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New Zealand evidence for the impact of primary healthcare investment in Capital and Coast District Health Board

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Abstract

Aims This paper provides New Zealand evidence on the effectiveness of primary care investment, measured through the Capital and Coast District Health Board's (DHB) Primary Health Care Framework. The Framework was developed in 2002/2003 to guide funding decisions at a DHB level, and to provide a transparent basis for evaluation of the implementation of the Primary Health Care Strategy in this district.

Methods The Framework used a mixed method approach; analysis was based on quantitative and qualitative data.

Results and conclusions This article demonstrates the link between investment in primary health care, increased access to primary care for high-need populations, workforce redistribution, and improved health outcomes. Over the study period, ambulatory sensitive hospitalisations and emergency department use reduced for enrolled populations and the District's immunisation coverage improved markedly. Funding and contracting which enhanced both 'mainstream' and 'niche' providers combined with community-based health initiatives resulted in a measurable impact on a range of health indicators and inequalities.

Māori primary care providers improved access for Māori but also for their enrolled populations of Pacific and Other ethnicity. Growth and redistribution of primary care workforce was observed, improving the availability of general practitioners, nurses, and community workers in poorer communities.

While the importance of primary health care's contribution to the health system is acknowledged,[1] it is not always easy to show how we track outcomes and show how primary care contributes to health system effectiveness.[2,3] Following the 2001 launch of New Zealand's first Primary Health Care Strategy, considerable new funding was channelled into the primary health care sector with the aim of reducing health inequalities between populations, reducing acute hospital demand, and improving health outcomes.[4,5]

The Capital and Coast DHB Primary Care Framework

In 2002/2003, Capital and Coast District Health Board (C&C DHB) developed a Primary Health Care Framework (the Framework) to guide funding decisions, and identified a set of indicators to measure the impact of increased primary health care investment (see the full report for a fuller discussion of the development of the methodology).[6]

In addition to funding aimed at reducing fees in general practice, C&C DHB targeted investment to improve equity of access and invested in a broad range of service developments and action to influence the social determinants of health.

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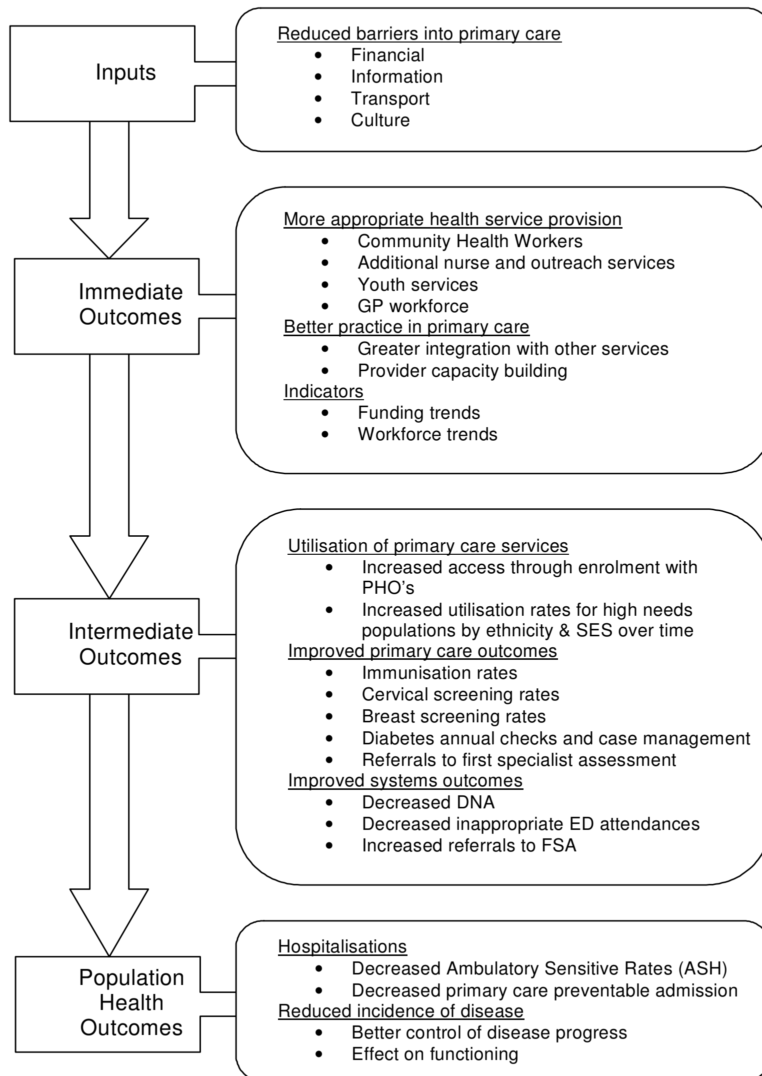
A negotiated process between the DHB and service providers allowed the DHB to collect NHI level utilisation data for all general practice consultations for PHO enrolees and similar utilisation data for many other primary care contracts. This data provided age, gender, ethnicity, and socio economic status (NZDep 2006) for every recorded encounter. Additionally, service providers submitted periodic narrative reports on the developments, trends, successes, and challenges of health service delivery and community initiatives. This rich data allowed a depth of analysis not possible in other District Health Boards.

