standing orders, relying instead on nursing assessment plus immediate GP review if required.

Repeat scripts

Use of nurses to help manage repeat scripts also varied. Some practices indicated that the nurses had a major role because they knew the patients better than the mainly locum GPs. Others indicated that they were seeking to stop availability of repeat scripts because of safety concerns.

4.1.6 Other issues

In some practices GPs and nurses use a common electronic notes format and read coding for consultation (often using Medtech 32). Tasks are delegated from one to the other electronically.

Opportunities noted for further expansion of the nursing role included:

- administration of IV antibiotics (eg for cellulitis)
- travel clinics
- suturing
- occupational health

Identified barriers to an expanded nursing role included:

- insufficient facility space (this was a common response)
- insufficient nurses
- nursing experience and skill mix
- legislative restrictions – particularly nursing inability to prescribe
- consumer expectations.

Most nurses reported that they had good opportunities for clinical development and professional training.

4.2 Diary outputs

Knowing the duration of various categories of GP and nurse consults is important in modelling the impact of task substitution. This was accomplished through the collection of diary data.

4.2.1 Data limitations

GPs and nurses were asked to fill out standardised diary templates with consistent instructions. Nonetheless, the following limitations should be noted:

- in some cases practitioners may have interpreted instructions differently from the way they were intended – where this is clearly the case we cleansed the data to preserve the intended meaning as we understood it, or excluded the data where the intended meaning is not clear
- we asked for a weeks worth of diaries from a GP and a nurse at each practice, however, the business of the practice environment meant that a smaller number of days were recorded in some practices
- the individual practitioners filing out the diary may not have been representative of their peers
- nurses in particular often have specialised roles in large practices – while we aimed to have good coverage of the roles, this has not necessarily been achieved in all cases
- the cases studies have been chosen to cover a useful range of practice types – the durations from each can not necessarily be generalised to the wider NZ primary care sector.

4.2.2 GP consult duration

Table 10 below shows duration information for all GP diary recorded consults in the 9 participating practices combined. Points of interests include:

- the mean child consult duration is shorter than the adult consult duration
- chronic condition consults are longer than non-chronic condition consults
- casual consults tend to be shorter than those for enrolled patients
- the overall consult length is slightly longer than that found in previous studies (15.7 minutes versus, for instance IPAC 2002 which found an average duration of 14.5 minutes), though this may be related to different treatment of double consults – which we counted as one consult.
- consults where the patient also saw a nurse are slightly shorter than those where the patient didn't.

Table 10: GP consults by type and duration

Type of consult	Number of consults	Duration (minutes)		
		Mean	Median	Range
Adult	418	16.3	15.0	1.0-60.0
Child	118	12.3	10.0	5.0-40.0
Enrolled	531	15.9	15.0	1.0-60.0
Casual	62	14.0	15.0	5.0-45.0
ACC	67	15.3	15.0	5.0-30.0

Table 10: GP consults by type and duration				
Type of consult	**Number of consults**	**Duration (minutes)**		
		Mean	**Median**	**Range**
Non-ACC	518	15.8	15.0	1.0-60.0
Chronic	22	19.8	20.0	10.0-60.0
Non-chronic	563	15.6	15.0	1.0-55.0
Also saw a nurse – yes	48	15.1	15.0	5.0-66.0
Also saw a nurse – no	488	15.4	15.0	1.0-55.0
Consult could have been nurse only – yes	30	13.2	15.0	5.0-55.0
Consult could have been nurse only - no	506	15.6	15.0	1.0-60.0
Overall / total	**673**	**15.8**	**15.0**	**1.0-60.0**

Note that the two practices where the diary instrument was piloted provided aggregate (overall) consult data only and hence are included in the overall/total consult numbers and overall mean, but not in the 'type of consult' subcategories.

4.2.3 Nurse consult duration

Table 10 shows consult duration information from the diaries kept by practice nurses for all practices combined. Of note:

- mean durations are much higher for patients with a chronic condition related visit
- durations are slightly longer where the patient also saw a GP – possibly relating to a difference in complexity for these patients (or perhaps time waiting for the GP to come available).
- overall consult durations are similar to GP consult durations.

Table 11: Duration of Nurse consults by type (in minutes)				
	Number of visits	**Mean**	**Median**	**Range**
Adult	632	15.9	15.0	1.0 – 65.0
Child	186	14.4	15.0	1.0 – 41.0
Enrolled	678	16.0	15.0	1.0-65.0
Casual	44	19.0	15.0	5.0-60.0
ACC	43	17.7	15.0	5.0-45.0
Non-ACC	679	16.1	15.0	1.0-65.0
Chronic	135	24.9	20.0	1.0-65.0

Table 11: Duration of Nurse consults by type (in minutes)				
	Number of visits	Mean	Median	Range
Non-chronic	637	15.1	15.0	1.0-60.0
Also saw a GP – yes	214	17.6	15.0	1.0-65.0
Also saw a GP – no	508	15.6	15.0	1.0-49.0
Immunisation – yes	72	17.8	15.0	5.0-41.0
Immunisation – no	650	16.0	15.0	1.0-65.0
Overall	1,153	15.9	15.0	1.0-65.0

4.2.4 Duration by practice

Figure 1 shows that average recorded consult duration varied markedly by practice. However this may reflect the specific GP or nurse who filled out the diary, rather than the practice as a whole.

Figure 1 : Average Duration for GP consultations

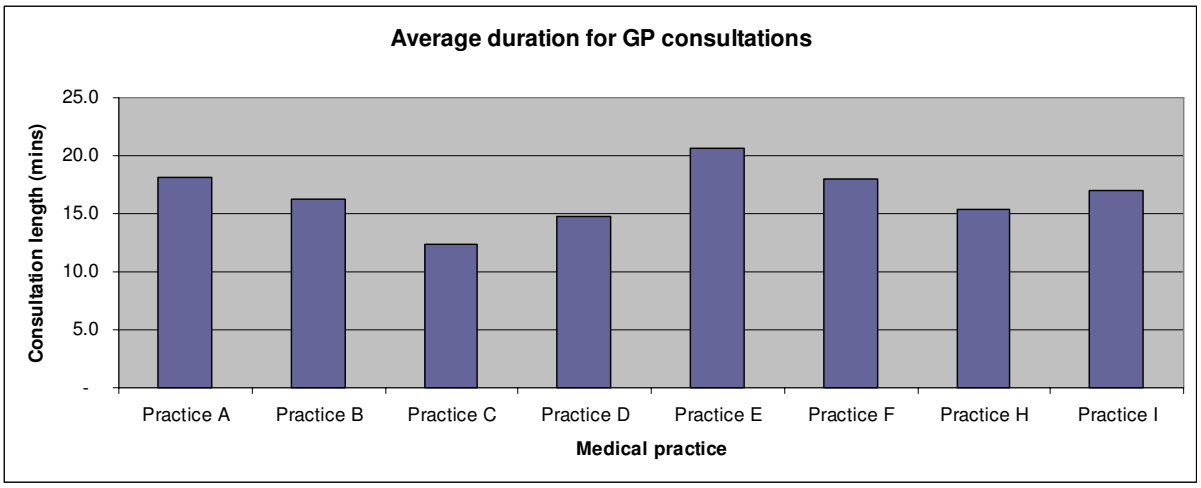
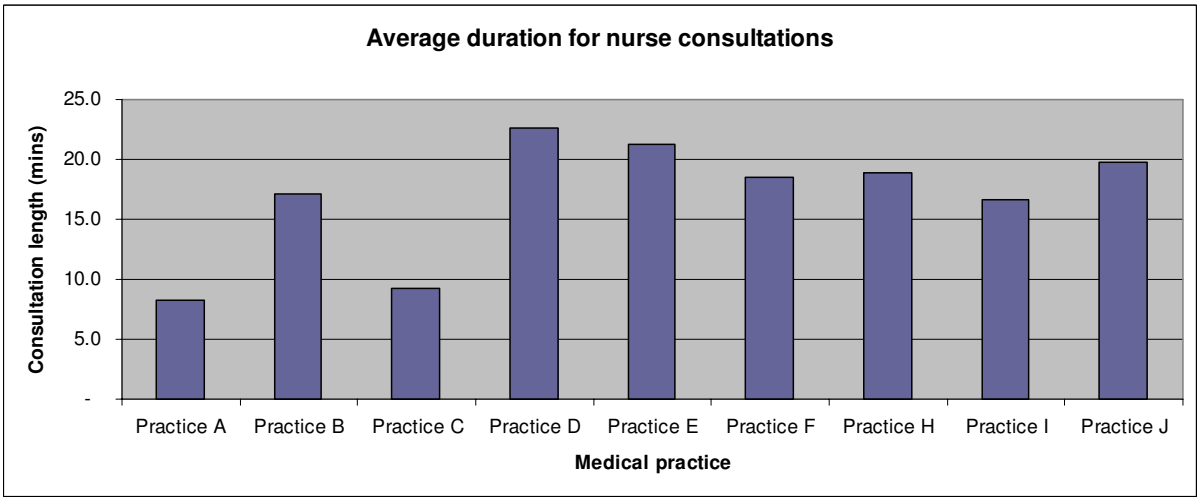


Figure 2 shows greater variability in nurse consult durations than in GP consult durations.

Figure 2 : Average Duration for nurse consultations



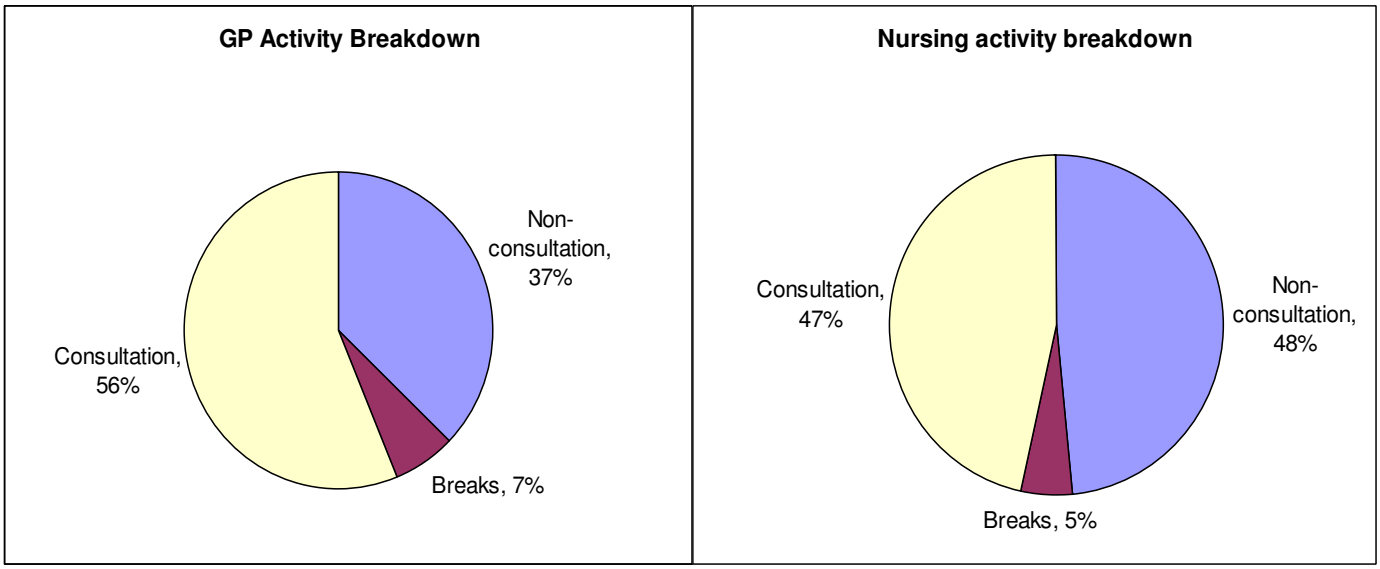
Practice J supplied a nursing diary but not a GP diary- hence we have nursing times for that practice but not GP consult time.

Further data showing duration information by practice is included in the appendix.

4.2.5 GP and nurse activities

Figure three shows mean time recorded by GPs and nurses as spent on consultations versus other activities. GPs spent more of their time on consults than nurses.

Figure 3 : Percentage of GP and Nurse time spent on different activities



4.3 Service Provision by Nurses

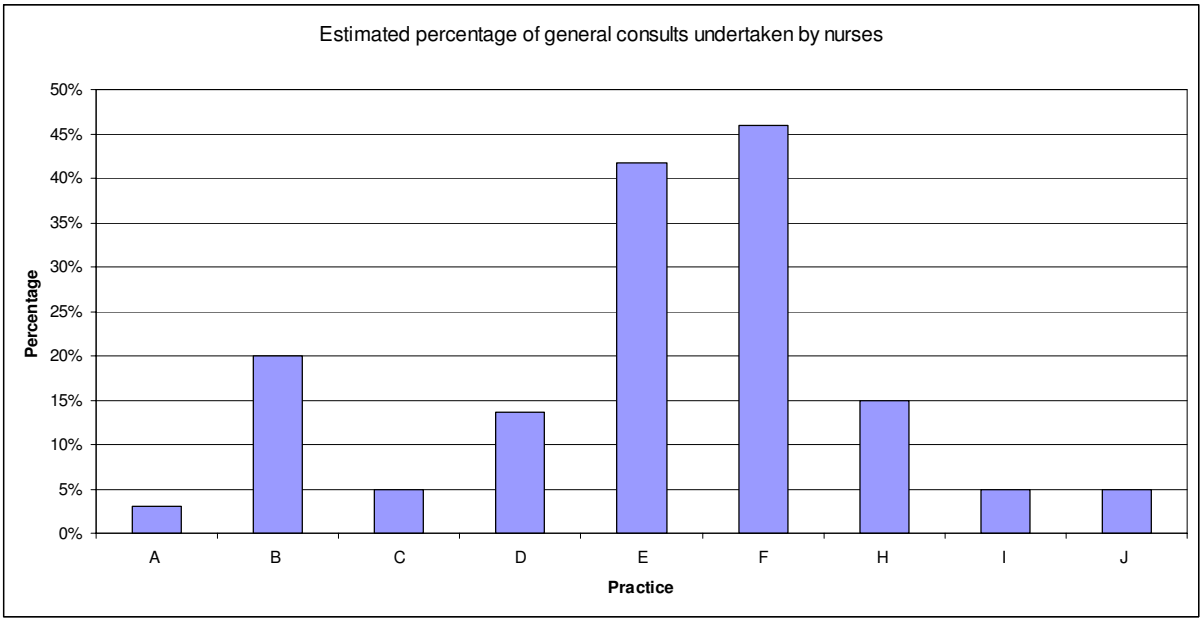
A key variable of interest was the percentage of general clinical consultations undertaken by nurses at each practice. Unfortunately data collection on this is variable between practices and had to be triangulated using three sources:

- the service utilisation report provided by each practice
- interviews (including information on nurse rostered time)
- the diary data.

Generally the service utilisation report was the preferred basis for estimated number of nurse consults, but this may have underestimated numbers where nurse consults were not being accurately coded / recorded.

Figure 4 shows the percentage of general consults (i.e. excluding immunisations and scripts) undertaken by nurses. The variation in practice is considerable, and is consistent with the interview data showing that nurses have considerably greater clinically autonomous roles in some practices.

Figure 4 : Percentage of general consults undertaken by nurses



Of interest, Practices E & F are very low cost access practices. Practice E is community owned and practice F is DHB owned.

4.4 Summary Findings

Overall, the case studies show considerable diversity in nursing roles, in charges for services (see Annex 2) and in the role that nurses play in practices. At the same time there is substantial commonality: nurses are providing the great majority of immunisations, they are leading the delivery

of proactive care for people with long term conditions and have an emergent role in some practices in managing acute/walk in patients.

5 Financial model outputs

"Annual income twenty pounds, annual expenditure nineteen, nineteen and six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery"
From David Copperfield, by Charles Dickens

This section describes the structure of and outputs from the activity based costing model.

5.1 Developing the financial model

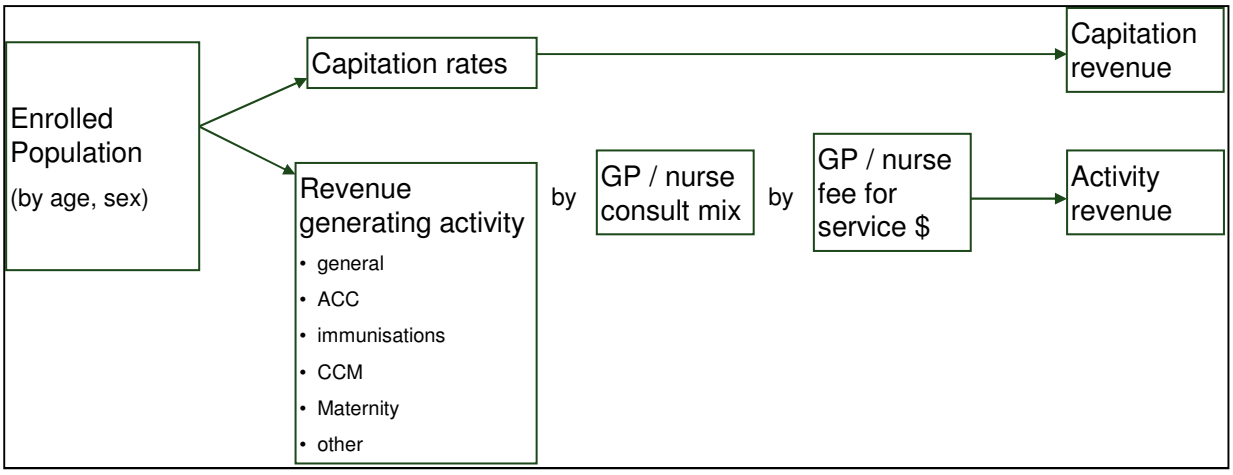
Review of practice financial and throughput information reveals a complex set of billable activity. In many cases there are more than 100 identified types of billable activity – each with their own copayment variables and potential for combinations of delivery by GPs and nurses. Ideally, every possible revenue line would be matched to a set of variables including average length of time for nurse/GP/both to provide the service, average revenue per unit of service and the 5 split between nurse and GP provision. This level of complexity is not possible to reproduce accurately in the time available, and would be complex to render in intelligible form. Therefore the revenue and activity streams were simplified considerably into the following categories of data:

Table 12: Revenue model categories

Category	Detail
Capitation revenue	2009/10 capitation rates by age group and gender times enrolled population less estimated clawbacks.
Activity revenue (FFS)	General consults < 6 years, number per year times average fee for service payments from all sources
	General consults 6+ years, number per year times average fee for service payments from all sources
	ACC consults, number per year times average fee for service payments from all sources (patient and ACC)
	Immunisations, number per year times average fee for service payments from all sources
	Chronic care/careplus consults, number per year times average fee for service payments from all sources (patient plus PHO/DHB)
	Scripts/repeat scripts, number per year times average fee for service payments from all sources
	Other activity (residual category including maternity, insurance medicals, minor surgery, etc), number per year times average fee for service payments from all sources

The key elements of the revenue model are set out in figure 5.

Figure 5: Revenue model



The revenue model is driven from the enrolled population – using estimated or actual activity rates for each service line multiplied by income per episode of care to calculate revenue. Capitation revenue is treated separately and not allocated to each activity stream.

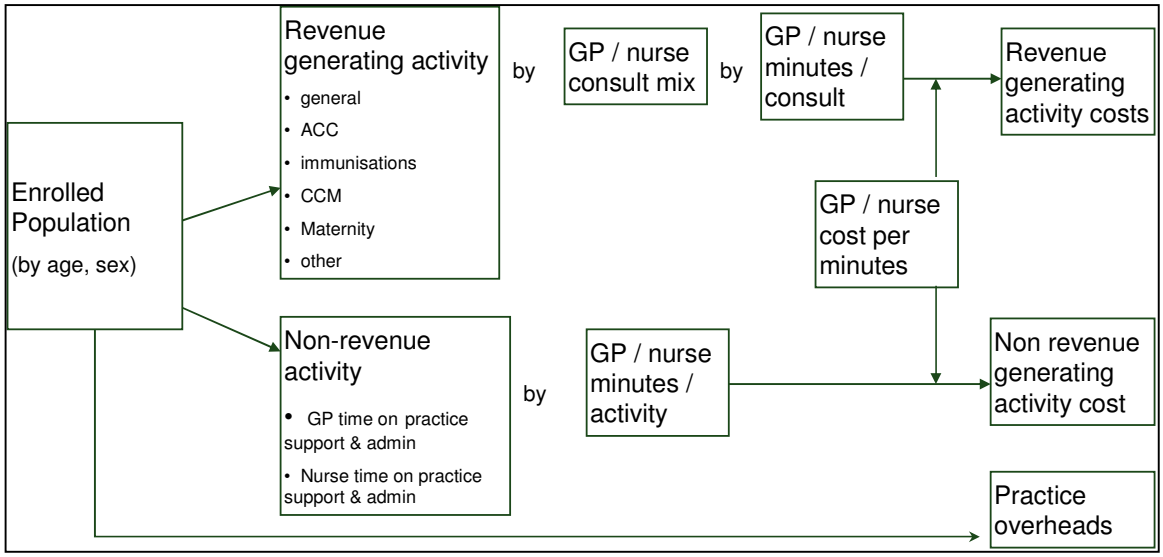
The cost aspect of the model uses the same activity categories and multiplies them by time per episode and labour cost per minute to derive total minutes and total cost. Overheads are kept centrally and not allocated to each expenditure stream.

Table 13: Cost model categories

Category	Detail
Practice overheads	Incorporating rent, utilities, supplies, and any other non labour costs
Admin & management	Incorporating non-clinical personnel costs such as reception, practice management administration, etc.
GP time	Hourly rate translated into a cost per 'productive' minute – after allowing for paid leave of all kinds and, where applicable, paid time for non-clinical activities under the MECA.
Nurse time	Hourly rate translated into a cost per 'productive' minute – after allowing for paid leave of all kinds.

The calculation of cost is shown schematically in figure 6.

Figure 6: Cost model



For each type of activity the model apportions the service volumes between GP only, nurse only or both (GP and nurse) options. The proportions can be adjusted in relation to each activity type, along with the fee obtainable and the time required for each consult.

The major objective of the model was not to exactly replicate practice finances, but to accurately simulate the direction of change in profit that would be associated with a change in the use of practice nurses. However, we wanted the model to deliver a rough approximation of actual practice costs and revenue in the NZ context. The model was tested by comparing the modelled costs, FTE and revenue with the actual results for various practices, and peer reviewed by an experienced practice manager. In general, outputs appear robust and compare fairly closely to actuals.

The financial model is built from a fixed population, with the ability to vary the nursing and GP staff time mix in order to maximise profit. The model is built to simulate the perspective of a practice owner.

The model takes no account of any possible flow on implications of service provision or of possible quality impacts.

5.1.1 Assumptions

Most of the financial model variables are able to be manipulated – to avoid making assumptions about the typical NZ practice cost structure. This facilitates sensitivity analysis of the various assumed parameters.

An implicit assumption is that nurse and GP time is, to some extent, substitutable in relation to general consultations.

This version of the model assumes that population is fixed and that nurse and GP labour is flexible – ie that additional FTEs can be sourced.

The literature (e.g. Hollinghurst et al 2006) suggests that a proportion of nurse consults are likely to require GP time as well as nurse time, whereas the same consult might have previously been provided entirely by the GP. This study did not provide evidence for this either way. However, to cover this possibility we have incorporated in the financial model an assumption that as the number of general

consults increases, the number of consults requiring both a GP and nurse consult also increases. The percentage increase is user defined, but the default setting is 20% - i.e. that 1 in 5 nurse consults will require a GP consult.

5.2 General Practice cost and revenue structure

The activity based costing model is intended to be customised to take account of the characteristics of any specific primary care practice. However, we have also taken the overall results of the diary duration data, copayment information and other relevant variables from both the case studies and the literature review (particularly the outputs of the 2002 and 2006 IPAC studies), and used them to develop a composite practice model with typical outputs. The outputs of the model for this 'typical' practice are shown below.

The reader should note that the composite model may not be generalisable to any specific primary care practice. It is modelled as a Free Under 6, but not Very Low Cost Access practice.

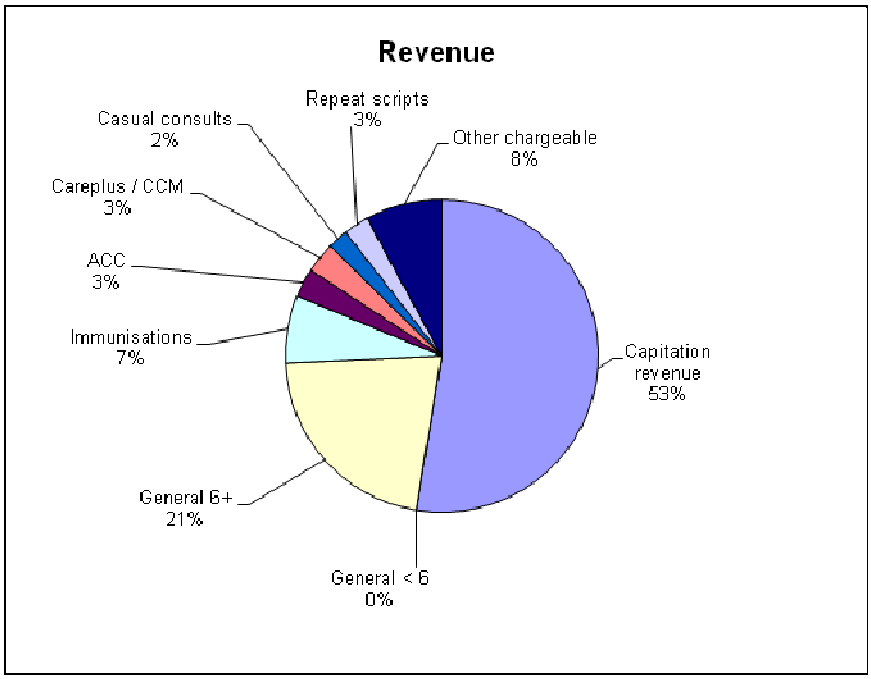
Key characteristics of the composite model are shown below.

Table 14: Composite model key characteristics

	Visits/pp	Allocating work to Doctor/Nurse			Revenue / FFS			Clinical time / episode		Both GP & Nurse	
Activity	Year	GP	Nurse	Both	GP	Nurse	Both	GP	Nurse	GP	Nurse
General < 6	3.97	86%	5%	9%	$ -	$ -	$ -	14.00	20.00	12.00	20.00
General 6+	2.44	86%	5%	9%	$ 27.00	$ 9.00	$ 27.00	14.00	20.00	12.00	20.00
ACC	0.37	86%	5%	9%	$ 54.00	$ 23.38	$ 54.00	14.00	20.00	12.00	20.00
Immunisations	0.39	5%	95%	5%	$ 20.16	$ 20.16	$ 20.16	14.00	14.00	14.00	14.00
CCM/careplus	0.13	15%	80%	9%	$ 65.00	$ 65.00	$ 65.00	16.00	25.00	16.00	25.00
scripts	0.58	80%	0%	20%	$ 10.00	$ 10.00	$ 10.00	5.00	5.00	3.00	5.00
casual	0.16	86%	5%	9%	$ 45.00	$ 20.00	$ 45.00	14.00	20.00	12.00	20.00
other	0.40	86%	5%	9%	$ 47.62	$ 47.62	$ 47.62	20.00	20.00	12.00	20.00
Total	4.67										

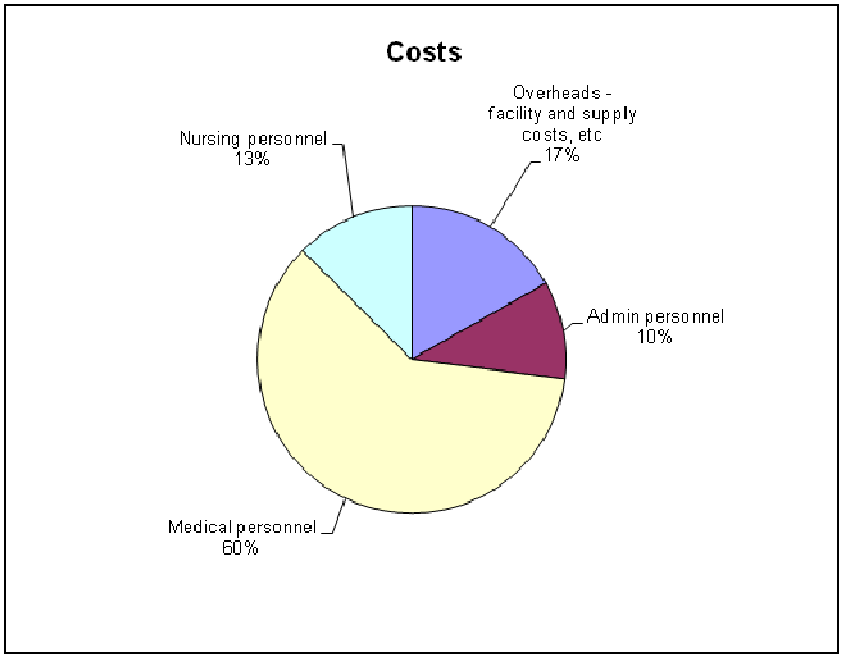
The composite practice reflects, in many ways, the typical NZ practice as revealed in the IPAC survey, rather than being the average of the case studies in this report, in order to make the results more descriptive of the median NZ practice.

Figure 7 : Practice revenue structure (composite model)



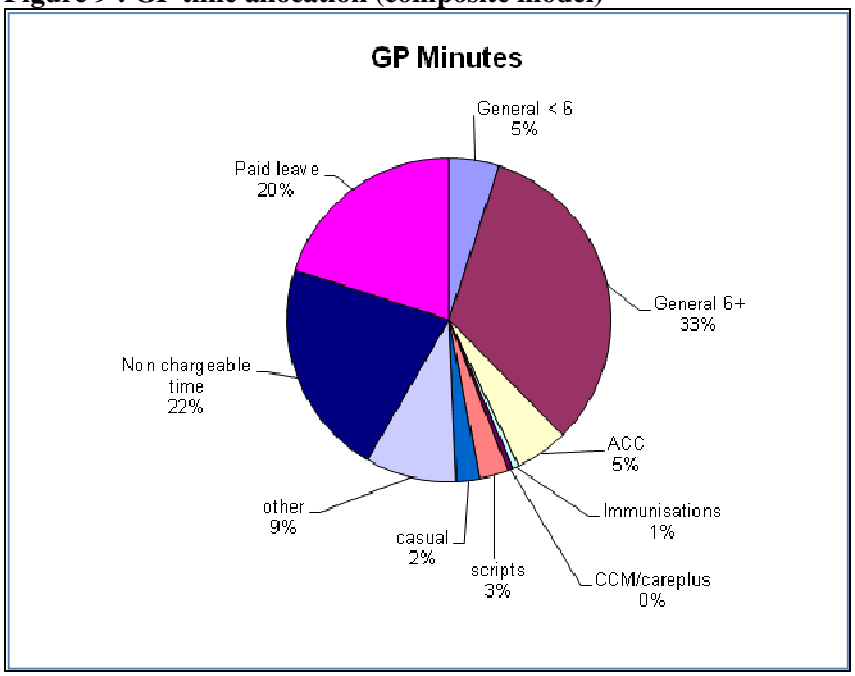
Capitation revenue makes up over 50% of total revenue, with general consult fees being the next most important category. Income from all other categories accounts for around 25% of income.

Figure 8 : Practice cost structure (composite model)



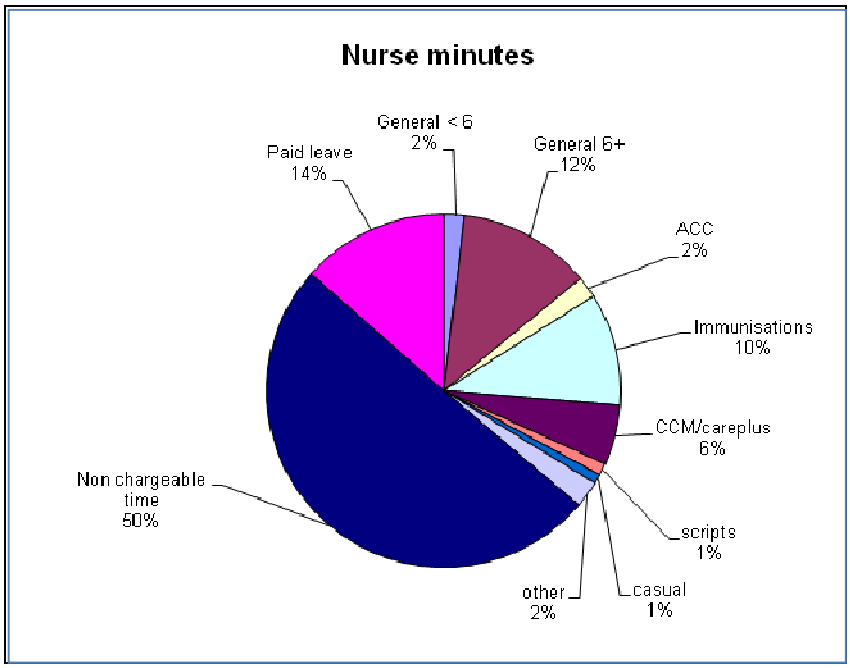
Medical and nursing costs make up around 75% of total costs.

Figure 9 : GP time allocation (composite model)



The bulk of GP time is spent providing clinical consults, the majority of which are for undifferentiated consults for those aged 6+.

Figure 10 : Nurse time allocation (composite model)



Nursing time in the composite model is allocated to a greater extent to non face-to-face consult activity – although this will vary considerably according to the role nurses play in a specific practice.

5.3 Profit/loss impact of task substitution

Whether greater utilisation of nursing versus GP time on an activity would result in increased or reduced profit is highly sensitive to a small number of variables:

- nurse cost per minute relative to GP cost minute
- nurse consult duration relative to GP consult duration
- nurse consult revenue relative to GP consult revenue
- % of nurse consults requiring GP time.

The impact of these is discussed in more detail below.

5.3.1 Nurse cost / GP cost

The ratio between nursing cost per minute and GP cost per minute is a key variable in determining the cost effectiveness of task substitution. In the composite model, an assumed GP hourly rate of $80 plus 5% for CME, etc costs, and allowing for all kinds of paid leave, generates a cost per working minute of $1.75. A nursing hourly rate of $29 per hour generates a cost per worked minute of $0.59 per worked minute. Hence nurse cost per minute is 34% of GP cost per minute. Given this ratio, all other things being equal, it will always be more cost effective to use a nurse to deliver a given service. For instance, every time a GP gives an immunisation taking (say) 10 minutes, it costs the practice some $11.60 more in labour costs to deliver the vaccine than it would have had the nurse delivered it within the same timeframe (i.e. GP cost (labour only) = 10 times $1.75 = $17.50; nurse cost = 10 times $0.59 = $5.90; difference = $11.60).

The effective cost per minute of GP times is affected by leave variables, and specifically by employment provisions that provide for additional nonclinical time. An allowance of, for instance, 20% additional non-clinical time effectively increases the cost per worked minute by more than 20%.

The greater the differential between GP and nurse salaries, the greater the likely cost effectiveness of task substitution.

5.3.2 Nurse consult duration relative to GP consult duration

The nurse/GP duration ratio mitigates (or exacerbates) the impact of the cost per minute ratio. If the activity would take longer when delivered by a nurse then this will reduce the cost effectiveness of task substitution. If, for instance, nurses on average take 2 minutes longer to deliver an immunisation than GPs, then the cost per activity calculation changes as follows: GP cost = 10 times $1.75 = $17.50; nurse cost = 12 times $0.59 = $7.08; difference = $10.42.

The closer the average nurse duration is to the average GP duration for a given activity, the more likely it is that task substitution is cost effective for that activity.

5.3.3 Nurse consult revenue relative to GP consult revenue

The relative ability to command a fee (either from the patient or from a third party funder, or both) is a third major variable in understanding the financial impact of switching activity between GPs and practice nurses. For instance, if ACC pays a fee of $32 for a given consult type if provided by a GP, and $15 for that consult if provided by a nurse, then this will reduce the cost effectiveness of task substitution significantly.

One of the impacts of the low fee regime associated with the Very Low Cost Access practices is that it can reduce the gap between GP copayments and nurse copayments, thus making it more cost effective to use nurses to deliver services.

5.3.4 Proportion of nurse consults requiring GP time

The fourth variable is the probability that some nurse consults will generate additional GP consults (e.g. for second opinion, to prescribe medication, etc). The potential savings from the lower cost of nurse time needs to be balanced against additional time spent by the GP on nurse-plus-GP consults. Our baseline model assumes that 20% of nurse consults will trigger a supplementary GP consult.

5.3.5 Impact of use of nurses or doctors or both in relation to specific tasks

The table below shows the marginal clinical labour only net profit/loss per episode using the composite model parameters, and for comparison, practice F – a very low cost access, high cost practice. The reader should note the table does not include capitation revenue or overhead costs and so is not a true profit or loss calculation. Hence the loss in the under 6 service category is not a true loss in that the capitation revenue received for the under 6's has not been allocated to offset the cost of providing the service. Similarly the cost of administration and clinical supplies, etc has not been attributed to the ACC service line, which therefore shows a profit. The composite model includes only a low ($9 per consult) charge for general nurse consults – which results in the nurse option being less profitable in many of the service lines – whereas the nurse option is more profitable in most lines for Practice F.

Table 15: Clinical labour only marginal profit / loss per episode of care

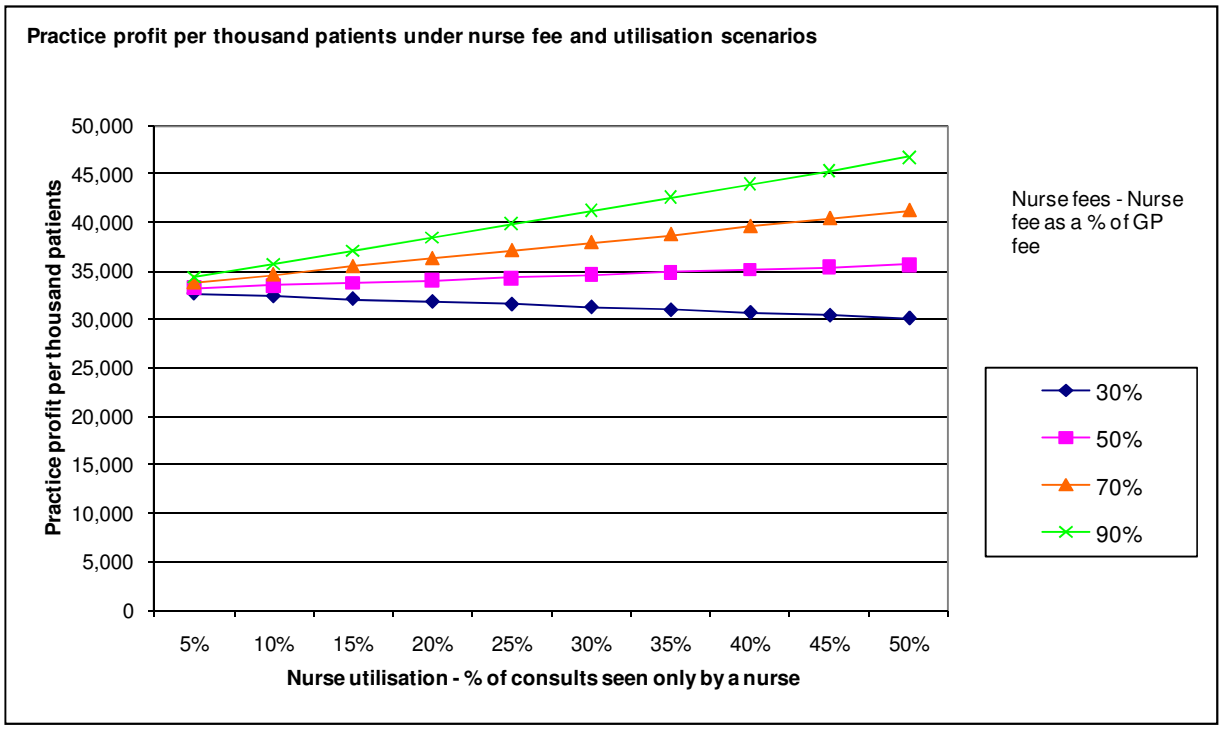
	Composite model			Practice F		
Service type	**GP**	**Nurse**	**Both**	**GP**	**Nurse**	**Both**
General < 6	-$ 24.5	-$ 11.7	-$ 32.7	-$ 49.2	-$ 10.2	-$ 37.9
General 6+	$ 2.5	-$ 2.7	-$ 5.7	-$ 36.8	$ 1.8	-$ 25.6
ACC	$ 29.5	$ 11.7	$ 21.3	-$ 8.7	$ 12.1	$ 2.5
Immunisations	-$ 4.3	$ 11.9	-$ 12.6	-$ 31.3	$ 9.4	-$ 41.9
CCM/ careplus	$ 37.0	$ 50.3	$ 22.3	-$ 14.4	$ 42.0	-$ 26.2
Scripts	$ 1.3	N.A.	$ 1.8	-$ 6.5	$ 4.2	-$ 3.9
Casual	$ 20.5	$ 8.3	$ 12.3	-$ 19.2	$ 24.8	-$ 7.9
Other	$ 12.6	$ 35.9	$ 20.7	-$ 1.6	$ 37.5	$ 22.2

5.3.6 Practice profit per 1000 enrolled population

We developed scenarios for the composite model and for each of the practice case studies to understand the impact of changing the percentage of activities undertaken by practice nurses on practice profit and loss at different nurse fee levels. The consult types affected by the nurse utilisation variable are the general, ACC, casual and 'other' categories – not the immunisations, scripts or CCM/careplus categories.

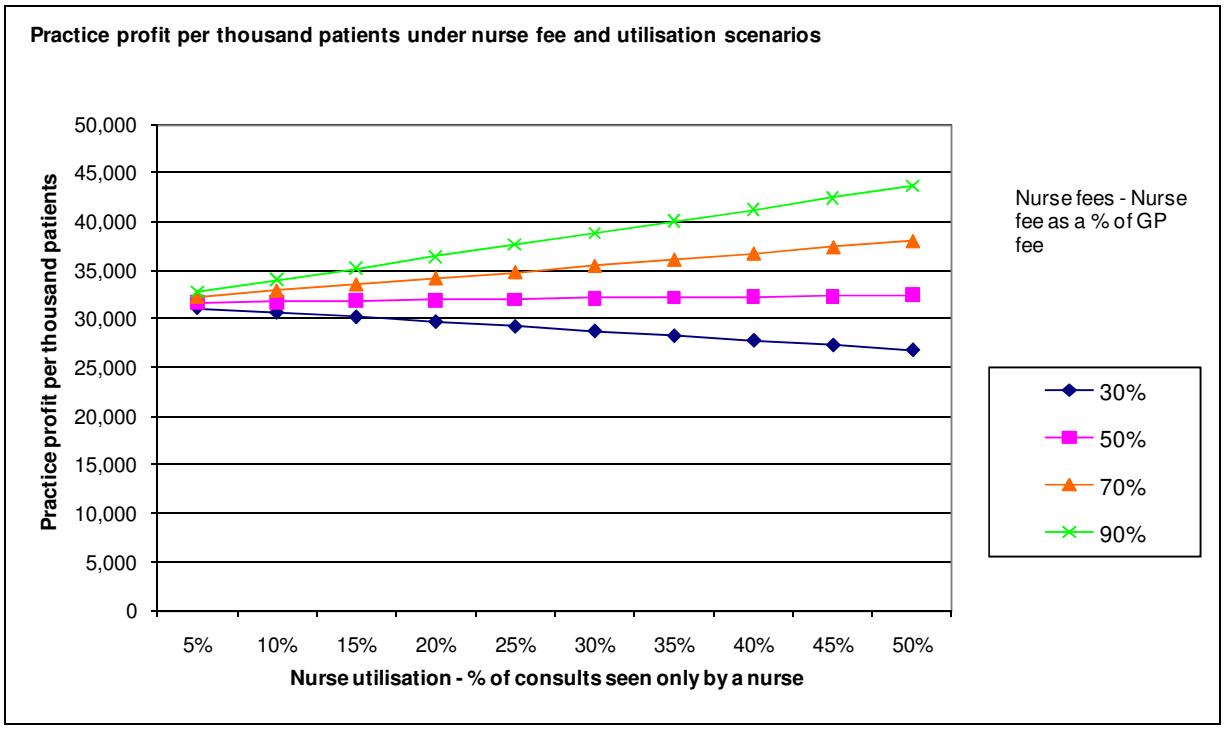
Where the line gradient is positive then increasing use of nurses will result in improved financial returns for the practice owner. Where it is negative then increased nurse utilisation will result in reduced profitability for the practice owner. The gradient is positive in all very low cost access practices reviewed.

Figure 11 : Composite model



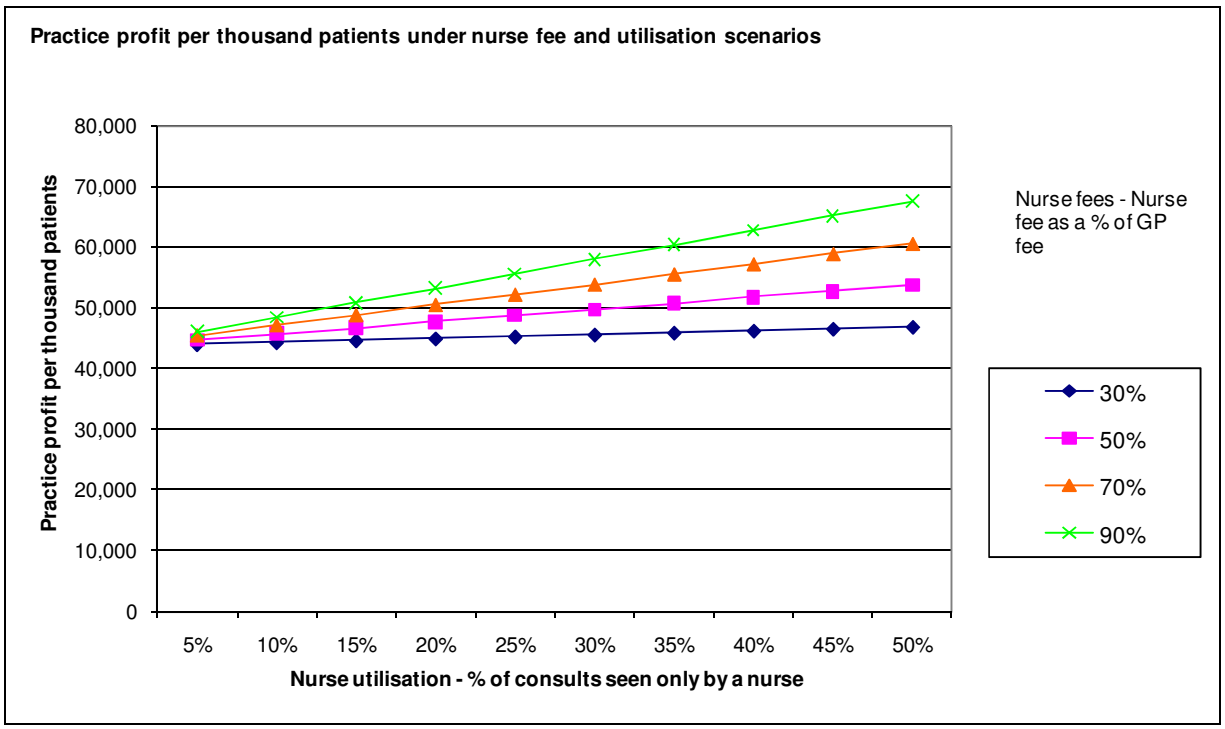
In the composite model the impact of switching to additional nurse consults is highly sensitive to the ratio between the nurse fee and the GP fee. This is also the case in most of the case study practices. In some cases the amount of revenue per nurse visit as a percentage of the GP visit will determine whether the practice makes a profit overall or not.