Figure 1. Input/outcome model for Capital and Coast DHB primary care framework



The Framework set out the intervention logic for investment, documenting assumptions about expected outcomes from investment, along with the underpinning

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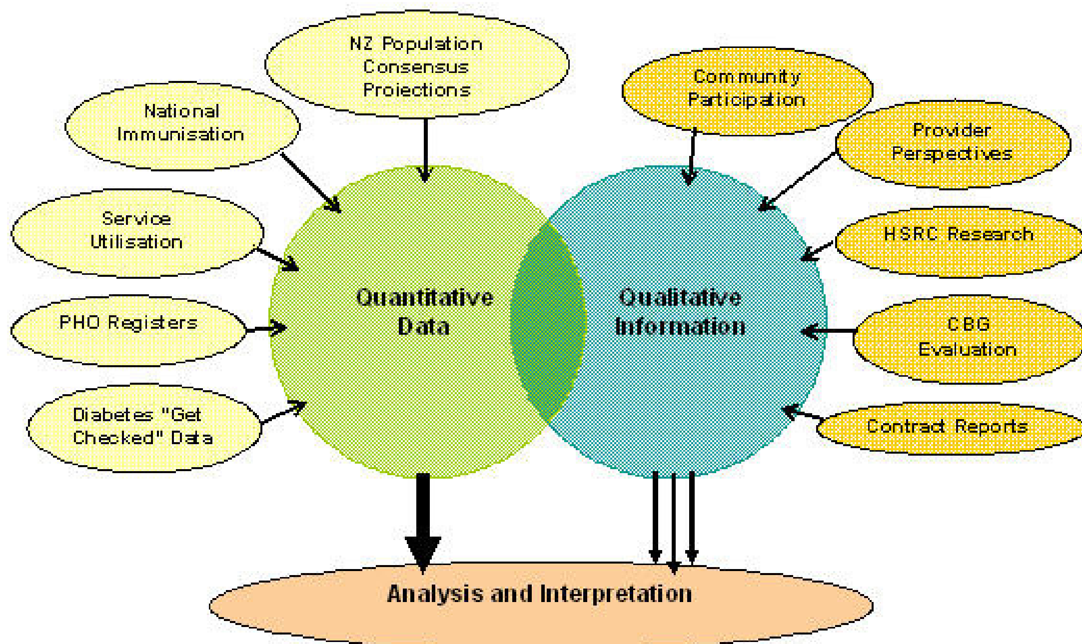
values and approach to contracting that C&C DHB hoped to model. It described the anticipated outcomes in terms of primary health care access, impact on health inequalities, and short term population health gain. This is summarised in a simplified input/outcome model based on a model developed for a similar evaluation.[7] We note that a diagram cannot capture the true complexity of interaction of well established services, provider relationships with communities, and the multiple levels of influence on population health patterns.

The Framework assumed that improved access to primary health care would improve health outcomes and reduce health inequalities and timely access was expected to reduce ambulatory sensitive hospitalisations (ASH), acute hospital demand, and inappropriate use of the Emergency Department (ED).