Figure 12 : Practice A



The pattern in practice A is very close to that in the composite model.

Figure 13 : Practice B



Practices B & C are both better off financially using more nursing time.

Figure 14 : Practice C

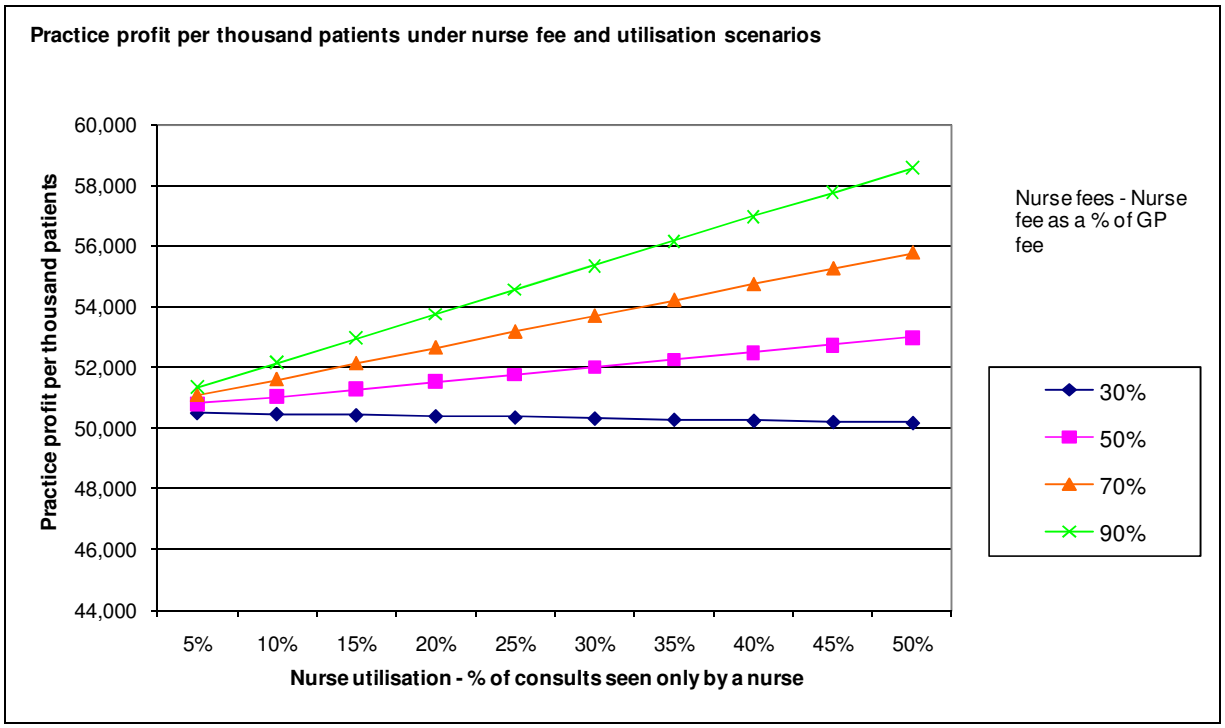
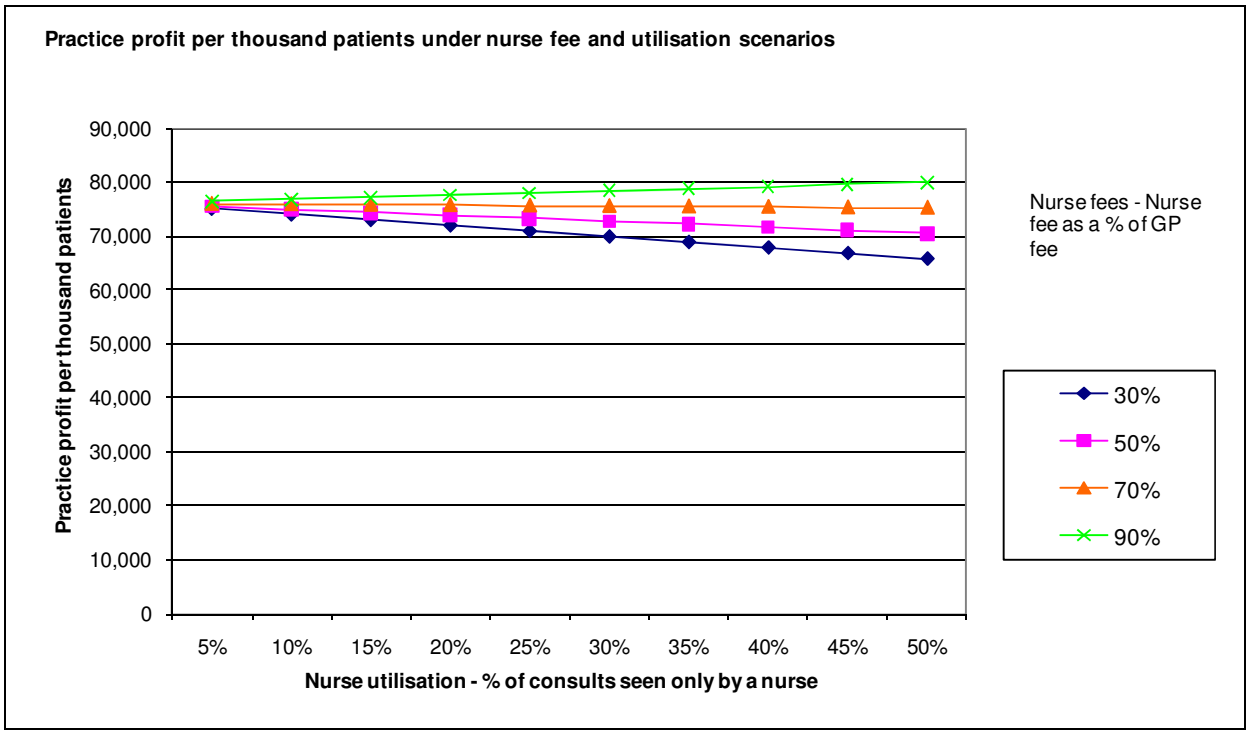
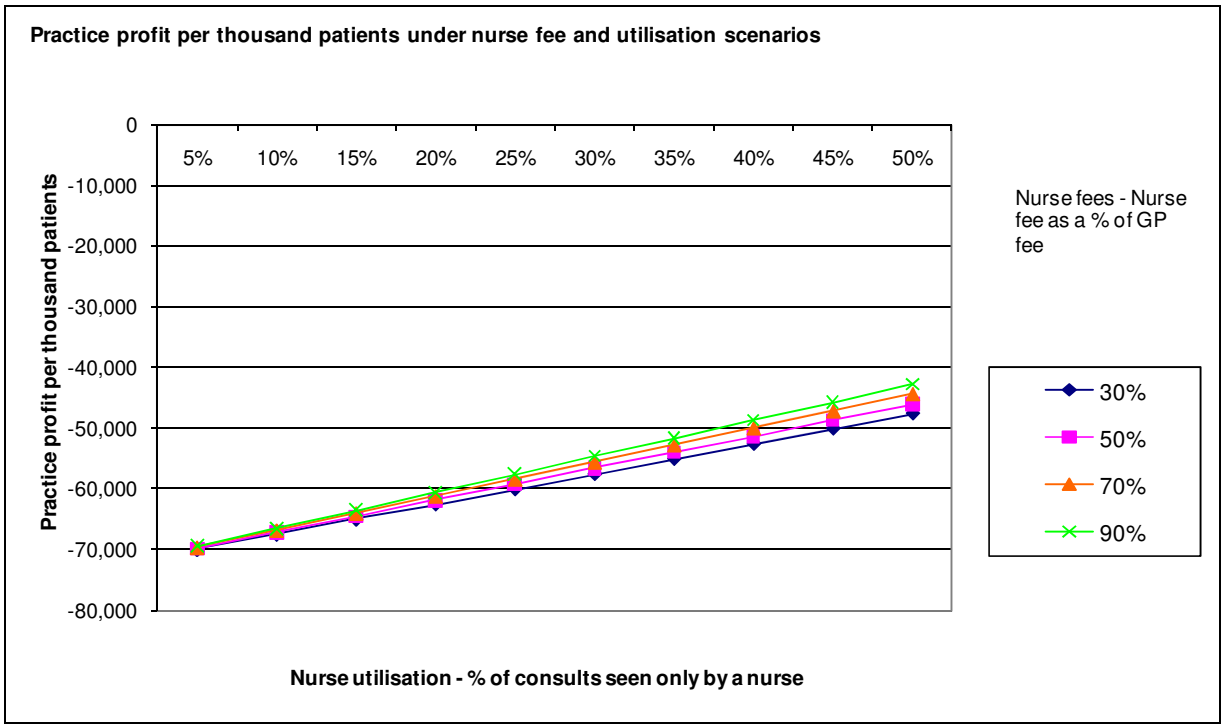


Figure 15 : Practice D



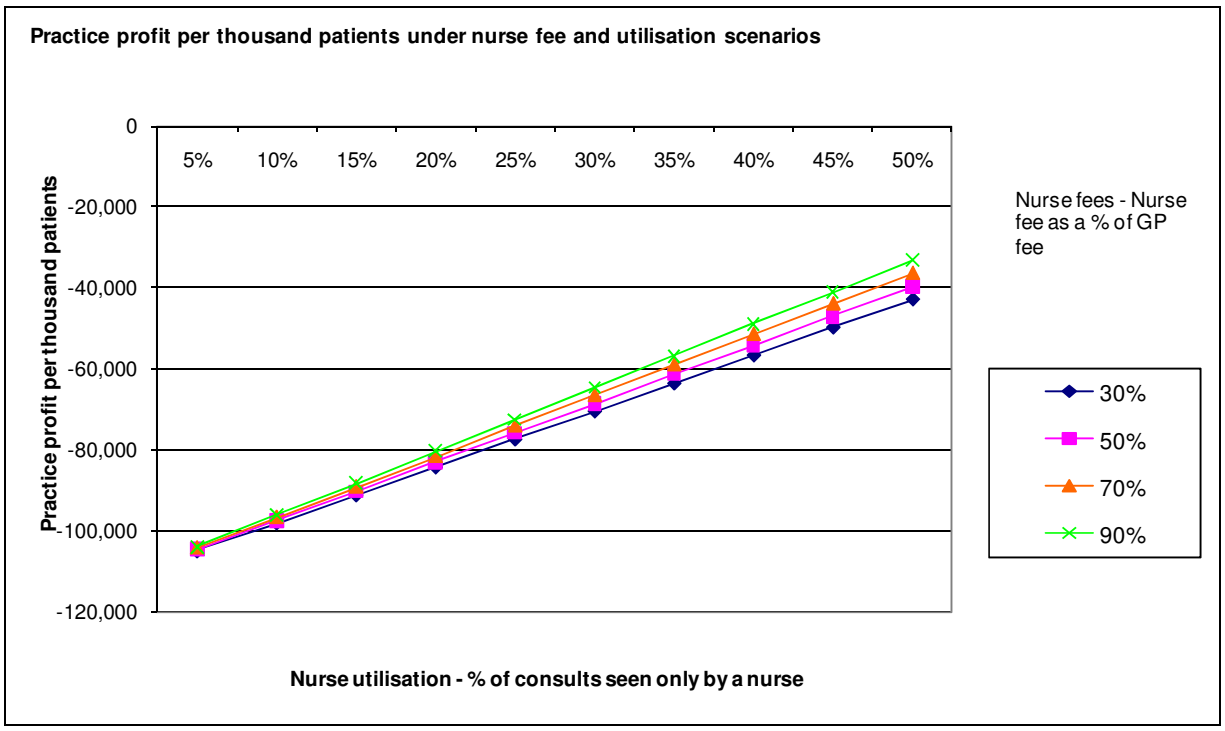
Practice D has relatively short GP consult durations and lower than average GP cost per clinical minute, hence it is better off financially not using significant nurse consult time, unless nurse consults fees are at around 90% of the GP consult fees.

Figure 16 : Practice E



Practices E and F have long and expensive GP consults on average, and are better off financially making maximum use of nursing time.

Figure 17 : Practice F



Practice H is a very low cost access practice with a relatively high cost per GP minute – hence it gains from increased use of practice nurses.

Figure 18 : Practice H

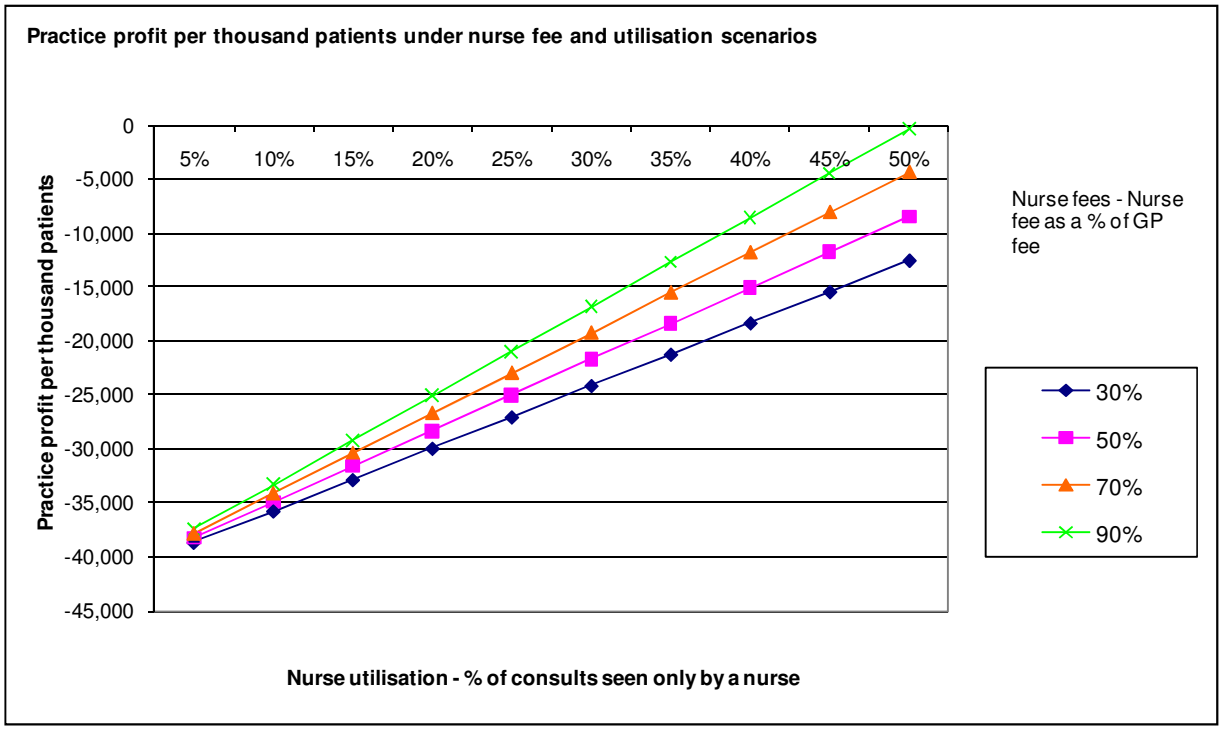
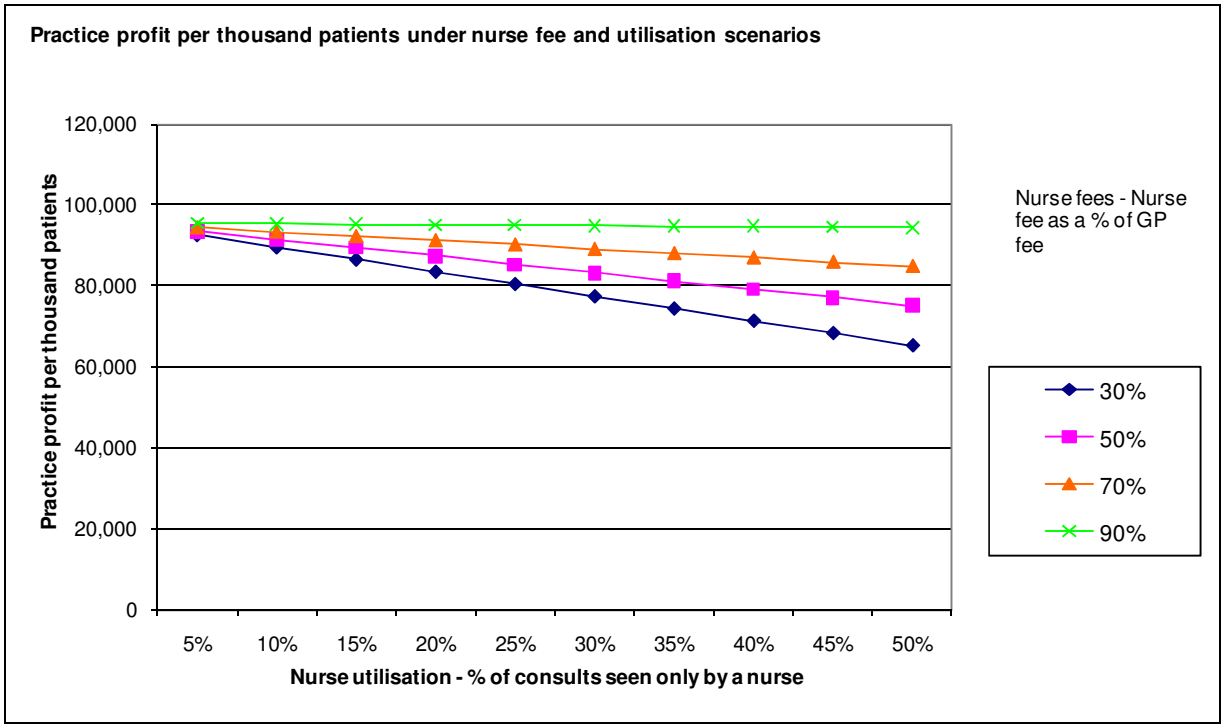
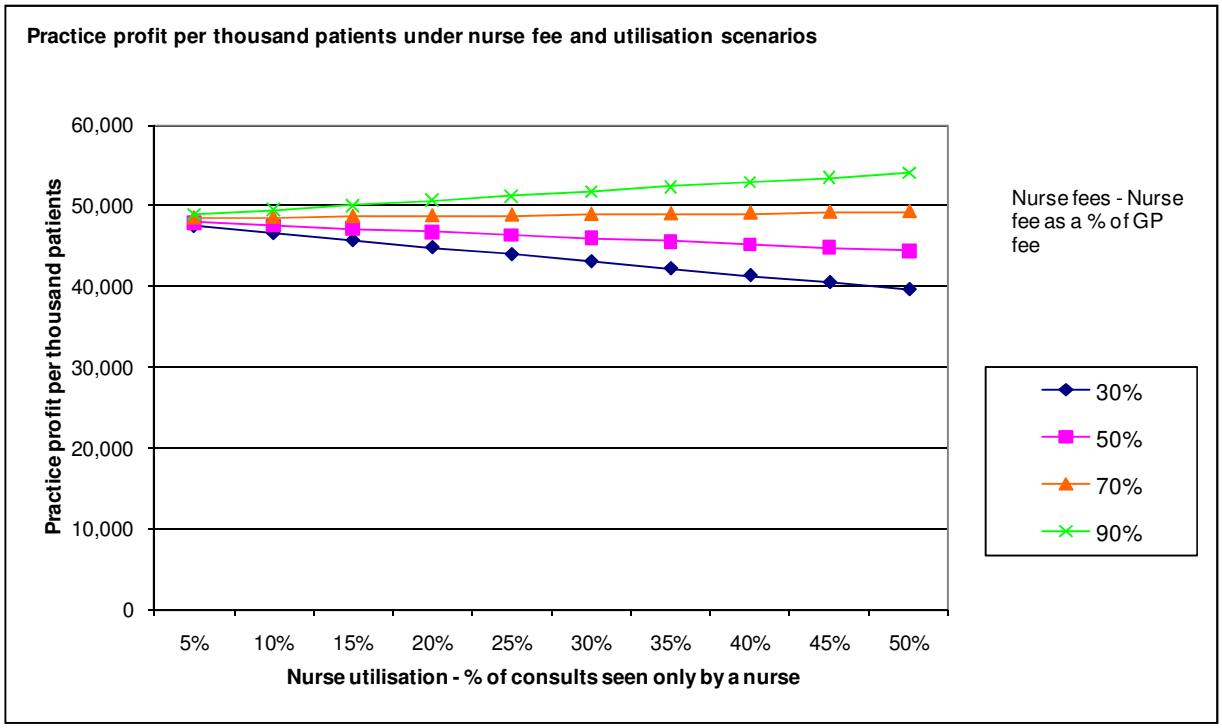


Figure 19 : Practice I



Practice I is not low cost access, and has relatively low cost GP time and higher cost nursing time; this practice is better off financially not using nurses to see general consults.

Figure 20 : Practice J



Practice J shows a typical spread – whereby the cost effectiveness of general adult task substitution is dependent on the ratio of nursing fees to GP fees.

6 Conclusions

6.1 Nurses can provide a broad scope of clinical services

It is clear that practice nurses can, and in some practices in NZ do, provide a broad set of primary care services, including undifferentiated general consultations. Robust data from practices E & F show that nurses there are providing in the order of 40 – 50% of the total clinical consultations. We have no information from this study on the relative quality of nurse versus GP consultations, but the most recent Cochrane review indicates equivalent or superior outcomes for nurse consults in primary care.

Actual nursing roles in primary care vary markedly between practices as indicated both in the proportion of nurse consults and in the breadth of the nursing role revealed in interviews.

Noted barriers to a broader scope of practice include insufficient facility space, insufficient nurses, nursing experience/skills and interest, and consumer expectations. The expectations and assumptions of the GPs in the practice are also likely to play a significant role.

6.2 Financial impact is variable

The actual financial impact for a practice owner of substituting more nursing time for GP time is highly dependent on a small number of variables, specifically:

- nurse cost per clinical minute relative to GP cost per clinical minute
- nurse consult duration relative to GP consult duration
- nurse consult revenue relative to GP consult revenue
- % of nurse consults requiring supplementary GP time.

For some practices, increasing the proportion of nurse consults and reducing GP consults, without changing other parameters, would result in significantly reduced profitability. For others the opposite applies.

One of the variables most amenable to practice control is the ratio between nurse consult revenue and GP consult revenue. That is, practices can increase their copayment fees for nurse consults (and/or reduce their fees for GP consults), in order to improve the cost effectiveness of task substitution. In most non-very low cost access practices nurse fees need to be at 50% or more of GP fees for substitution to be worthwhile.

Modelling indicates that task substitution will almost always be financially advantageous in very low cost access practices.

6.3 Limitations & opportunities for further development

This study suffered from a number of limitations, including:

- Inability to distinguish between different types of 'both' consults – i.e. those that commenced with a GP review and went on to require nursing support – e.g. for a wound dressing, versus those that commenced with a nursing consult and went on to require GP input to say a prescription. More accurate understanding of the duration impact of these two different pathways would allow more accurate modelling of task substitution effects.

- Consult diaries did not differentiate older adults – who might be expected to have different duration profiles.
- Limited sample – replication with a larger group of practices would improve ability to generalise findings.
- Further activity differentiation – the current model bundles minor surgery, maternity, occupational health, etc into a residual 'other' category – ability to differentiate these based on duration, fee, etc would improve modelling accuracy.
- Assumed skill homogeneity – the model ignores differences in individual clinical competencies – in practice, task substitution is more likely to be feasible where nurses are more experienced and have enhanced training.
- Fixed population – the current model assumes the population is fixed and labour flexible. In some areas of NZ GP numbers are relatively fixed but the ability to increase enrolled population exists – hence the ability to model this would be useful. Further in some areas it is difficult to attract nurses.

6.4 Funding policy implications

Service funding arrangements that involve the same remuneration for the same task regardless of who provides the service are most likely to result in increased use of nurse time. This can be seen in:

- immunisations, which are paid at a constant rate regardless of provider, and which are mainly provided by practice nurses
- careplus/chronic condition management episodes of care, which (depending on the PHO) are often paid at a fixed price per visit and are often provided by practice nurses
- telephone calls / recalls / lab results calls, which are usually not specifically remunerated on a fee for services basis, and which are often provided by practice nurses
- acute/on-the-day face to face consults in very low cost access practices, where the average per episode fee is low, are likely to be provided primarily by practice nurses with support from GPs as required.

Therefore policies to increase utilisation of nurses in a for profit environment could include a same-fee-regardless-of-provider policy - which can also be achieved by a no fee (capitation only) approach.

Increased awareness of the financial contribution of nursing might also be useful in changing perceptions and assumptions. We note that in some practices nurses made a greater contribution to practice activity based revenue than GPs.

6.5 Implications for practice owners

Practice owners will face many constraints, including availability and skills of the local workforce, and the difficulty in changing long established business processes. Nonetheless, the opportunity exists for practices to consider new ways of providing clinical services by making best use of, and extending practice nursing skills. In many cases, an appropriate copayment regime will make transfer of a wide range of clinical tasks from GPs to nurses cost effective. Of interest is the sensitivity of profit to both consult duration, and the percentage of time spent on clinical activity – small changes in either of these can mean the difference between a significant loss and a significant profit.

Annex 1: Work diary outputs

Table 16 : GP consult duration : Mean

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	All practices
Overall	18.1	16.2	12.4	14.8	20.6	18.0	15.4	17.1	15.8
Adult	-	17.7	13.2	15.1	20.5	18.3	15.4	-	16.3
Child	-	11.7	10.6	14.0	21.7	15.5	15.0	-	12.3
Enrolled	19.0	16.1	12.3	14.9	20.2	18.1	15.5	-	15.9
Casual	12.5	25.0	12.9	10.0	30.0	16.0	15.0	-	14.0
ACC	17.0	16.4	12.8	13.7	10.0	17.0	30.0	-	15.3
Non-ACC	19.2	16.2	12.3	14.9	21.0	18.2	14.8	-	15.8
Chronic	10.0	-	-	14.5	23.5	25.3	15.0	-	19.8
Non-Chronic	19.8	16.2	12.4	14.8	18.7	17.8	15.4	-	15.6
Also saw nurse – yes	-	15.4	13.3	13.6	60.0	10.0	22.5	-	15.1
Also saw a nurse - no	-	16.3	12.3	15.1	19.0	18.2	14.8	-	15.4
Nurse only - yes	-	0.0	7.6	9.3	-	16.2	15.0	-	13.2
Nurse only - no	-	16.2	12.6	15.1	20.6	18.4	15.4	-	15.6

Table 17 : GP consult duration : Median

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	-	15.0	12.0	15.0	20.0	15.0	15.0	-	-	15.0
Adult	-	15.0	13.0	15.0	20.0	15.0	15.0	-	-	15.0
Child	-	10.0	10.0	15.0	20.0	15.0	15.0	-	-	10.0
Enrolled	-	15.0	12.0	15.0	20.0	15.0	15.0	-	-	15.0
Casual	-	25.0	11.5	10.0	30.0	16.0	15.0	-	-	15.0
ACC	-	15.0	12.5	10.0	10.0	15.0	30.0	-	-	15.0
Non-ACC	-	15.0	12.0	15.0	20.0	15.0	15.0	-	-	15.0
Chronic	-	-	-	14.5	20.0	20.5	15.0	-	-	20.0
Non-Chronic	-	15.0	12.0	15.0	15.0	15.0	15.0	-	-	15.0
Also saw nurse – yes	-	15.0	10.0	15.0	60.0	10.0	22.5	-	-	15.0
Also saw a nurse - no	-	15.0	12.5	15.0	20.0	15.0	15.0	-	-	15.0
Nurse only - yes	-	0.0	9.0	10.0	-	15.0	15.0	-	-	15.0
Nurse only - no	-	15.0	13.0	15.0	20.0	15.0	15.0	-	-	15.0

Table 18 : GP consult duration : Minimum duration

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0
Adult	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0
Child	-	5.0	5.0	6.0	15.0	5.0	15.0	-	-	5.0
Enrolled	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0
Casual	-	10.0	5.0	10.0	30.0	5.0	15.0	-	-	5.0
ACC	-	10.0	5.0	6.0	10.0	5.0	30.0	-	-	5.0
Non-ACC	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0
Chronic	-	-	-	12.0	10.0	20.0	15.0	-	-	10.0
Non-Chronic	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0
Also saw nurse – yes	-	5.0	5.0	6.0	60.0	10.0	15.0	-	-	5.0
Also saw a nurse - no	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0
Nurse only - yes	-	0.0	5.0	6.0	0.0	5.0	15.0	-	-	5.0
Nurse only - no	-	5.0	4.0	5.0	10.0	1.0	10.0	-	-	1.0

Table 19 : GP consult duration : Maximum duration

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	-	40.0	45.0	37.0	60.0	55.0	30.0	-	-	60.0
Adult	-	40.0	45.0	37.0	60.0	55.0	30.0	-	-	60.0
Child	-	25.0	18.0	20.0	30.0	40.0	15.0	-	-	40.0
Enrolled	-	40.0	25.0	37.0	60.0	55.0	30.0	-	-	60.0
Casual	-	40.0	45.0	10.0	30.0	27.0	15.0	-	-	45.0
ACC	-	30.0	20.0	25.0	10.0	30.0	30.0	-	-	30.0
Non-ACC	-	40.0	45.0	37.0	60.0	55.0	15.0	-	-	60.0
Chronic	-	-	-	17.0	60.0	40.0	15.0	-	-	60.0
Non-Chronic	-	40.0	45.0	37.0	30.0	55.0	30.0	-	-	55.0
Also saw nurse – yes	-	30.0	45.0	17.0	60.0	10.0	30.0	-	-	60.0
Also saw a nurse - no	-	40.0	25.0	37.0	30.0	55.0	15.0	-	-	55.0
Nurse only - yes	-	0.0	10.0	11.0	0.0	55.0	15.0	-	-	55.0
Nurse only - no	-	40.0	45.0	37.0	60.0	55.0	30.0	-	-	60.0

Table 20 : GP consult : Number of visits

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	57	147	156	80	25	102	26	80	-	673
Adult	-	112	109	60	22	92	23	-	-	418
Child	-	35	47	20	3	10	3	-	-	118
Enrolled	49	144	116	79	24	100	19	-	-	531
Casual	8	3	40	1	1	2	7	-	-	62
ACC	5	18	24	3	1	15	1	-	-	67
Non-ACC	44	129	132	77	24	87	25	-	-	518
Chronic	4	0	0	2	10	4	2	-	-	22
Non-Chronic	45	147	156	78	15	98	24	-	-	563
Also saw nurse – yes	-	12	16	15	1	2	2	-	-	48
Also saw a nurse - no	-	135	140	65	24	100	24	-	-	488
Nurse only - yes	-	0	7	4	0	17	2	-	-	30
Nurse only - no	-	147	149	76	25	85	24	-	-	506

Table 21 : Nurse consult duration : Mean

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	8.3	17.1	9.2	22.6	21.2	18.5	18.9	16.6	19.7	15.9
Adult	9.0	17.4	9.5	24.2	22.0	18.6	19.1	-	20.4	15.9
Child	6.1	15.7	7.7	18.9	19.1	18.2	16.0	-	16.4	14.4
Enrolled	-	16.7	9.2	23.1	20.7	18.3	18.8	-	19.9	16.0
Casual	-	24.6	8.9	10.0	31.7	20.9	20.0	-	17.0	19.0
ACC	-	19.7	9.3	0.0	13.5	15.0	30.0	-	23.3	17.7
Non-ACC	-	16.7	9.2	22.6	21.5	18.7	18.5	-	19.3	16.1
Chronic	-	14.2	13.0	52.5	19.5	21.1	28.3	29.2	23.3	24.9
Non-Chronic	-	17.2	9.1	18.0	23.0	18.3	17.3	-	18.3	15.1
Also saw GP– yes	-	20.7	8.3	33.2	14.9	19.6	20.8	-	21.3	17.6
Also saw a GP- no	-	14.5	9.6	15.6	25.6	18.3	18.0	-	19.0	15.6
Immunisation- yes	-	17.2	9.3	21.3	26.9	19.1	15.8	-	18.8	17.8
Immunisation - no	-	17.1	9.2	22.8	19.6	18.5	19.2	-	19.8	16.0

Table 22 : Nurse consult duration : Median

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	10.0	15.0	10.0	17.5	20.0	15.0	15.0	-	15.0	15.0
Adult	10.0	15.0	10.0	22.0	20.0	15.0	15.0	-	15.0	15.0
Child	10.0	15.0	7.5	15.0	20.0	15.0	15.0	-	15.0	15.0
Enrolled	-	15.0	5.0	20.0	20.0	15.0	15.0	-	15.0	15.0
Casual	-	20.0	10.0	10.0	30.0	18.0	15.0	-	15.0	15.0
ACC	-	15.0	10.0	0.0	13.5	15.0	30.0	-	17.5	15.0
Non-ACC	-	15.0	7.5	17.5	20.0	15.0	15.0	-	15.0	15.0
Chronic	-	15.0	10.0	57.5	17.0	22.5	30.0	-	30.0	20.0
Non-Chronic	-	15.0	10.0	14.0	20.0	15.0	15.0	-	15.0	15.0
Also saw GP– yes	-	15.0	10.0	30.0	13.5	20.0	15.0	-	15.0	15.0
Also saw a GP- no	-	15.0	10.0	10.0	30.0	15.0	15.0	-	15.0	15.0
Immunisation- yes	-	15.0	10.0	22.5	30.0	15.0	15.0	-	15.0	15.0
Immunisation - no	-	15.0	5.0	17.5	19.5	15.0	15.0	-	15.0	15.0

Table 23 : Nurse consult duration : Minimum

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J
Overall	1.0	5.0	5.0	1.0	1.0	4.0	5.0	-	5.0
Adult	1.0	5.0	5.0	1.0	1.0	4.0	5.0	-	5.0
Child	2.0	7.5	5.0	10.0	1.0	5.0	10.0	-	15.0
Enrolled	-	5.0	5.0	1.0	1.0	4.0	5.0	-	5.0
Casual	-	5.0	5.0	10.0	20.0	10.0	15.0	-	10.0
ACC	-	5.0	5.0	0.0	12.0	10.0	30.0	-	15.0
Non-ACC	-	5.0	5.0	1.0	1.0	4.0	5.0	-	5.0
Chronic	-	6.0	5.0	30.0	1.0	5.0	15.0	-	10.0
Non-Chronic	-	5.0	5.0	1.0	1.0	4.0	5.0	-	5.0
Also saw GP– yes	-	5.0	5.0	10.0	1.0	5.0	5.0	-	10.0
Also saw a GP- no	-	5.0	5.0	1.0	7.0	4.0	10.0	-	5.0
Immunisation- yes	-	7.5	5.0	5.0	20.0	10.0	10.0	-	15.0
Immunisation - no	-	5.0	5.0	1.0	1.0	4.0	5.0	-	5.0

Table 24 : Nurse consult duration : Maximum

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J
Overall	20.0	60.0	45.0	65.0	61.0	47.0	50.0	-	45.0
Adult	10.0	60.0	45.0	65.0	61.0	47.0	50.0	-	45.0
Child	20.0	25.0	15.0	35.0	30.0	41.0	25.0	-	30.0
Enrolled	-	45.0	45.0	65.0	61.0	47.0	50.0	-	45.0
Casual	-	60.0	10.0	10.0	45.0	33.0	30.0	-	30.0
ACC	-	45.0	15.0	0.0	15.0	20.0	30.0	-	45.0
Non-ACC	-	60.0	45.0	65.0	61.0	47.0	50.0	-	35.0
Chronic	-	20.0	30.0	65.0	61.0	35.0	50.0	-	30.0
Non-Chronic	-	60.0	45.0	40.0	45.0	47.0	45.0	-	45.0
Also saw GP– yes	-	60.0	20.0	65.0	61.0	38.0	50.0	-	45.0
Also saw a GP- no	-	45.0	45.0	35.0	49.0	47.0	40.0	-	30.0
Immunisation- yes	-	30.0	15.0	35.0	30.0	41.0	25.0	-	30.0
Immunisation - no	-	60.0	45.0	65.0	61.0	47.0	50.0	-	45.0

Table 25 : Nurse consult : number of visits

	Practice A	Practice B	Practice C	Practice D	Practice E	Practice F	Practice H	Practice I	Practice J	All practices
Overall	62	134	201	30	59	171	62	369	65	1153
Adult	48	109	169	21	43	131	57	-	54	632
Child	14	25	32	9	16	40	5	-	11	152
Enrolled	-	127	192	29	56	157	57	-	60	678
Casual	-	7	9	1	3	14	5	-	5	44
ACC	-	17	7	0	2	9	2	-	6	43
Non-ACC	-	117	194	30	57	162	60	-	59	679
Chronic	-	5	5	4	30	14	9	50	18	135
Non-Chronic	-	129	196	26	29	157	53	319	47	956
Also saw GP– yes	-	56	53	12	24	31	19	-	19	214
Also saw a GP- no	-	78	148	18	35	140	43	-	46	508
Immunisation- yes	-	19	15	4	13	11	6	-	4	72
Immunisation - no	-	115	186	26	46	160	56	-	61	650

Annex 2: Case reports

Practice A

Practice context

Practice A, located in Auckland has only one GP, which allows the practice to provide greater continuity of care for patients. The practice building is also small and, due to the lack of space, nurses work at the reception desk and within the reception areas. This lack of space can create confidentiality issues for nurses providing care to patients.

Decision making

Decisions within the practice are made cooperatively, and everyone is involved. Ultimately, however, the business owners have the final say.

Staffing profile

The practice has 1 FTE GP, 1 FTE nurse and 0.55 FTE reception staff.

Model of care

General nursing role

Nurses in the practice are flexible and work 'coming through the door' structures the day. Patients make appointments to see the nurses, but only if their condition has already been diagnosed. Appointments with the Nurses are for things like B12 injections and flu injections. The doctor sees patients for immunisations and school checks first, then the nurse does the actual immunisation or check. Nurses spend 30 to 50% of their time doing work that does not require a nursing qualification; making appointments, managing appointments, filing and ordering supplies. Nurses also fill in at reception when the part time receptionist is not there.

Due to space constraints, nurses don't take patient blood pressure or do spirometry. Nurses also provide telephone consultations for patients.

Nursing task inclusions and exclusions

Nurses regularly do a fairly restricted range of clinical tasks as shown below.

Task	y/n	Task	y/n
ECG	X	Sexual health consults	X
Dressings/wound care	√	Repeat scripts	√
Immunisations	X	Initiate new scripts	X
Cervical Smears	X	Diabetes get checked	√
Mental health consults	X	Careplus consults	√
Phlebotomy	X	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	X	Liquid nitrogen application	X

Task	y/n	Task	y/n
Spirometry	X	Acute triage/consult	√
Bone densiometry	X	General clinical consults	X
Occupational health checks	X	IV antibiotics	X

Acute (unplanned)

Nurses triage walk in patients and phone calls, though the practice does not have many of either. The nurse does a basic assessment, and decides if the patient can be treated by the nurse, needs to see the doctor, or should go to an accident and emergency centre.

Medication management

Repeat scripts

Nurses print repeat scripts and these are signed off by the GP, sometimes with a note about the patient attached. It is very rare for new prescriptions to arise from a nurse consult, but these are treated in the same manner as the repeat scripts.

Other issues

Barriers to expanded nursing role

Insufficient space was identified as the key barrier to expanding nurse roles at this practice. Nurses do not have space to undertake basic tasks, such as spirometry or taking a patients' blood pressure.

Training / professional development

The practice PHO offers some courses for nurses. Some of these are done in work time and this is supported by the practice. Further postgraduate study is the responsibility of the nurses.

Population & utilisation

The total practice enrolled population in March 2009 was 1427 people.

Table: Pop by age & sex

Age	Gender	Number
00-04	F	53
	M	50
05-14	F	113
	M	107
15-24	F	97
	M	96
25-44	F	203
	M	221
45-64	F	155
	M	160
65+	F	75
	M	97
Total		**1,427**

Financial profile

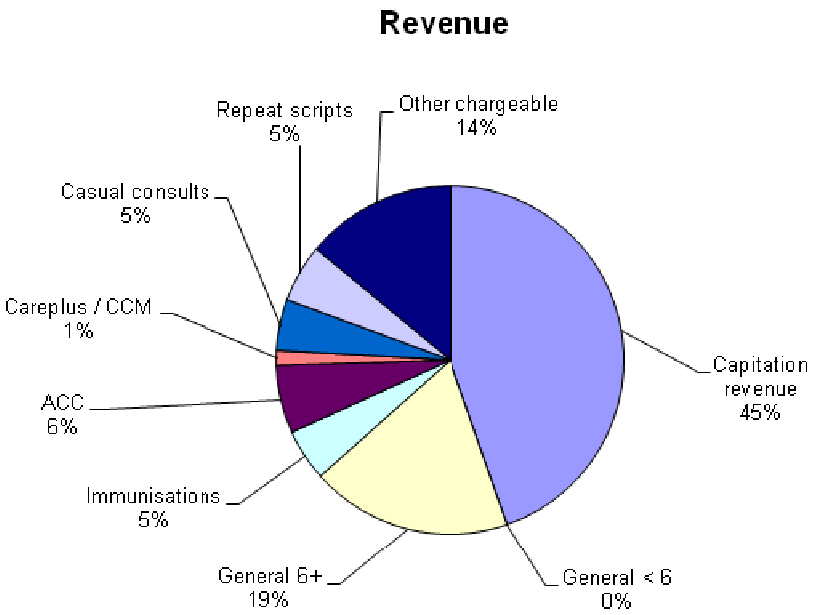
Copayments

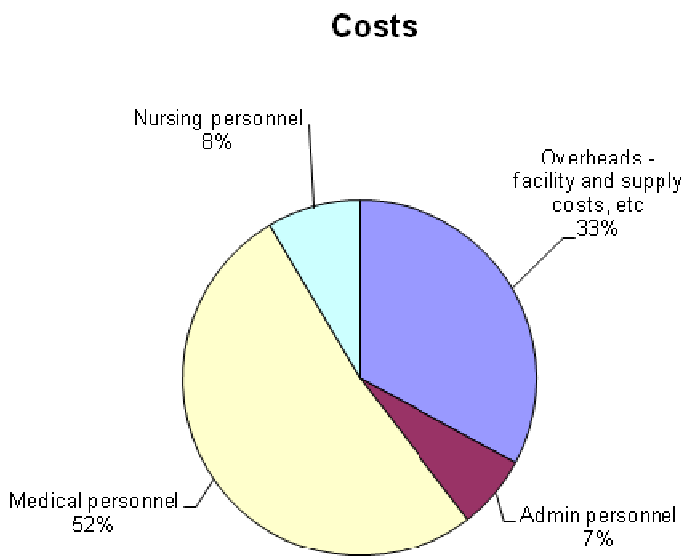
Standard practice fees (including GST) for enrolled patients are:

	Doctor	**Nurse**	**Both**
Under 6:	0	0	0
Young person:	$32	$20	$32
Adult	$37.50	$37.50	$37.50

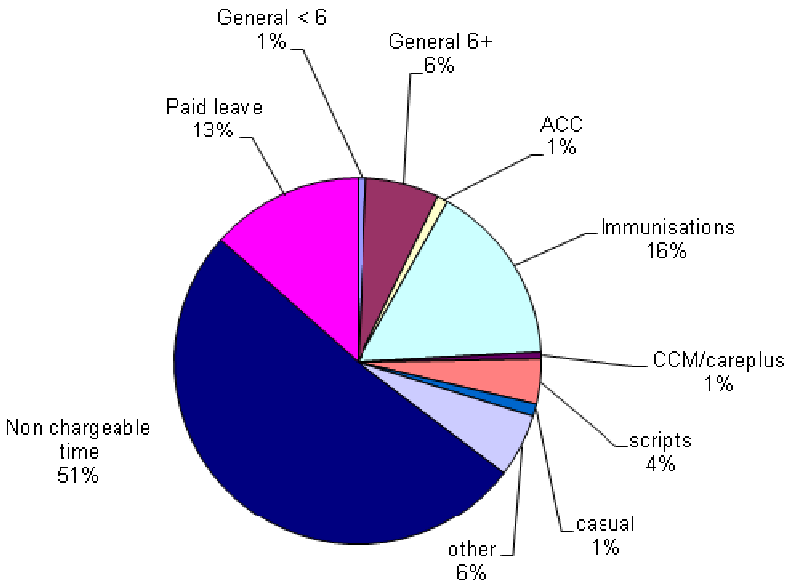
Modelling suggests that the practice would run at an annual profit of around $45,000 before tax.

Model outputs: Practice A

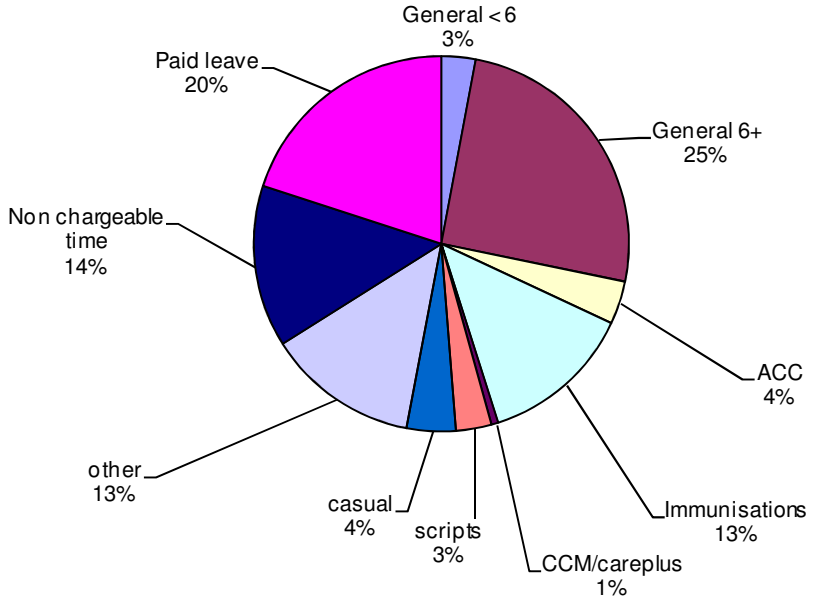




Nurse minutes



GP Minutes



Practice B

Practice context

Practice B is a large practice in the South Island with somewhat deprived population. It is a single practice PHO and provides low fees and a courtesy bus. Ten of the GP's are directors of the practice and the majority of the GP's are contractors.