The Framework guided investment, and prioritised the enhancement of services in high deprivation areas, for Māori, for Pacific communities, for refugee communities, and for young people. Investment also focussed on building broader primary health care teams, and improving workforce stability in areas of high deprivation. Considerable investment (sourced from DHB marginal funding) was made to bring all service providers up to similar capacity to meet the needs of their enrolled populations, investing differentially in areas with clusters of high health and social need.

Figure 2. Mixed Methods data collection and analysis



This analysis used mixed methodology.[8] By 2006, C&C DHB had 96% of its population enrolled in PHOs, so was able to analyse the whole population without the usual statistical sampling problems. We assumed that cost influences utilisation, therefore analysis was undertaken by aggregating primary care practices into four

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clusters: Very Low Fees (analogous to VLCAF practices which met the 2006 Ministry of Health eligibility criteria of zero fees for children under 6 years and a maximum of $15 for adults over 18 years), Low Fees, Medium and High Fees practices. We used fees clusters to look at the relationship between cost (patient co-payment) and access. The ranges of GP fees in these clusters are as follows:

Table 1. Fee ranges

Fee range	Fee level (normal consultation)
Very low fees (VL)	Free to maximum of $15 for all age groups
Low fees (L)	$16–$30
Medium fees (M)	$31–$39
High fees (H)	$40 or above

Qualitative analysis of reports from the service providers was used to put the numbers in context. Drafts of a report, used as the basis for this article, were shared with the primary care sector and the PHO Advisory Group (footnote – this included up to 3 representatives from each PHO – clinical, management or community), who provided feedback and input.

Results

Immediate outcomes of primary health care investment

Increased funding—Primary care funding increased significantly in 2003 with the advent of PHOs, yet primary care still received the smallest tranche of DHB funding overall, averaging an increase of $6M annually 2002–2007 while hospital funding increased $21M annually, on average (see Figure 3). Thus, absolute investment in health services increased with no substitution from one area to another.

Figure 4 illustrates the funding increases associated with the phased rollout of additional subsidies. It shows the “access” formula funding that initially applied to PHOs with greater than 50% Māori, Pacific and low-income enrolled population, was progressively applied to different age groups in the remaining (“interim”) PHO practices. Most new funding went to Medium Fees PHOs.

Very Low fee practices did not receive as much funding over the same period. Consequently, differential investment was required to maintain very low cost access in areas of high health need.

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Figure 3. C&C DHB annual expenditure trends