Decision making

The Practice Directors and PHO board have formed a clinical governance group that make key clinical decisions in the practice. The membership on this group includes two director general practitioners, two practice nurses, the practice manager and the Maori/ Pacific Island outreach nurse. These meetings include discussing audits of continuing medical education (CME), supervision of training, clinical project development and implementation and best practice guidelines and implementation. The Directors meet monthly, joined also by the Practice Manager and Nurse Development Manager, and make key governance decisions at this meeting.

Staffing profile

Medical

The practice has 19 GPs. Of these 8.5 FTE GPs are directors, and 5.4 FTE are locums, a registrar and medical students, though these numbers are subject to frequent change. Some of the directors have a governance role in specific aspects of the practice, for example, CME, Personnel and Health and Safety.

Nursing

The practice has 18 nurses. Of these, 6 nurses, 4.8FTE, are specialist nurses, 11 nurses, 7.3 FTE, are practice nurses. The nurse specialties are Diabetes, Men's Health, Maori Pacific Outreach, Mental Health and LTC (long-term conditions management.) One nurse is on maternity leave, and one nurse is with the new graduate programme. There is also a clinical director of nursing who works 0.56FTE.

Other

Other staff employed in the practice are:

- 2.2 FTE Administration staff
- 1 FTE Courtesy coach driver who provides transport for patients to and from appointments
- 7.5 FTE reception
- 0.4 FTE Allied Health
- 1.4 FTE Management

Model of care

General nursing role

The nurses clinic offers a wide range of services and operates an acute appointment list, run by two nurses for patients that are referred from their GP or for acute assessment for patients that cannot get a GP appointment. In addition to this there can be up to 5 nurse appointment lists running each day for patients that require a nursing service. Some of the appointment lists are for general nursing services and others are for specialist nursing services, for example, diabetes, respiratory and mental health. Patients make appointments with both with nurses and doctors.

The practice has two nurses rostered daily (this is rotated), who provide telephone nurse services. These services include follow up phone calls, sending lab results to patients and generating repeat prescriptions.

Nursing task inclusions and exclusions

Nurses regularly do a broad range of clinical tasks as shown below.

Task	**y/n**	**Task**	**y/n**
ECG	X	Sexual health consults	√
Dressings/wound care	√	Initiate repeat scripts	√
Immunisations	√	Initiate new scripts	√
Cervical Smears	√	Diabetes get checked	√
Mental health consults	√	Careplus consults	√
Phlebotomy	X	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	√	Liquid nitrogen application	√
Spirometry	√	Acute triage/consult	√
Bone densiometry	X	General clinical consults	√
Occupational health checks	√	IV antibiotics	X

Acute (unplanned)

Designated nurses triage both phone calls and walk in patients. Whenever possible, acute patients see their own doctor. Call-ins and walk-ins see the doctors if available, otherwise patients are seen by the nurses.

Chronic care management (planned care)

Nurses take a lead role in management of chronic conditions. Nurses work with patients with mental health issues, family and social problems, drug problems, diabetes and chronic respiratory conditions. The practice has recently appointed a long-term conditions nurse to roll out help co-ordinate the care for patients with chronic conditions. The practice also rolled out a cardiovascular risk assessment programme in June 2007. This is a nurse led service that incorporates outreach in workplaces, particularly targeting males. The nurses clinic has a dedicated administrator that manages the recall system under supervision from the nursing team. Some patients recalled for chronic care conditions see only the nurse while others will see both the GP and nurse, depending on the clinical presentation of the patient.

Medication management

Standing orders

Nurses working at expert level on the Practice Professional Development Framework work can prescribe a limited range of medication under standing orders. The medication includes

kenacomb ear drops, amoxicillin, trimethoprim, gastrolyte, azithromycin, doxycycline, erythromycin, mild analgesics and enemas.

Repeat scripts

Nurses manage repeat scripts within the practice guideline. Nurses print prescriptions from phone or email requests, which the doctors then check and sign.

Barriers to expanded nursing role

Barriers identified include, insufficient facility space, time, resources, financial and legal limits. Patients also prefer to receive their medical care from a doctor where possible, and doctors like to have close control over patient care.

Nurses are perceived to provide good clinical value to the practice.

Training / professional development

Nurses are provided with 40 hours study leave p.a and significant financial support. All core subject training is provided to nurses free of charge through the PHO. The Health Centre also provides a budget for practice nurse education to cover areas outside of the core subject training that may require attendance at conferences or short courses. In addition to this the PHO provides funding for workforce development targeting post graduate education. This support has been critical to the development of the nursing team with over 50% of the nursing team possessing a postgraduate qualification.

Population & utilisation

Table: Pop by age &sex

Age	Gender	Number
00-04	F	691
	M	713
05-14	F	1,376
	M	1,500
15-24	F	1,426
	M	1,313
25-44	F	2,828
	M	2,206
45-64	F	1,809
	M	1,764
65+	F	788
	M	640
Total		**16,630**

Financial profile

Copayments

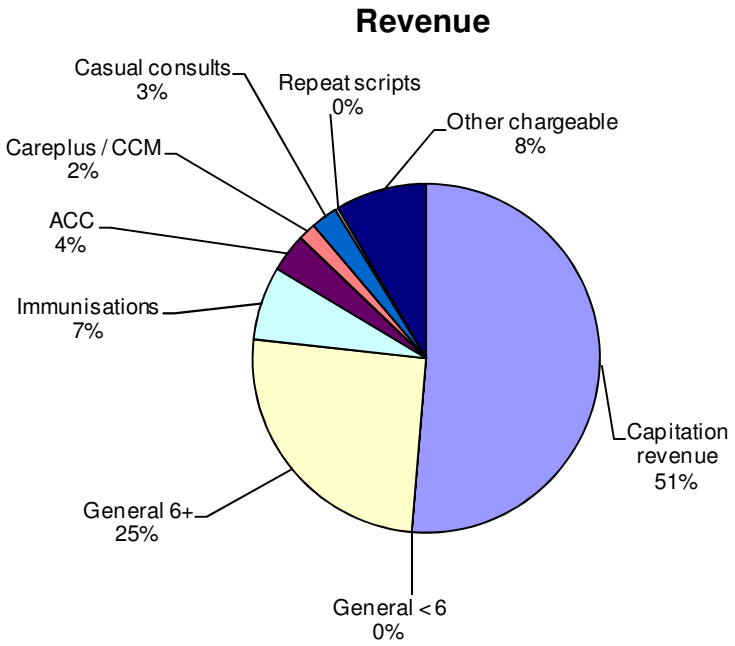
Standard practice fees (including GST) for enrolled patients, including a prompt payment discount are:

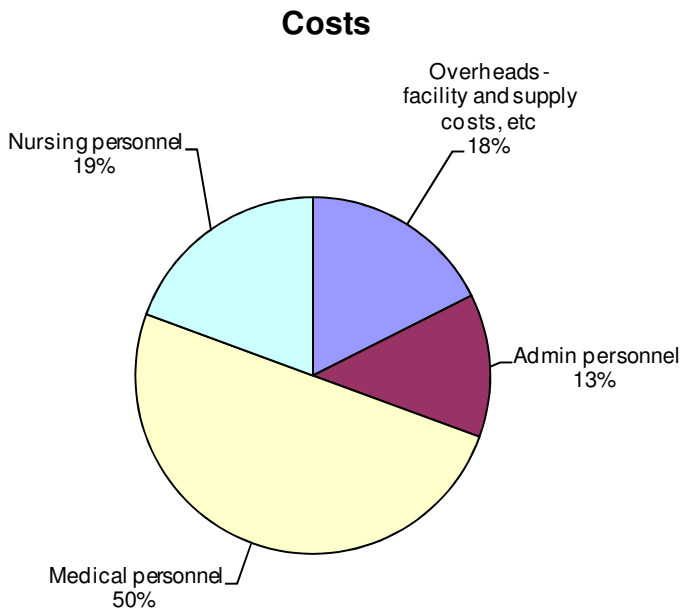
	Doctor	Nurse	Both
Young person (0 to 17) :	0	0	0

Adult (Funded)	$31	$17	$31
Adult (Non-Funded without CSC)	$59	$27	$59
Adult (Non-Funded with CSC)	$44	$27	$44

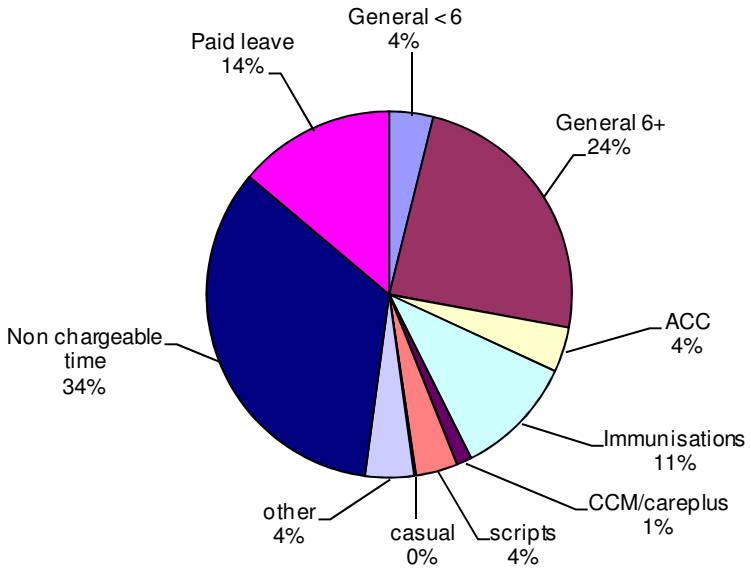
Modelling suggests that the practice would run at an annual profit of $890,000 before tax.

Model outputs Practice B

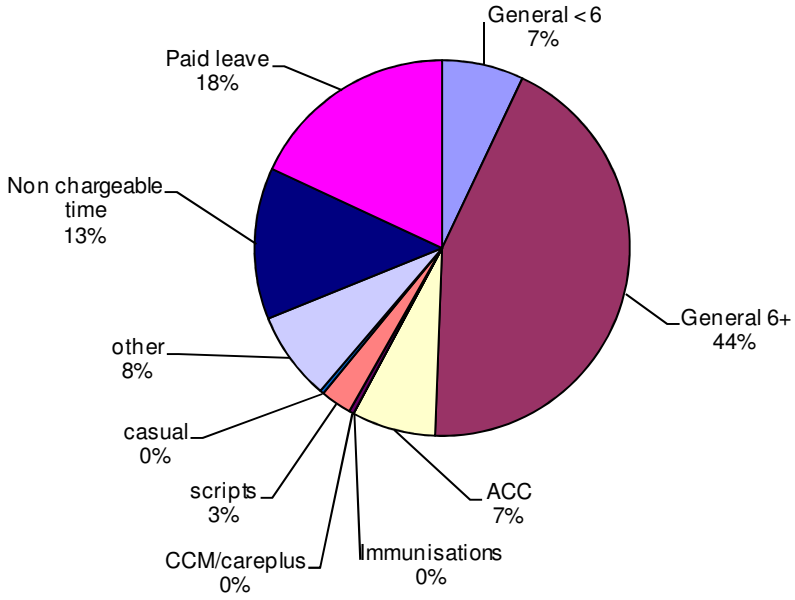




Nurse minutes



GP Minutes



Practice C

Practice context

Practice C is a large health practice with 9,992 enrolled patients, located in a relatively deprived part of Auckland. The practice is part of the Radius group that operates four practices in Auckland and several elsewhere. It is open daily 8am to 8pm and 9am to 3pm at the weekend. Staff can speak 7 or eight languages and the practice has visiting orthopaedic and plastic surgeons, which contribute to its better than usual facilities for emergency cases.

The practice welcomes drop-in patients and these make up a majority of the case load.

Decision making

Half of the doctors are partners and have weekly business and clinical meetings; they make key decisions in the practice, and seek suggestions and opinions from all of the practice staff. At the clinical meetings the partners discuss difficult cases.

Nurses also meet weekly and suggestions are sent via the nurse manager to the general manager. The General Manager, who is also a GP, makes most of the minor decisions in the practice. Nurses and doctors do not have meetings together.

Staffing profile

The practice has eight doctors of whom 4 are full-time, and 5 to 6 nurses.

Model of care

General nursing role

It is very rare for patients to make direct appointments with the nurses, unless it is for specific procedures, e.g. Cervical Smears. Nurses are not specialised, and the nursing day is not differentiated by different routines or shifts. There is a shared nurse room, and a smear room. Of nursing tasks in the practice, only stocktaking and ordering supplies could be undertaken by someone without a nursing qualification.

Nursing task inclusions and exclusions

Nurses regularly do a broad range of tasks as shown below.

Task	y/n	Task	y/n
ECG	√	Sexual health consults	-
Dressings/wound care	√	Repeat scripts	√
Immunisations	√	Initiate new scripts	X
Cervical Smears	√	Diabetes get checked	√
Mental health consults	√	Careplus consults	√
Phlebotomy	-	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	-	Liquid nitrogen application	X

Task	y/n	Task	y/n
Spirometry	-	Acute triage/consult	√
Bone densiometry	X	General clinical consults	X
Occupational health checks	-		

Acute (unplanned)
The majority of patients at practice C are walk in patients, and most of these ask to see a doctor. Acute patients are triaged by any nurse that is available. Nurses also triage phone calls.

Chronic care management (planned care)
Nurses take a lead role in management of chronic conditions and undertake Care Plus and diabetes checks, and education. There is an all-day Care Plus clinic where all patients have bookings, and nurses manage patient recalls.

Medication management
The Nurses print scripts if the patient has been seen within the last six months. The doctors check and sign off the prescriptions.

Other issues

Barriers to expanded nursing role
This practice has very well defined roles for doctors and nurses, and this custom creates a barrier for nurses expanding their role.

Nurses do not have an increasing pay scale for nurse development and education. This means that nurses to not reap any monetary benefit from further study.

Training / professional development
The PHO provides education sessions for ongoing nurse development. Nurses are allowed time to attend this and are paid for this time.

Population

Age	Gender	Number
00-04	F	371
	M	353
05-14	F	791
	M	751
15-24	F	678
	M	672
25-44	F	1,421
	M	1,545,
45-64	F	1,087
	M	1,118
65+	F	526
	M	678
Total		**9,992**

Financial profile

Copayments

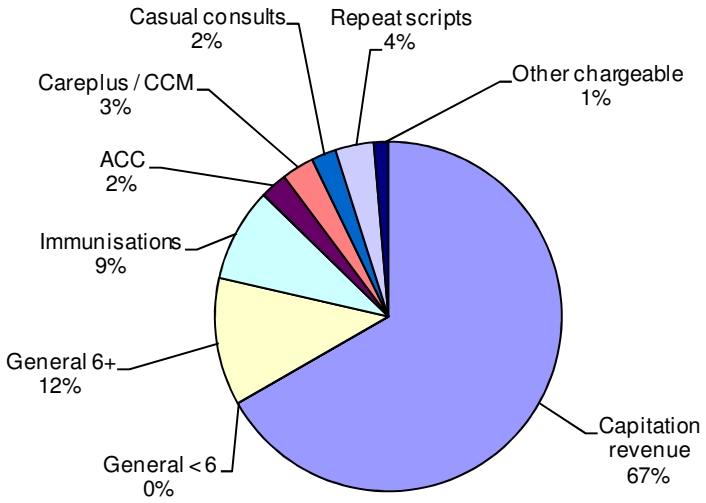
The practice charges vary according to the service provided and the service provider. Standard practice fees (including GST) for enrolled patients are:

	Doctor	Nurse	Both
Under 6:	$0	$0	$0
Adult	16	5	16

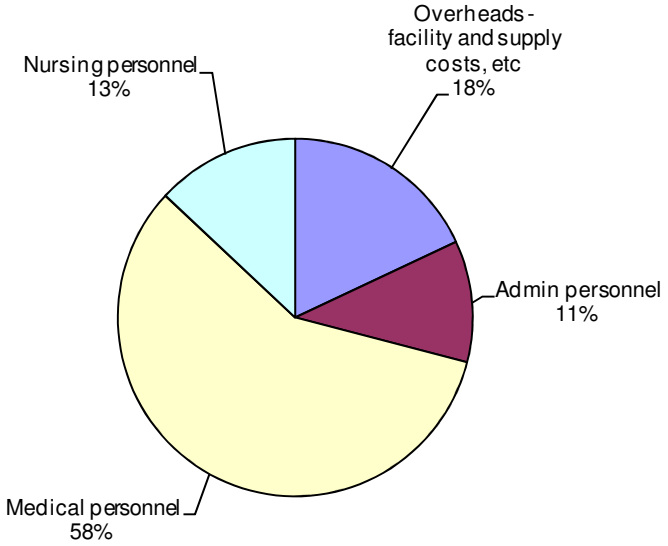
Modelling suggests that the practice would run at an annual profit of $504,000 before tax.

Model outputs

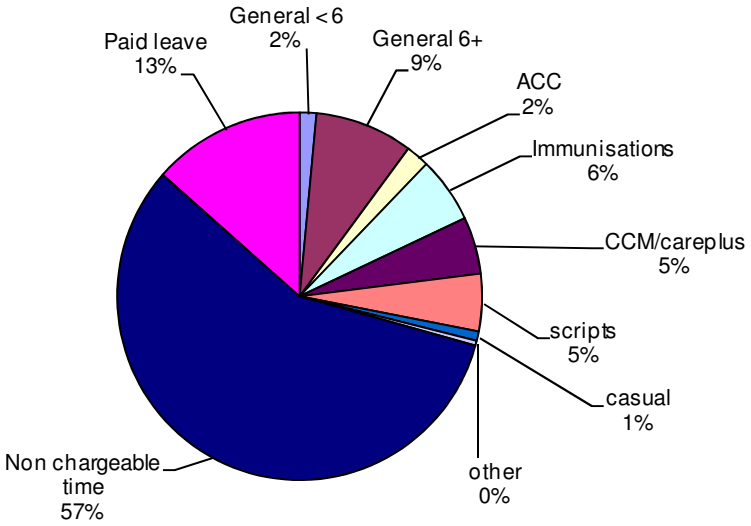
Revenue



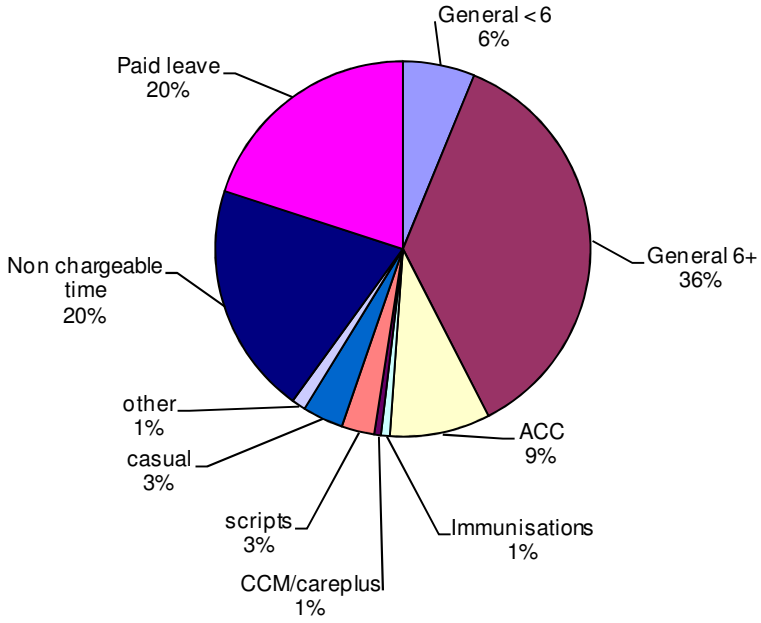
Costs



Nurse minutes



GP Minutes



Practice D

Practice context

Practice D is a large suburban health practice located in one the NZ's four main cities. The practice has been owned by 6 GP partners for over ten years. The practice is a medium cost practice. The surrounding population has gentrified over the past two decades and is now middle – higher income with a lower than average proportion of Maori and Pacific people. The population is relatively geographically contained. The practice is open from 8.30am to 6.30pm on weekdays. A feature of the practice is its workforce stability - most of the practice staff have been there for longer than 10 years, with some having been there for more than 20 years.

The practice gained Cornerstone accreditation in 2005 and 2008.

Decision making

Management decisions are taken at different levels according to the significance of the decision. Ultimately the 6 GP directors will make major decisions affecting the practice, but there are a number of inclusive processes that inform decision making, including:

- An annual strategic planning meeting
- Clinical meetings
- A bimonthly full staff meeting
- A bimonthly nurses meeting
- A monthly Directors meeting
- A weekly planning meeting.

The philosophy and culture of the practice was reported to be egalitarian with everyone's opinion being valued and considered.

Each of the Directors has an area of responsibility – e.g. HR, IT, etc.

Staffing profile

Medical

The practice has 8 GPs working a total of around 6 FTEs. GPs do not have planned/scheduled non-consult time.

Nursing

The practice has 9 nurses employed covering a total of 6 FTEs.

Other

Other staff employed in the practice are:

- 3 FTE reception staff
- 1 FTE practice manager,
- 1 FTE clinical manager (nurse – included in the 6 nursing FTEs above)

Model of care

General nursing role

The general pattern is for 5 nurses to be on each day, with two on the phones and 3 running acute, chronic care or practice clinics. Nurses spend very little time on non-nursing tasks (estimated at less than 5%). Patients do book to see the nurse –particularly for chronic conditions. The facility currently has 3 nurse consult rooms.

Activity	Approx number of ½ day sessions per week
Phone nurse (triage, test results f/up, paper work, recalls, misc)	20
Acute clinic (on the day appointments, triage, accident, fever, etc)	10
Chronic clinic (prebooked, diabetes, CVD, ECG, dressings, smears, imms, careplus, etc)	13
Practice clinic (pre-booked, blood tests, ear syringes, immunisations),	10

Nursing task inclusions and exclusions

Nurses regularly do a broad range of clinical tasks in consults as shown below.

Task	y/n	Task	y/n
ECG	√	Sexual health consults	√
Dressings/wound care	√	Repeat scripts	X
Immunisations	√	Initiate new scripts	X
Cervical Smears	√	Diabetes get checked	√
Mental health consults	X	Careplus consults	√
Phlebotomy	√	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	√	Liquid nitrogen application	√
Spirometry	√	Acute triage/consult	√
Bone densiometry	X	General clinical consults	X
Occupational health checks	√	IV antibiotics	X

Acute (unplanned care)

Acute patients, both walk in and phone calls, are triaged by nurses designated for that role for the day or 1/2 day. Usually patients will then see the GP, but the nurse will have taken a history and observations and may suggest a diagnosis and treatment plan for consideration by the GP.

Chronic care management (planned care)
Nurses have a major role in management of long term conditions. Key activities include the diabetes get checked programme and Careplus. The practice had enrolled some 370 Careplus patients against a target of 430 at August 2009. Care plus patients are initially booked for a 1 hour appointment and then for 30 minute nurse appointments to follow up. Patients will see the GP as part of a dual consultation process. Patients are seen at regular intervals depending on their condition.

Medication management
Standing orders
Standing orders are in place for ventolin administration, flu vaccinations (off schedule), UTI treatment, emergency contraception pills, vitamin b12, nicotine replacement therapy, and depo provera. Nursing staff considered they could also be used in future for initiating the oral contraceptive pill and maybe some other situations.

Repeat scripts
The receptionists take telephone requests for repeats. The practice is considering a script line. Currently nurses are not usually involved in repeat scripts.

Other issues
GPs and nurses use a common electronic notes format and read coding for consultation (using Medtech 32). Tasks can be delegated from one to the other electronically.

Opportunities noted for further expansion of the nursing role included:

- administration of IV antibiotics (eg for cellulitis)
- travel clinics
- suturing.

Nurses are leading an oral health promotion programme involving giving oral health advice and other interventions when administering immunisations. Also launching a breast feeding awareness PDSA cycle.

Barriers to expanded nursing role

Identified barriers to an expanded nursing role were insufficient facility space and insufficient nurses. Hence, construction of 3 extra rooms is due to commence in November 2009.

Training / professional development

The interviewees noted that the practice provides excellent support for clinical development and professional training including:

- a designated nurse training budget
- 5 days paid study leave per year
- Time off in lieu when doing evening classes
- Opportunity to attend some conferences.

Population & utilisation
The total practice enrolled population is 11,436 at August 2009, of which around 10,500 are accepted by the PHO enrolment database for funding. About 80% are of European ethnicity.

Table: Pop by age & sex

Age Group	Gender	Number
00-04	F	459
	M	470
05-14	F	813
	M	769
15-24	F	698
	M	717
25-44	F	2,027
	M	1,669
45-64	F	1,373
	M	1,260
65+	F	671
	M	510
Total		**11,436**

Financial profile

The practice capitation revenue is allocated to each GP based on patient face to face consults numbers times a practice set $35 nominal internal fee. The surplus is allocated to the partners. There is no allocation of capitation income to the nursing cost centre based on nursing consult numbers.

Copayments

The practice charges vary according to the service provided and the service provider. Standard practice fees (including GST) for enrolled patients are:

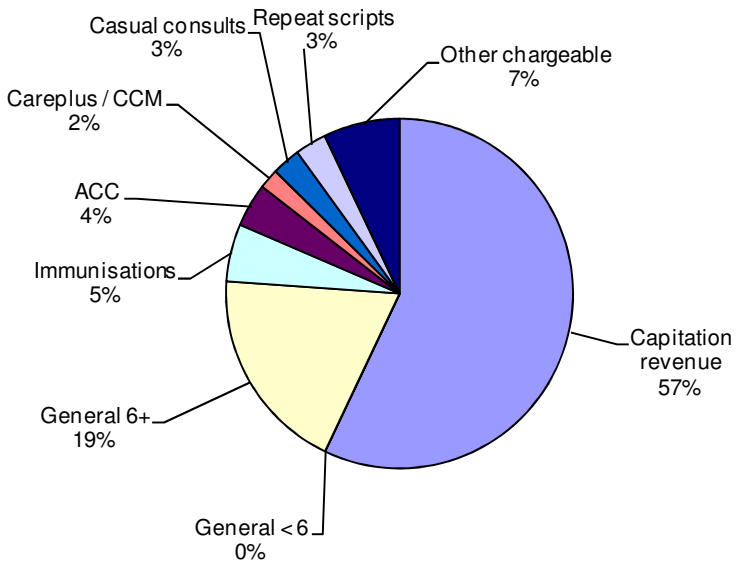
	Doctor	Nurse	Both
Under 6:	0	0	
Young person:	$32	$10 - 20	$32
Adult	$32	$10 - 20	$32

Additional charges apply for additional services (ECG, wound dressings, Xray, double consults, phlebotomy, etc).

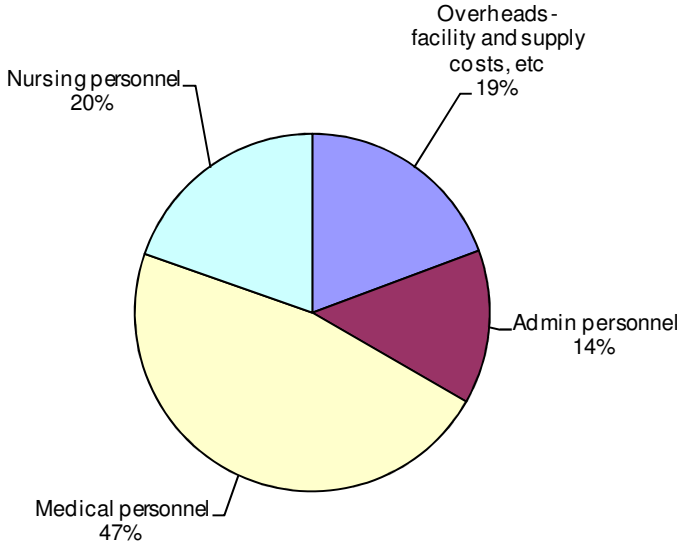
Modelling suggests that the practice would run at an annual profit of $786,000 before tax.

Model outputs

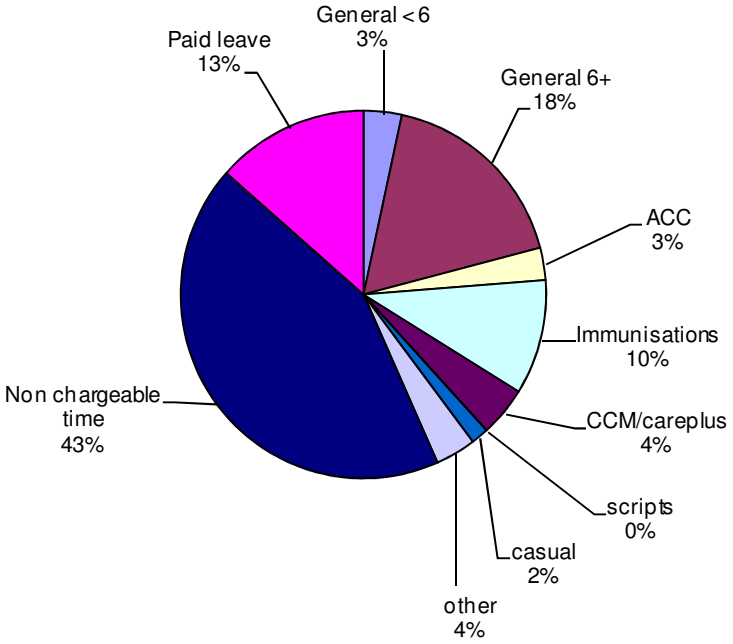
Revenue



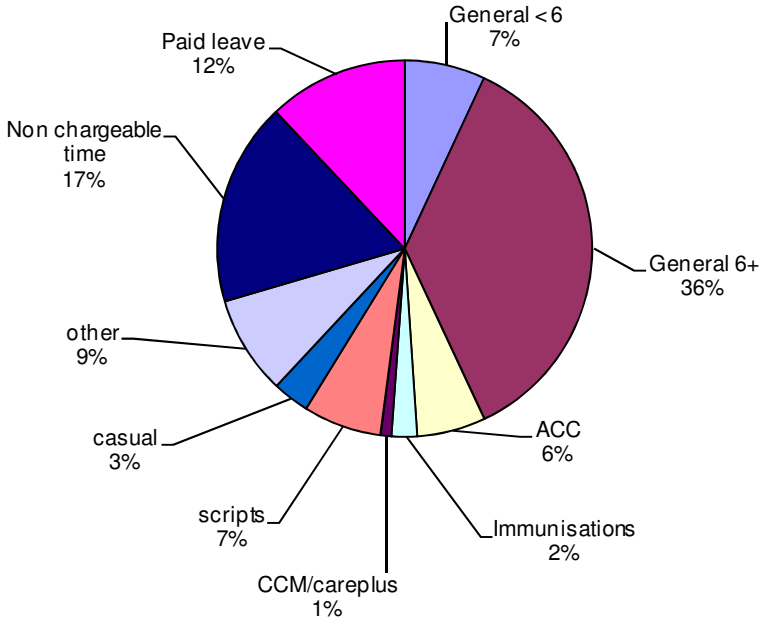
Costs



Nurse minutes



GP Minutes



6.5.2 Comment

The current internal fee for service allocation has the effect of encouraging GPs to see patients. Logically, an amount of the capitation payment sufficient to cover 50% of ¾ of a nurse per GP should be allocated toward nursing consults since the practice nurse subsidy is included in the capitation formula. This could change the appearance of profit/loss from nursing. The activity based revenue look low in comparison to other practices of a similar size, suggesting either a large amount of discounting, lower utilisation, or less billing for additional services.

Practice E

Practice context

Practice E is a medium sized suburban health practice located in one of NZ's four main cities. The practice is community owned and targeted at vulnerable populations – low income, refugees, Maori and Pacific. Its objective is to provide affordable high quality care for the vulnerable. The practice is a very low cost access practice. The practice is open from 8.30am to 7.00pm Monday to Thursday, 8.30 to 6pm on Friday and provides GP only services 9 – 1 and 2 – 5 on Saturdays and 2 – 5 on Sundays. A feature of the practice is its broad range of services, with a number of specific ancillary health service contracts provided by GPs and nurses, and by a wide variety of other staff including allied health staff, midwives, community workers. The practice has a commitment to workforce development, providing a fixed term contract for a graduate nurse each year. The practice has a community centred philosophy – extending beyond clinical treatment to a holistic view of health using the Te Whare Tapu Wha model.

The practice has accreditation through Te Wana and Cornerstone.

Decision making

The practice uses consensus decision making model, with all major decisions being considered by all staff and community representatives.

Decision making is facilitated by a core group including a nurse team leader, a medical team leader, a reception team leader and the practice manager and operations manager. A weekly all staff meeting and shared lunch is held between 1 and 3pm on Wednesdays, with the practice closed during this period.

Staffing profile

Medical

The practice has 9 GPs and one registrar working a total of around 6 FTEs. All GPs are salaried. GPs balance their time between 'on the day' – acute activity, booked – planned clinics and time set aside for paper work. Each makes up around 1/3rd of their total time.

Nursing

The practice has 9 nurses employed covering a total of 7 FTEs plus a new graduate role. The aim is to employ all nurses for at least 32 hours per week.

Other

Other staff employed in the practice are:

- 4.5 FTE reception staff
- 1 FTE practice manager,
- 1 FTE Operations manager
- 0.6 FTE administration assistant
- 4 FTE midwives
- 1 FTE social worker
- 1 FTE community worker
- 0.2 FTE interpreter

There are also a number of visiting specialists.

Model of care

General nursing role

The general pattern is for 5-6 nurses to be on each day, with two on acute triage and treatment and 3 running chronic care or practice clinics. Nurses spend very little time on non-nursing tasks. Patients do book to see the nurse – particularly for chronic conditions. The standard nurse consult appointment time is 18 minutes. The facility currently has 3 nurse consult rooms.

The nurses are specifically not 'handmaidens to the doctor' – they do not stock rooms, open packs or clean and tidy. They consider they work as part of a team and are not directed by the GPs. Each nurse will do 1 – 2 days acute triage per week and 2 -3 half day practice clinics.

Activity	Approx number of ½ day sessions per week
Acute clinic (on the day appointments, triage, accident, fever, etc)	20
Practice clinic (prebooked, diabetes, CVD, respiratory conditions, metal health, smears, imms, careplus, well health checks, etc)	10- 15
Flexi – includes general practice support	10
Other – outreach clinics, mental health liaison	4

Nursing task inclusions and exclusions

Nurses regularly do a broad range of clinical tasks as shown below.

Task	**y/n**	**Task**	**y/n**
ECG	X	Sexual health consults	√
Dressings/wound care	√	Repeat scripts	√
Immunisations	√	Initiate new scripts	X (rarely)
Cervical Smears	√	Diabetes get checked	√
Mental health consults	X	Careplus consults	√
Phlebotomy	X	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	√	Liquid nitrogen application	√
Spirometry	√	Acute triage/consult	√
Bone densiometry	X	General clinical consults	(some)

Task	y/n	Task	y/n
Occupational health checks	X	IV antibiotics	X

Acute (unplanned)

Acute patients, both walk in and phone calls, are triaged by nurses designated for that role for the day or 1/2 day. Patients will often then see the GP, but the nurse will have taken a history and observations and may suggest a diagnosis and treatment plan for consideration by the GP. The practice has an average of 37 drop in visits per day. There are normally 2 nurses and one or 2 GPs allocated to 'on the day' work.

Chronic care management (planned care)

Nurses have a major role in management of long term conditions within an overall MDT philosophy. Key activities include the diabetes get checked programme and Careplus. Patients will see the GP as required – may involve a nurse visit plus a brief follow on consult by a GP. Nurse may initiate insulin or changes doses under GP instructions.

Medication management

Standing orders

Standing orders are in place for UTI treatment, paracetemol and emergency contraception, but are not used otherwise.

Repeat scripts

The triage nurses follow up on telephone requests for scripts by filling out a script for GP review and signing. Protocols are applied – e.g. to be seen every 6 months.

Barriers to expanded nursing role

Identified barriers to an expanded nursing role were the skill level of workers, and that nurses have very distinct roles, and working as a team or in partnership with doctors is not encouraged.

Training / professional development

The interviewees noted that the practice provides excellent support for clinical development and professional training including:

- a designated nurse training budget of $800 per nurse per year
- 10 days paid study leave per year, on top of work based training (eg smear taking courses)
- Ability to have external supervision.

Population & utilisation

The total practice enrolled population is 5500. The register is closed to new enrolees unless they are refugees or family members of current patients. The current facility is seen as the major constraint to additional enrolees. The facility has 9 consult rooms.

Table: Pop by age/sex

Age Group	Gender	Number
00-04	F	192

	M	192
05-14	F	418
	M	418
15-24	F	455
	M	455
25-44	F	855
	M	855
45-64	F	625
	M	625
65+	F	205
	M	205
Total		5,500

Financial profile

Copayments

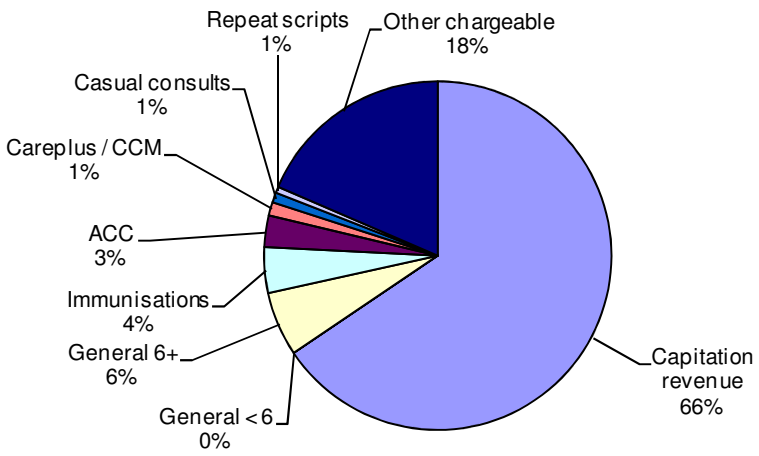
Standard practice fees (including GST) for enrolled patients are:

	Doctor	**Nurse**	**Both**
Under 6:	0	0	0
Adult	$10	$10	$10

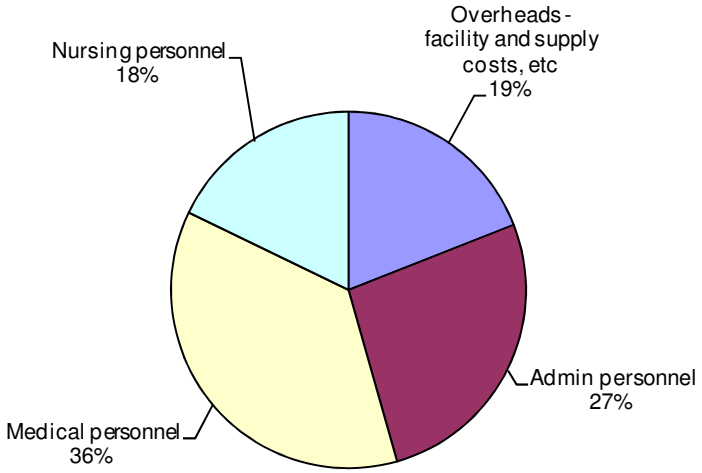
Modelling suggests that the practice would run at an annual loss of $270,000, however, this does not include income from other, supplementary, contracts.

Model outputs: Practice E

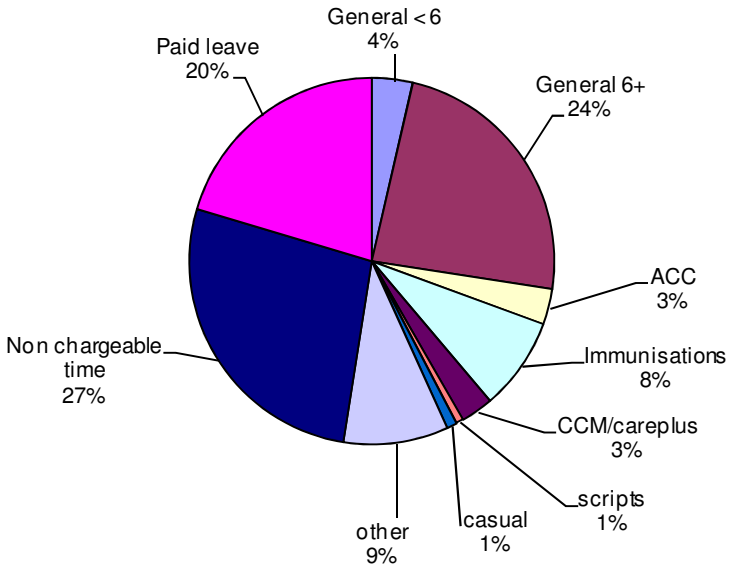
Revenue



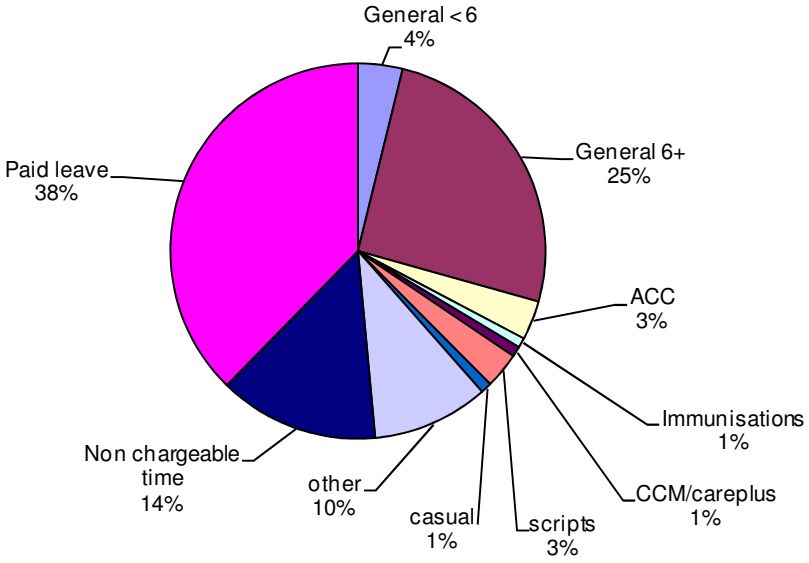
Costs



Nurse minutes



GP Minutes



Practice F

Practice context

Practice F is a large sized rural health practice located on the campus of a small rural hospital in the South Island. The practice has been owned and managed by the DHB for 7 years and all staff are salaried. The GP's also cover the onsite ED, 8 bed medical ward and long stay age residential care facility, but the nursing and practice management teams are separate. The practice is a very low cost access practice with a co-payment GP fee $16.50 and nurse $16.00 per visit. The surrounding population is relatively low income and higher need, and is dispersed across a wide geographic area. Practice B is the only primary care centre within 100kms. The practice is open from 8.30am to 5.00pm on weekdays, and holds emergency clinics from 10am to 11am and 5pm to 6pm on Saturday and Sunday.

The practice has recently been audited and accredited under Cornerstone accreditation.

The service provides medical cover for a rural outreach clinic (about 1200 patients, who are included in the total enrolment numbers). The clinic is staffed by a fulltime rural nurse specialist, 0.5FTE receptionist and 0.2 FTE GP. It sometimes contributes to rural nurse leave cover for the service at Karamea.

Decision making

Management decisions are taken through the practice manager and escalated to the Buller Health manager when necessary. There are a series of clinical and management meetings, including a bi-monthly professional group meeting, (ie GPs together, the nurses together) a weekly doctor nurse team meeting (mainly to discuss patients management plans). Clinical governance meetings occur weekly ie: clinical nurse leader, the practice manager, the GP clinical leader and the overall Health Centre Manager. Decisions often require agreement from DHB senior management, which was reported to be a source of frustration.

Weekly meetings are held within usual business hours.

Staffing profile

Medical

The practice has 8 budgeted medical FTEs. However the actual permanent medical staffing was 3.5 permanent FTE at the time of writing, plus locums when available. Of the 3 main permanent medical staff one had been at the practice for 7 years and two for 3 years. One GP is assigned every day to covering ED and the hospital and aged residential care beds, effectively reducing the staffing by more than 1.2 FTE. The medical staff are employed under the ASMS MECA and have protected non clinical time one day per week, as well as 10 days paid CME and 6 weeks annual leave.

Nursing

The practice has 12 nurses employed at total of 6.13 FTEs. Of these 11 are RNs and 1 is an EN. There is a designated clinical nurse manager with a half time administrative role included in the 11 RNs. All but two nurses work part time. A number work part time for the DHB provider arm and part time for the primary care service (diabetes nurse, respiratory/cardiology nurse). Most nursing staff had been working in the service (or in the adjoining hospital service for many years (average of 7 years). Most are doing post graduate qualifications and 7 are designated at expert level.

Other

Other staff employed in the practice are:

- 9 reception staff who work part time equivalent to 3.06 FTE reception staff

- 1 FTE practice manager,
- 1 FTE practice administrator
- Cleaner

Model of care

General nursing role

The nurses have a broad scope of practice. The scope was deliberately extended 5 years ago in response to an acute shortage of medical staff. The overall model of care was changed (initially on an interim basis) so that nurses undertook a greater percentage of clinical consultations. They now take responsibility both for triaging acute presentations and for managing chronic conditions proactively. The CNM characterised the difference in the model of care from most practices as:

'*In most practices you see the doctor and then see the nurse if you need to. Here you see the nurse, and then see the doctor if you need to". This is subject to GP FTE resources and reviewed on a regular basis. GP's do have regular 15 min appointment schedules.*

The model of care has now become normalised – although some doctors are more comfortable with the approach than others.

The staff are divided into 3 teams of one doctor and three nurses. Each team meets weekly to review clinical management plans for chronic care patients.

A usual weekly nursing roster involves:

Activity	**Approximate sessions / week**
Phone nurse	10
CCM	4 (equivalent to full sessions)
Duty nurse (acute triage & urgent consults)	17 - 20
Script Line	5
Sexual Health/Smears	1
Routine Consults	8-10
Immunisations	1
Liquid Nitrogen	1
Occupational Health	1
Smoking Cessation	1
Contraception Clinic	1

Nursing task inclusions and exclusions

Nurses regularly do a broad range of clinical tasks in consults as shown below.

Task	y/n	Task	y/n
ECG	√	Sexual health consults	Y
Dressings/wound care	Y	Repeat scripts	√
Immunisations	Y	Initiate new scripts	√
Cervical Smears	√	Diabetes get checked	√
Mental health consults	Y	Careplus consults	√
Phlebotomy	Y	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	Y	Liquid nitrogen application	Y
Spirometry	Y	Acute triage/consult	√
Bone densiometry	√	General clinical consults	√
Occupational health checks	Y	IV antibiotics	N

Acute (unplanned)

Acute patients, both walk in and phone calls, are triaged by nurses designated for that role for the day or 1/2 day. The receptionist notes incoming calls and urgent appointment requests. A nurse on 'phone' duty returns the calls and asks patients more about their condition. The nurse then books the appropriate appointment, including a nurse or doctor appointment, provides self care advice, or provides other advice as appropriate.

In August there were 25 acute walk in patients seen by the duty nurse(s) on average per day. There is a 4 week wait for non urgent doctor appointments and a 2 week wait for non urgent nurse appointments. This fluctuates according to GP resources and obtaining locum cover, and is monitored weekly. The on site Emergency Department is always open and is free of charge.

Chronic care management (planned care)

Nurses take a lead role in management of chronic conditions. The practice philosophy is not to allow acute presentations to 'crowd out' proactive care for those with chronic conditions.

Patients with chronic conditions are stratified based on risk into 1 of 3 categories. Level one is any chronic condition including high blood pressure, CVD, diabetes, COPD, CHF, etc. Currently the practice has 700 CVD patients, 700 with COPD, and 400 with diabetes. The PHO pays $60 per level one patient, based on an expectation that they will receive 1 free 30 minute nurse led annual review, and will be followed up quarterly (dependent on whether the patient is required to been seen quarterly it may six monthly) with a std 15minute consult with usual co-pay. There is no cap on level 1 patient numbers.

The level two category is for patients with any two chronic conditions whose condition is not well controlled. The PHO pays $200 per patient per year with a cap of 223 patients (of these 17 are Maori). Patients are required to complete the Flinders assessment prior enrolment. These patients receive four 30 minute free nurse consults per year.

The level 3 category is paid at $450 per year with a cap of 45 (of these 3 Maori). This category is reserved mainly for those patients requiring home-based assessment and care. They receive four or more home based nurse visits per year.

Each day one or more nurses is rostered to see patients with long term conditions on a planned basis. This covers diabetes 'Get Checked' annual reviews, CVD risk assessment and treatment and guideline based care for those with COPD and other chronic conditions. The EN runs a regular high blood pressure clinic.

On average – 36 (*half hour)* nurse consults per week are reserved for Chronic Care Management.

Each doctor nurse team has a weekly meeting at which the care plan for relevant patients with Chronic Conditions is reviewed and medication requirements and lab test checked, and follow up actions assigned.

Medication management

The practice does not tend to use standing orders, relying instead on nursing assessment plus immediate GP review.

There is a nurse on separate script line duty who clears the script line (voicemail service) daily and prints repeat scripts for signing by each GP after first checking the patient notes (*and/or phoning patients)* as appropriate.

Barriers to expanded nursing role

Identified barriers to an expanded nursing role were insufficient facility space and insufficient numbers of nursing staff.

Training / professional development

The interviewees noted that the DHB provides excellent support for clinical development and professional training.

Population & utilisation

The total practice enrolled population is 7,228, of which 7194 are accepted by the PHO enrolment database for funding. The gap is related to:

- Patients who access other practices which results in this capitation revenue deducted from the practice funding.
- Patients may have enrolled elsewhere and their details require updating in the PMS

Table: Pop by age/sex

Age Group	Gender	Number
00-04	F	216
	M	219

Age Group	Gender	Number
05-14	F	446
	M	442
15-24	F	391
	M	485
25-44	F	853
	M	831
45-64	F	1015
	M	1155
65+	F	598
	M	577
Total		7,228

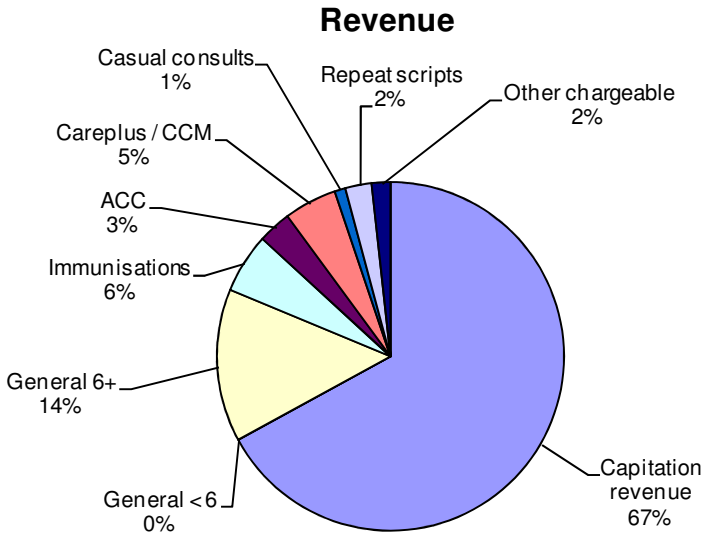
Financial profile

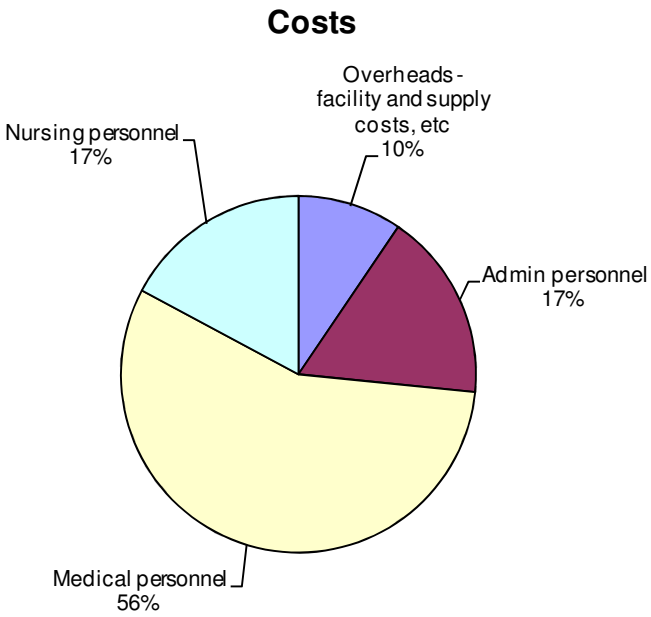
Copayments

The practice nurse is $16 and GP consult $16.50 visit. There is an extra charge for additional services (ECG, wound dressings, double consults, etc).

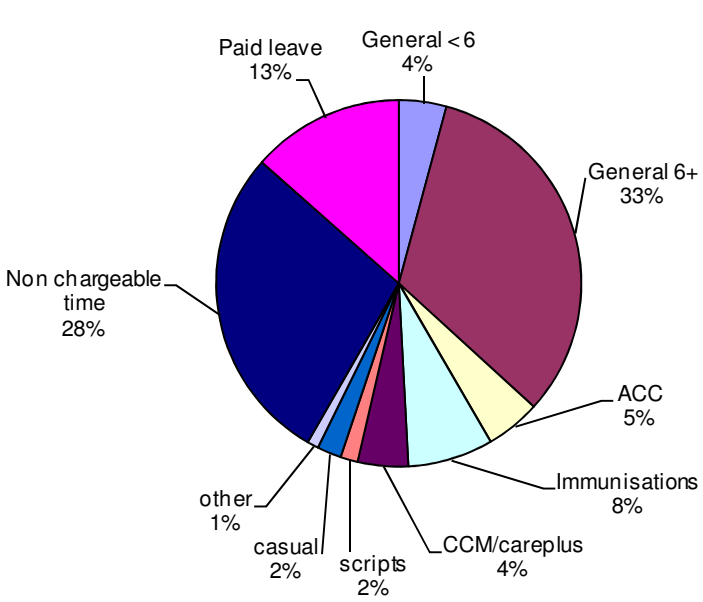
Modelling suggests that the practice would run at an annual loss of $280,000.

Model outputs: Practice F

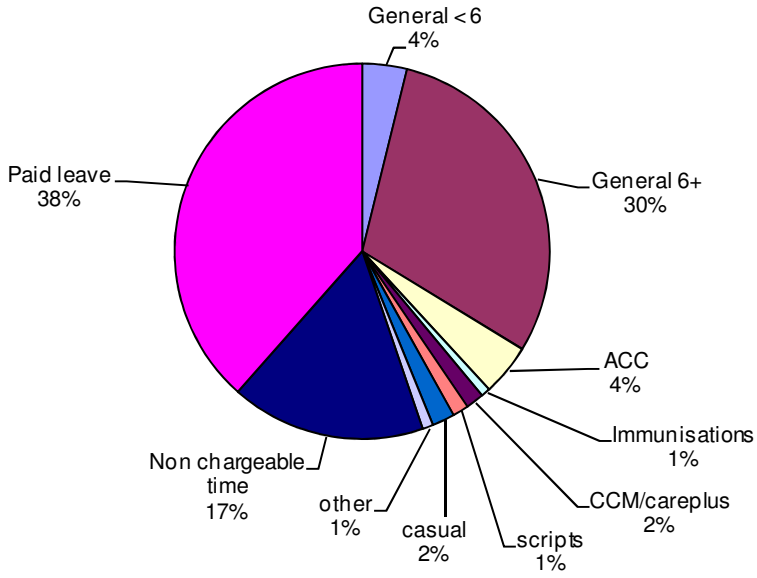




Nurse minutes



GP Minutes



Practice H

Practice context

Practice H is the general practice clinic of a Maori health provider organisation (a Maori Health Trust), created to narrow the gap in health status between Maori and Non Maori in a rural area of New Zealand. Practice H provides two permanent clinics, one of which is the focus of this study (Practice H) the other is on the east coast, 35 minutes drive away. Services provided by Practice H extend to the surrounding area, and include Outreach Clinics provided by a Nurse Practitioner with prescribing rights.

The practice not included in this study employs 2 GPs and 2 FTE Practice Nurses.

Until March of 2008, Practice H was staffed by a locum GP and 1 practice nurse In 2008, the practice expanded rapidly and is still developing. It now employs 4 salaried GPs, 1 Nurse Practitioner, 3 Practice Nurses (2.3FTEs), an Enrolled Nurse (1 FTE) and a Health Care Assistant. In June 2009, Practice H merged with another practice, with a single GP and nurse. The new GP has a profit sharing arrangement with Practice H, and works mostly with his practice nurse. The other practice nurses work mostly alongside the other GPs.

The practice has 7, 261 enrolled patients, including 835 children under 6, and is a low cost practice. The practice GPs are rostered for evening calls and operate Saturday and Sunday Clinics. The Maori Health Trust provides ancillary services that complement the practice work: a social worker, outreach nurses, and health promoters. The practice also has additional visiting professionals to refer clients to; a podiatrist and physiotherapists.

Decision making

The Practice Manager, Medical Director, General Manager and the Board of Trustees make decisions for the practice. The Practice Manager oversees the nursing and support staff and the Medical Director oversees the GPs. The GPs and Nurse Practitioner have monthly meetings where they review practice statistics. The nurses and support staff also have separate meetings. Everyone, including the nurses, administration staff, GPs, Practice Nurse, social worker, have weekly meetings to discuss clinic matters.

Staffing profile

Medical

The practice has 5 GPs (5x FTEs).

Nursing

The practice employs 1 Nurse Practitioner with prescribing rights, 3 registered nurses (2.3 FTEs) and an enrolled nurse (1xFTE).

Other

Other staff employed in the practice are:

- 1 FTE Health Care Assistant (HCA)
- Administrative staff

Model of care

General nursing role

There are two models of nursing care, due to the recent take over of another clinical practice.

1. The nurse from the recently taken-over practice works exclusively with the GP from the practice. She was the nurse interviewed for this study and works more autonomously than the other nurses but usually only with her GP's patients. She makes 15 minute appointments and does recalls, smears, immunisations and manages their Care Plus patients.

2. The HCA and enrolled nurse do the initial patient assessments, including writing up the main reason for the visit, writing up observations, for example, blood pressure or if the patient has a fever. The HCA stocks the rooms, does the sterilising and ordering, takes observations and enters these into the computer, and prepares flu vaccines for the GPs.

One of the other two Registered Nurses also has 15 minute appointments for recalls, smears, immunisations and to maintain the Care Plus patients. The third RN is still developing her skills so does not work as autonomously as the other two. The RNs also do assessments when the doctors are busy, and manage walk-ins and overflow. As well as the patients making appointments to see the nurses, the GPs refer patients for nurse appointments, for things like taking BPs and removing sutures.

Nursing task inclusions and exclusions

Nurses regularly do a broad range of tasks as shown below.

Task	**y/n**	**Task**	**y/n**
ECG	√	Sexual health consults	√
Dressings/wound care	√	Repeat scripts	√
Immunisations	√	Initiate new scripts	√
Cervical Smears	√	Diabetes get checked	√
Mental health consults	X	Careplus consults	√
Phlebotomy	X	Chronic care management	√
Suturing	X	IUD insertions	X
Audiometry tests	X	Liquid nitrogen application	√
Spirometry	√	Acute triage/consult	√
Bone densiometry	X	General clinical consults	√
Occupational health checks	√	IV antibiotics	√

Acute (unplanned care)

One doctor is allocated the responsibility for acute/unplanned /walk-in patients each day. In addition, the GPs and the Nurse Practitioner each have a 15 minute slot every hour allocated for emergencies. The nurses triage the acute/unplanned /walk-in patients and refer to the doctors or Nurse Practitioner as necessary.

Chronic care management (planned care)

The nurses recall the Care Plus patients. Nurses organise lab tests, check the results, and then see the patients for about 30 minutes. If considered necessary, patients then see a GP or Nurse Practitioner for 15 minutes.

Medication management

Standing orders
Only used for contraception

Repeat scripts
Prepared by the nurses over the phone as long as the patient has been seen in the last 12 months. Blood pressures are checked 3 monthly and laboratory tests are done as necessary.

New scripts
Generally, the GP will sign following the nurses' assessment.

Barriers to expanded nursing role

The practice is supportive and there is a push for the nurses to be more autonomous.

Training / professional development

The practice pays for clinical updating of its Practice Nurses and upskilling for new nurses and supports Clinical Training Agency funded Post Graduate Certificates. It supports continuing nursing education (upskilling) provided by the PHO as long as the other nurses are available to cover the clinic.

Clinical Master's is not so encouraged unless a nurse is pursuing a Nurse Practitioner qualification.

Population & utilisation

Table: Pop by age/sex/ethnicity/deprivation

Age Group	Gender	Number
00-04	F	340
	M	342
05-14	F	570
	M	570
15-24	F	509
	M	504
25-44	F	1,066
	M	1,160
45-64	F	915
	M	880
65+	F	393
	M	309
Total		**7,559**

Financial profile

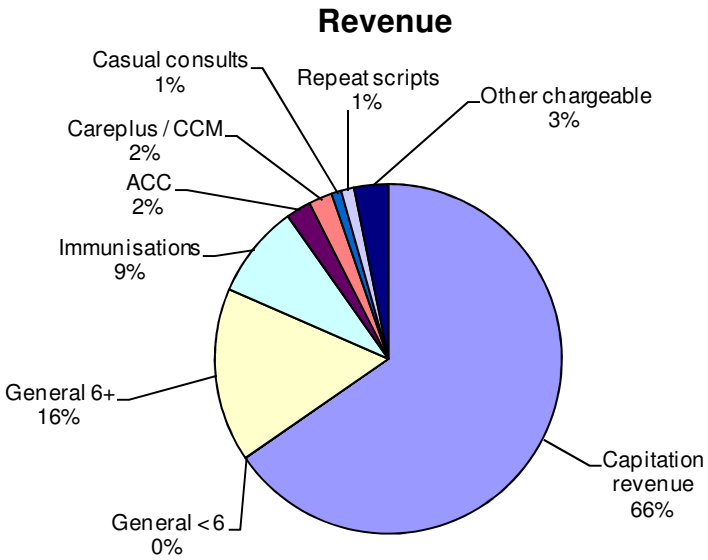
Copayments

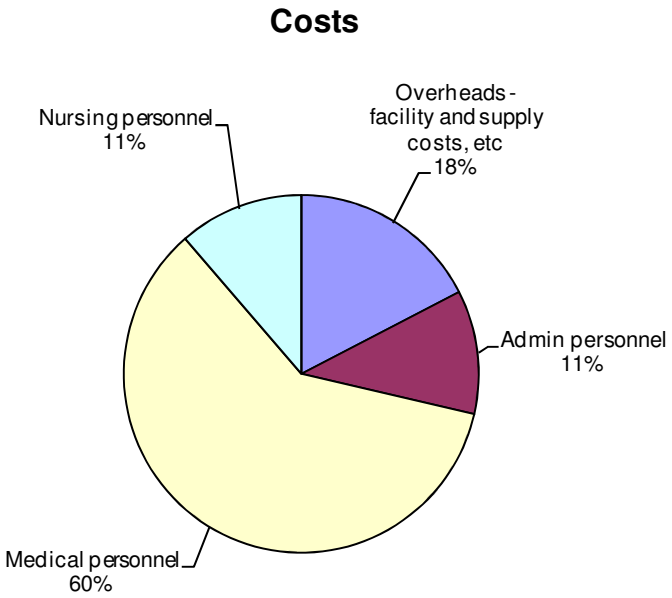
The practice charges vary according to the service provided and the service provider. Standard practice fees (including GST) for enrolled patients are:

	Doctor	**Nurse**
Under 6:	0	0
Young person:	$10	$5
Adult	$16	$10

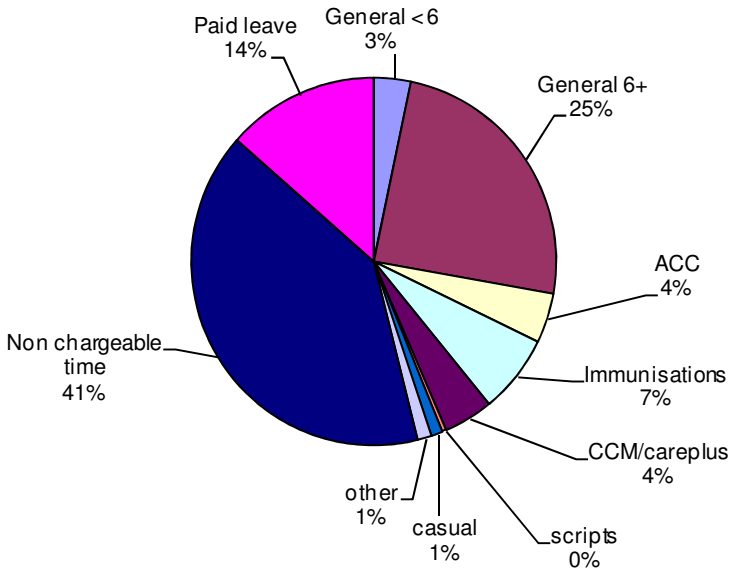
Modelling suggests that the practice would run at an annual loss of $230,000.

Model outputs: Practice H

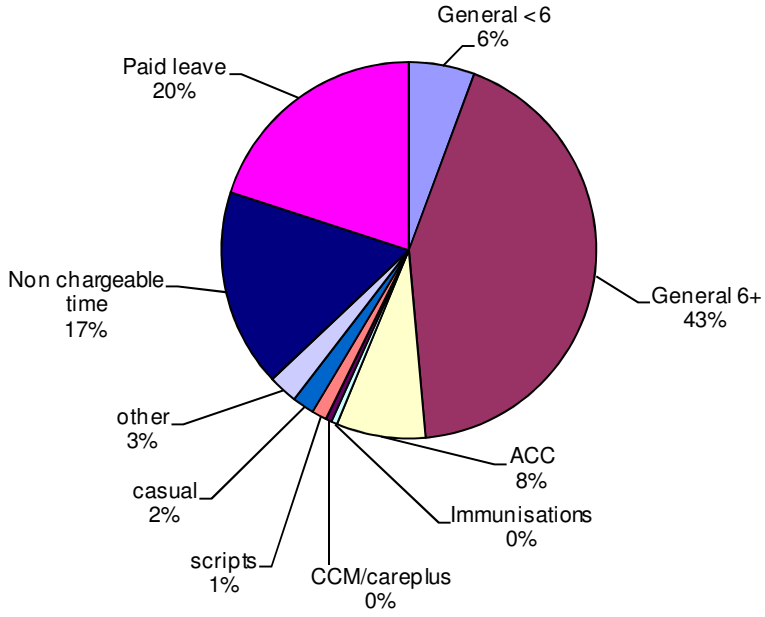




Nurse minutes



GP Minutes



Practice I

Practice context

Practice I is a large practice with 8 (6FTE) doctors and 6 (4FTE) nurses. It has a registered patient base of 10,102, comprised of a disproportionate number of elderly patients in a high decile area in Auckland. The medical centre offers a range of services, including Midwifery, Dietician, Audiologist, Naturopath, Physiotherapist, Nutritionist and a visiting Obstetrician and Gynaecologist. The practice GPs do minor surgery in their own theatre. An on-site dispensing pharmacy and a diagnostic laboratory operate from the centre. The practice is a relatively high cost practice; with a GP copayment fee of $42 for standard consultations for adults aged 45 to 64. The practice is open weekdays from 8am to 7pm and is open on Saturdays for casual walk in patients.

Decision making

The management team, which comprises of the nurse team leader, the practice manager, the reception team leader and the lead doctor, meet every month and contribute to big decisions in the practice. The practice director, who owns the practice, makes the final decisions. In addition, nurses, doctors and admin staff all have individual meetings to discuss practice issues, for example, Swine flu.

Staffing profile

Medical

The practice employs 8 GPs, or 6.3 FTE. GPs have appointments booked each day, and these are booked in tandem with nurse appointments if necessary. For example, patients on the chronic care programme first see a nurse and then a GP. Additional procedures resulting from a GP consultation are placed on a queue screen (IS support screen, see below) for nurse appointments.

Nursing

The practice has 6 nurses, or 4 FTE nurses. Nurses have two appointment screens, an IT appointment screen for nurse only activities, and an IS support screen for appointments to support doctors. Nurses also triage walk in patients and contact patients with lab results. In particular, there are approximately 10 patients for INR per day, and approximately 100 patients in total on Warfarin. Patients make appointments to see the nurses for chronic care, for example, for BP's, wound checks and care plus appointments.

Other

Other staff employed in the practice are:

- 7 FTE reception staff
- 1 FTE practice manager
- 1 FTE accounts person

Model of care

General nursing role

The nursing role is split into two: nurse appointments and providing doctors with support. The nurses rotate in a roster. Rostered roles include a nurse to handle booked appointments on the nurse screen, a nurse to handle the queue screen (which accommodates walk ins, acutes, triage, etc) and another nurse to assist all the others during busy times.

Nursing task inclusions

Nurses regularly do a broad range of clinical tasks in consults as shown below.

Task	y/n	Task	y/n
ECG	√	Sexual health consults	√
Dressings/wound care	√	Repeat scripts	√
Immunisations	√	Initiate new scripts	X
Cervical Smears	√	Diabetes get checked	√
Mental health consults	√	Careplus consults	√
Phlebotomy	√	Chronic care management	√
Suturing	√	IUD insertions	X
Audiometry tests	√	Liquid nitrogen application	X
Spirometry	√	Acute triage/consult	√
Bone densiometry	X	General clinical consults	(some)
Occupational health checks	√	IV antibiotics	√

For sexual health, nurses undertake the initial consult, and then the patient sees a GP.

Acute (unplanned)
Nurses triage acute walk in patients. It is practice policy not to send anyone away between Monday to Friday. The nurse may treat the patient or send the patient on to the duty doctor. One doctor is rostered as duty doctor each day. On Saturday morning, the practice operates a drop in clinic.

Chronic care management (planned care)
Nurses manage the 3 monthly recalls for Care Plus patients. They make the appointments and make observations and provide health education etc. before the patient sees the GP. All chronic care patients see the GP at their 3 monthly check up

Medication management
Standing orders

The practice does not use standing orders.

Repeat scripts

The GPs usually see all chronic care patients every 3 months, and renews scripts during the consult. In between times the nurses and receptionists prepare prescriptions, which are then reviewed and signed by a doctor.

Barriers to expanded nursing role
Identified barriers to expanding the nursing role include constraints on resources, people time and space.

Training / professional development
The practice PHO runs CNE (continuing nurse education) meetings. Nurses are paid for their attendance. Each nurse is allotted a number of hours paid leave each year and can negotiate

for special interest courses, for example, smoking cessation, smear taking, asthma and diabetes. All nurses are trained in phlebotomy.

Population & utilisation

The total enrolled population of the practice is 10,102.

Table: Pop by age & sex

Age Group	Gender	Number
00-04	F	275
	M	282
05-14	F	592
	M	564
15-24	F	671
	M	613
25-44	F	1,376
	M	1,129
45-64	F	1,600
	M	1,382
65+	F	947
	M	671
Total		**10,102**

Financial profile

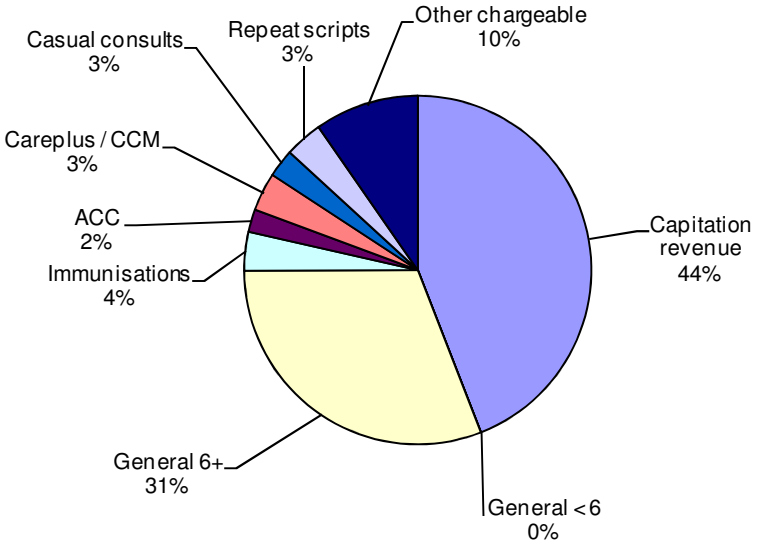
Standard practice fees (including GST) for enrolled patients are:

	Doctor	Nurse	Both
Under 6:	$0	$0	$0
Young person:	$32	$5	$32
Adult	$42	$5	$42

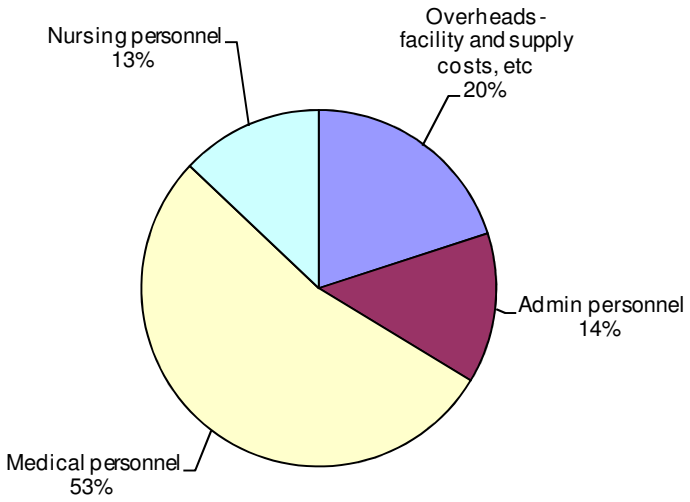
Modelling suggests that the practice would run at an annual profit of $925,000 before tax.

Model outputs: Practice I

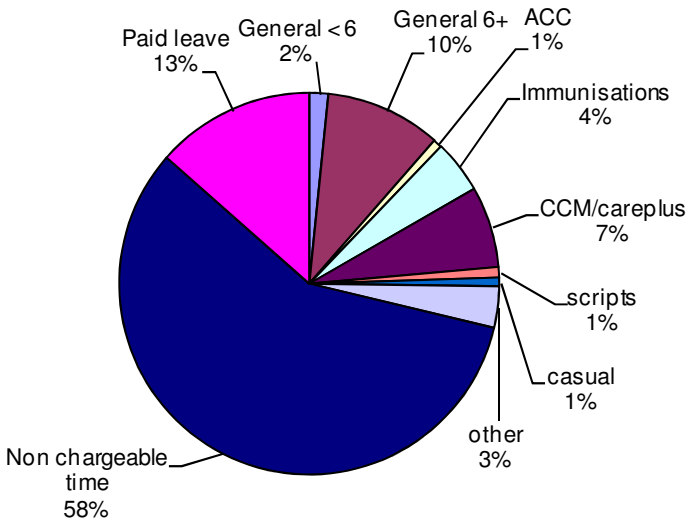
Revenue



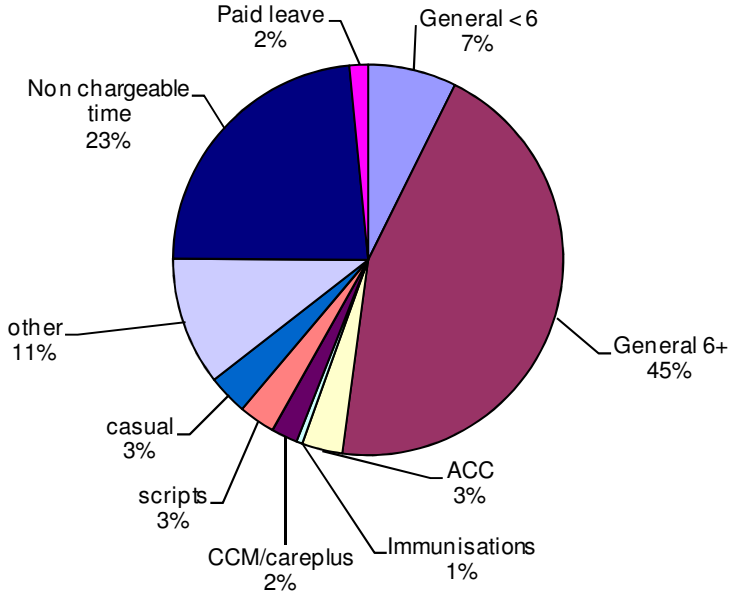
Costs



Nurse minutes



GP Minutes



Practice J

Practice context

Practice I is a large practice with 10,000 enrolled patients. The practice is PHO funded and is a medium cost practice. A significant proportion of the enrolled population identify as Maori. Alterations to the practice building have allowed each Nurse their own consulting room. Each nurse pairs with a specific GP, who has a room adjoining the nurse.

As a part of their quality improvement programme the practice recently hired a clinical and quality/ IT support person. Every month the practice evaluates each doctor and nurse's clinical outputs and discusses them at regular team meetings with the intention of improving the quality of service provided by the practice.

The centre recently became a member of the Rotorua General Practice Group (RGPG). The practice is also working toward gaining Practice Accreditation in a new scheme, under development by the Royal New Zealand College of General Practitioners (RNZCGP), and hope to be one of the first to gain accreditation in New Zealand.

Decision making

The three practice partners, who are senior doctors in the practice, meet every three to four months and make many of the decisions in the practice. Everyone in the practice attends a regular monthly meeting and discusses funding, health and practice issues. The nurses also attend regular meetings and the lead doctor, lead nurse and practice manager have weekly practice management meetings as well.

Staffing profile

Medical

The practice has 7 GPs totalling 5 to 6 FTE. One GP is on maternity leave. Each GP is teamed with a Nurse, and there are 5 teams in total. The partnered GPs receive a percentage of the capitation funding according to their number of registered patients. A percentage also goes to employed doctors and the rest of the staff are salaried. The associate doctors receive 50% of their income from their numbers of enrolled patients.

Nursing

The practice has 6 Nurse FTEs and one part time reliever. Four of the nurses have specialty areas, and three work generically. Nurses see patients who do not see the GP, as well as patients who do. Nurses are encouraged to earn additional income through these individual appointments and there are plans to implement a fee schedule for Nurse Consults.

Other

Other staff employed in the practice are:

- 1 FTE practice manager,
- IT manager
- A visiting dietician from Lakes DHB

Model of care

General nursing role

GPs and nurses operate in paired teams. The nurse day is very structured. Each nurse is responsible for restocking their and their doctor's room. Each nurse also has a day where they are responsible for the treatment room, oxygen and any other extras. Nurses are responsible for organising prescriptions, call-backs, urgent calls from patients and clearing the 'in-box' by

which doctors' send nurses jobs. Nurses are responsible for prioritising all of these duties. Patients often make appointments to see the nurse alone.

Nursing task inclusions and exclusions
Nurses regularly do a moderate range of clinical tasks as shown below.

Task	**y/n**	**Task**	**y/n**
ECG	X	Sexual health consults	
Dressings/wound care	√	Repeat scripts	X
Immunisations	√	Initiate new scripts	X
Cervical Smears	√	Diabetes get checked	√
Mental health consults		Careplus consults	√
Phlebotomy		Chronic care management	√
Suturing		IUD insertions	
Audiometry tests		Liquid nitrogen application	
Spirometry		Acute triage/consult	√
Bone densiometry		General clinical consutls	
Occupational health checks		IV antibiotics	

Acute (unplanned)
The nurses triage acute walk in patients. Patients present to the receptionist, and then to a senior registered nurse who takes them to the treatment room and books a doctor or ambulance if necessary. The nurse sees all unbooked patients on the day, and most acute patients see a doctor as well.

Chronic care management (planned care)
Most chronic care patients are enrolled in Care Plus. The Clinical and Quality support person sends out recalls to patients requiring regular doctor check ups, which occur every 3 months. Where indicated, patients are booked for dual appointments with the nurse, and then the doctor. However, many patients only see the nurse for their regular check up. For example, a patient has an appointment with the nurse for observation and health education, and then an appointment with the Doctor.

Medication management
Standing orders
Standing orders are in place for acute chest pain. Under development are standing orders for contraception, impetigo, bacterial vaginosis and uncomplicated urinary tract infections in young females. They are keen to enable senior registered nurses to prescribe under standing orders.

Repeat scripts

Receptionists take calls for repeat script and computer generate the time and drug requested. A registered Nurse then decides if the script is appropriate, or if the patient needs to see a doctor. The doctor then receives the prescription for sign off. The practice is considering stopping providing repeat prescriptions, as some consider them too dangerous and fraught with the stress of risk of errors to continue.

Barriers to expanded nursing role

Identified barriers to expanding the nursing role include nurse time, practice space, and the attitude of new doctors, who are not used to working alongside nurses. One interviewee commented that a nurse work is not a substitute for, but rather a complement to, doctors work, and a skilled practice nurse could undertake up to 50% of consults currently done by doctors, but not working to a substitution model.

Training / professional development

The Practice PHO leads and provides funding for ongoing education for Nurses. There is a virtually unlimited fund for ongoing nurse training within the practice. One of the nurses operates an education portfolio for each of the other nurses. The practice provides paid study leave for some ongoing training courses, for example, CPR.

Population & utilisation

Table: Pop by age/sex

Age Group	Gender	Number
00-04	F	450
	M	450
05-14	F	880
	M	880
15-24	F	900
	M	900
25-44	F	1,500
	M	1,500
45-64	F	1,080
	M	1,080
65+	F	512
	M	512
Total		**10,644**

Financial profile

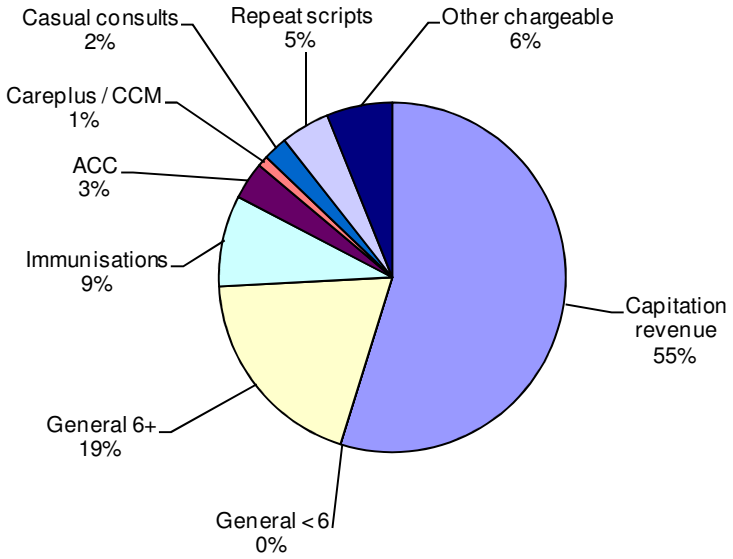
Standard practice fees (including GST) for enrolled patients are:

	Doctor (no HUHC)	Doctor (HUHC)	Nurse (no HUHC)	Nurse (HUHC)
Under 6:	$ 0	$0	$0	$0
6 to 17 years:	$ 22	$20	$12	$5
18+ years	$28	$ 25	$17	$10

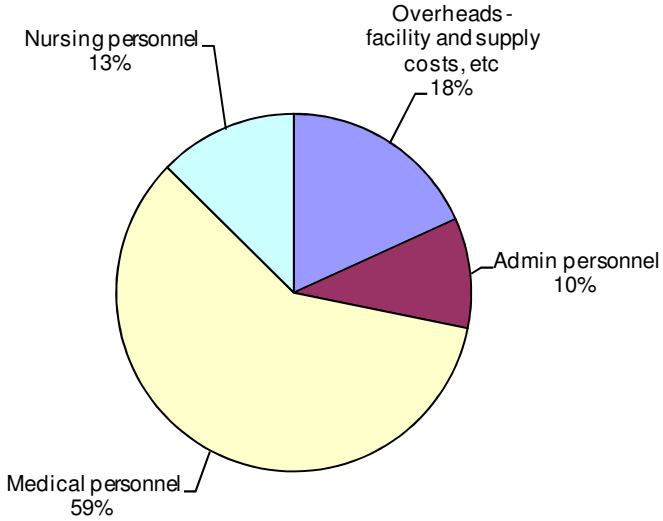
Modelling suggests that the practice would run at an annual profit of some $505,000 per annum before tax.

Model outputs: Practice J

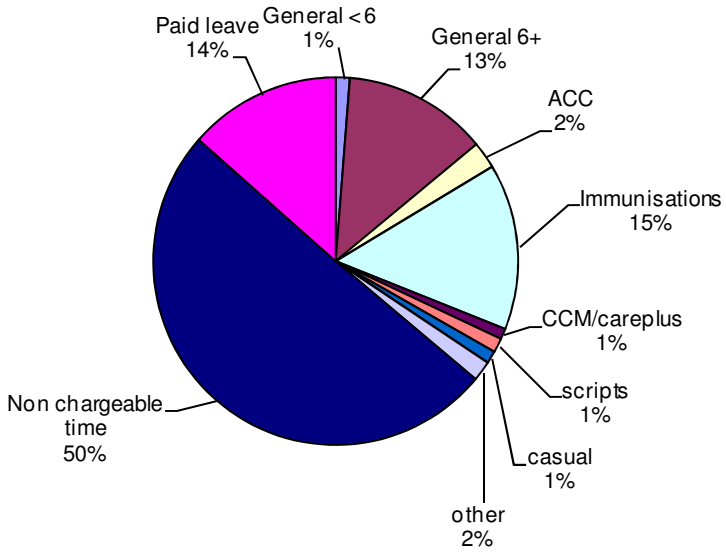
Revenue



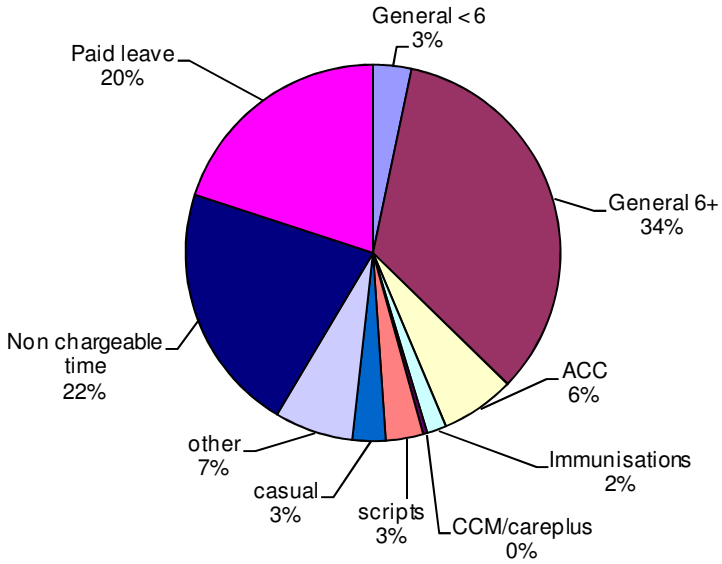
Costs



Nurse minutes



GP Minutes



Annex 3: Interview question lines

These are prompts – to be used as appropriate.

Begin by explaining the project and thanking for time. All comments to be confidential in the report.

Practice Manager/ Owner

- How would you describe the practice – what do you have in common with other practices and what do you think is different about this practice?
- How are decisions made in the practice?
- What are your current part charges for each of the various consultation types?
- How is the capitation funding and activity revenue apportioned between members of the practice?
- What are the specific, separately funded programmes that your practice accesses income from? E.g. Care Plus, Chronic disease management.
- Are there barriers to your practice providing more separately funded programmes?
- What tasks don't nurses do? – why not?
- Do patients make appointments to see the nurse(s)?
- How are acute unbooked (walk-in) patients managed? Do nurses triage them?
- How are chronic conditions that require regular recalls and check ups managed?
- Are there barriers to nurses working more autonomously in this practice?
- What investment is there in nurses' ongoing education and upskilling?
- Are you getting good value from your Practice Nurses?
- What income are they generating?
- Have there been changes in nursing numbers in recent years?

Nursing

- How would you describe the practice – what do you have in common with other practices and what do you think is different about this practice?
- How are decisions made in the practice?
- How is a nurse's day structured? – nurse consultations, consultations earning extra income for the practice, GP support, practice support, non-nursing duties,
- Do patients make appointments to see the nurse?
- What proportion of your time do you spend on non-nursing duties? - work that does not require a Registered Nurse qualification?

- How are acute unbooked (walk-in) patients managed? Do nurses triage them?
- How does your practice deal with repeat prescriptions? - new prescriptions arising from a nurse consultation?
- Do you use standing orders? – in what way?
- How are chronic conditions that require regular recalls and check ups managed?
- Are there barriers to your practice providing more separately funded programmes? E.g. Care Plus, Chronic disease management?
- What tasks don't nurses do in this practice? – why not?
- Are there barriers to nurses working more autonomously in this practice?
- What investment is there in nurses' ongoing education and upskilling?

Doctors

- How would you describe the practice – what do you have in common with other practices and what do you think is different about this practice?
- How are decisions made in the practice?
- What work do nurses do to reduce the time the doctors need to spend with the patients?
- Do patients make appointments to see the nurse?
- How are acute unbooked (walk-in) patients managed? Do nurses triage them?
- How are chronic conditions that require regular recalls and check ups managed?
- Do you use standing orders? – in what way?
- How does your practice deal with repeat prescriptions? - new prescriptions arising from a nurse consultation?
- What tasks don't nurses do? – why not?
- Are there barriers to your practice providing more separately funded programmes? E.g. Care Plus, Chronic disease management?
- Are you getting good value from your Practice Nurses?
- Are there barriers to increasing the scope of the nurses' role?
- What investment is there in nurses' ongoing education and upskilling?

Annex 4: diary data collection forms

Date			Practice:							Doctor					
At the end of each consultation or other activity please record the type of activity, the start and finish time and any related patient co-payment.															
	Start Time	Finish time	Non -consult work			Face-to-face Consultations with Patients									
			Please tick one √√√			A or C	Please tick √√√				Other services	Please tick √√√			
	Start time = previous finish time.		Management activities	Patient paperwork	Phone work	Adult "A" or Child (<6) "C"	Enrolled patient	Casual patient	ACC Patient	Chronic care/care plus	Please specify	Patient also saw the nurse?	Could consult have been nurse only?	Copayment payable?	Comment / notes
eg 1	8.50	9.00			√										
eg 2	9.00	9.13				A	√					√	√	$20	

Date	Practice: Ranouf			Nurse:									
At the end of each activity please record the type of activity, the start and finish time and any related patient co-payment. Use additonal pages as required.													
	Start Time	Finish time		**Face-to-face Consultations with Patients**									
				A or C	Please tick √√√						Other services		
	Start time = previous finish time.		**Practice support**	**Adult "A" or Child (<6) "C"**	**Enrolled patient**	**Casual patient**	**ACC**	**Immunisation**	**Chronic care/ or care plus**	**Patient was also seen by GP?**	**Please specify**	**Copayment payable?**	**Comment / notes**
eg 1	8.50	9.00	√										infection control
eg.2	9.00	9.13		**A**	√					√		$20	acute walk in patient
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Annex 5: Activity based costing approaches

Activity based costing (ABC) has significant implementation problems, especially for large organisations or organisations subject to frequent changes in structure and output. A paper by Kaplan (Kaplan and Anderson 2003) suggests that a different costing method, called Time-Driven Activity-based costing (Time-driven ABC) is a better method for determining costs and therefore determining methods for improving profitability.

The basic ABC model operates by identifying standard resources which are used in different activities, which combine to produce the finished output. This approach has the advantage of identifying high cost activities and allowing identification of targeted, profit increasing improvements to business operations.

The ABC model has several problems. Firstly, the process of interviewing and surveying employees is costly. Secondly, if there is a change in production methods, the alteration in the number of resources used in different production processes cause the original ABC costing to become out of date extremely quickly. The calculations also rely on the accuracy of the responses –which can be variable. An additional concern is that it is easy for the ABC model to become extremely complex extremely quickly.

The alternative approach offered is the Time-based ABC. Rather than identifying the costs involved with an activity, the time required to perform the activity is the input used to calculate costs. Costs are allocated to staff time and the overall costs are calculated from the time per activity. A key advantage of this system is that it identifies where there is unused capacity. It relies on observed time spent on activities, rather than reported percentage of time spent, improving the accuracy of the results.

An additional advantage of this method is that additional activities added into the production process can be accounted for by estimating the additional time they require, rather than re-interviewing everyone involved in the process. The same applies to improvements in existing processes. This makes updating the model simple and makes application to larger businesses feasible.

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