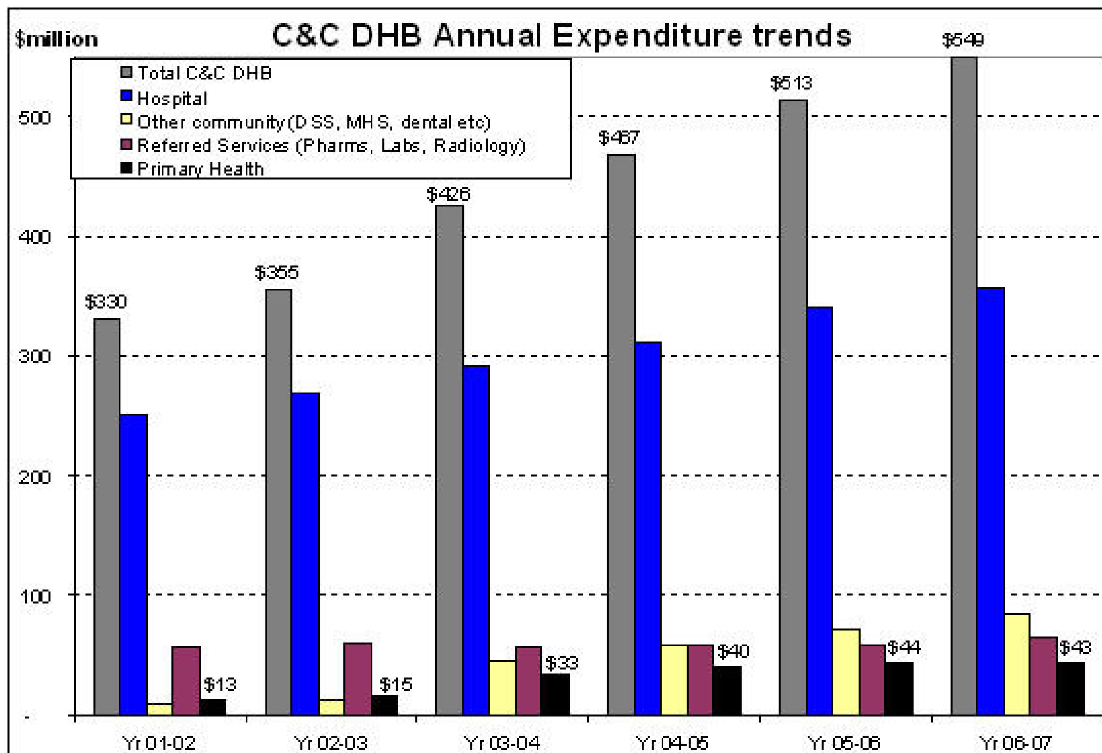
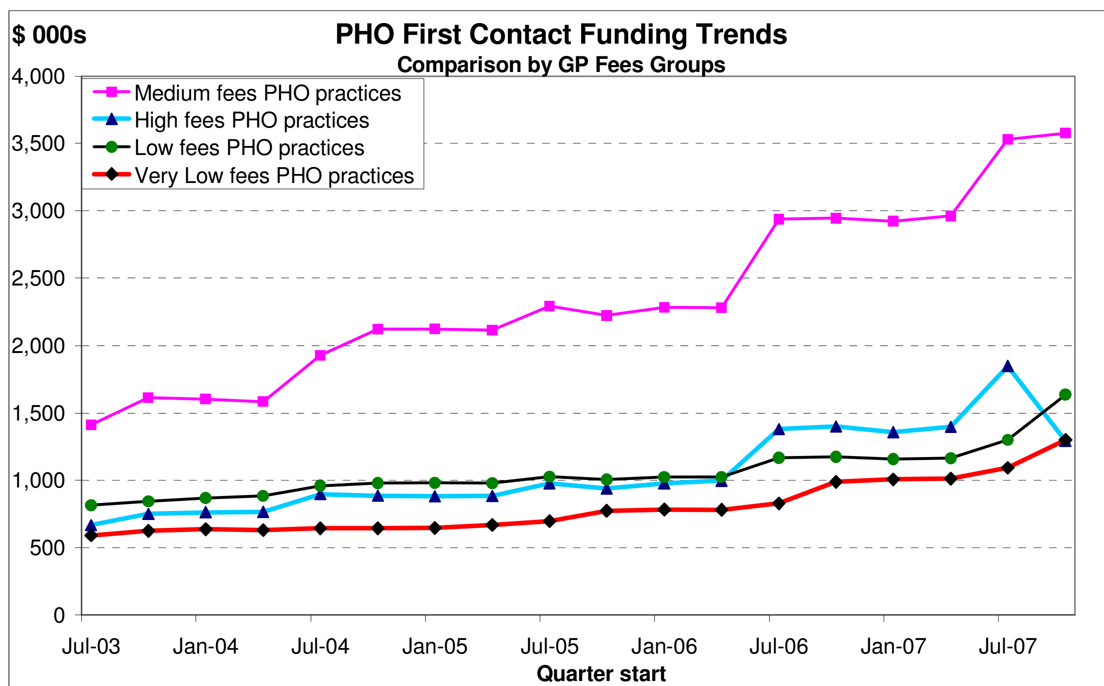


Figure 4. PHO first contact funding trends-comparison by GP fees groups



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Enrolment in PHOs—Two methods were used to track PHO coverage. Using DHB data only in terms of enrolment and projected Census population as the denominator, PHO enrolment increased from 80% in 2004 to 85% in 2007.

However, the most accurate estimate was made in 2006, when detailed analysis of PHO enrolment by DHB was compared to Census data, and the DHB had access to information about enrolment in any PHO, including those in neighbouring DHBs. This showed that 96% of the C&C DHB population was enrolled with a PHO (89% Māori, 93% Pacific, and 93% of people living in NZDep 9 and 10 areas).

Access and service utilisation trends—Service utilisation, measured by the number of visits to first contact services (GP and/or nurse attendances), provides a good indication of overall access to primary care, which populations are using services and trends in access as cost and other barriers are modified.

Figure 5. First contact service utilisation—comparison by cost of access

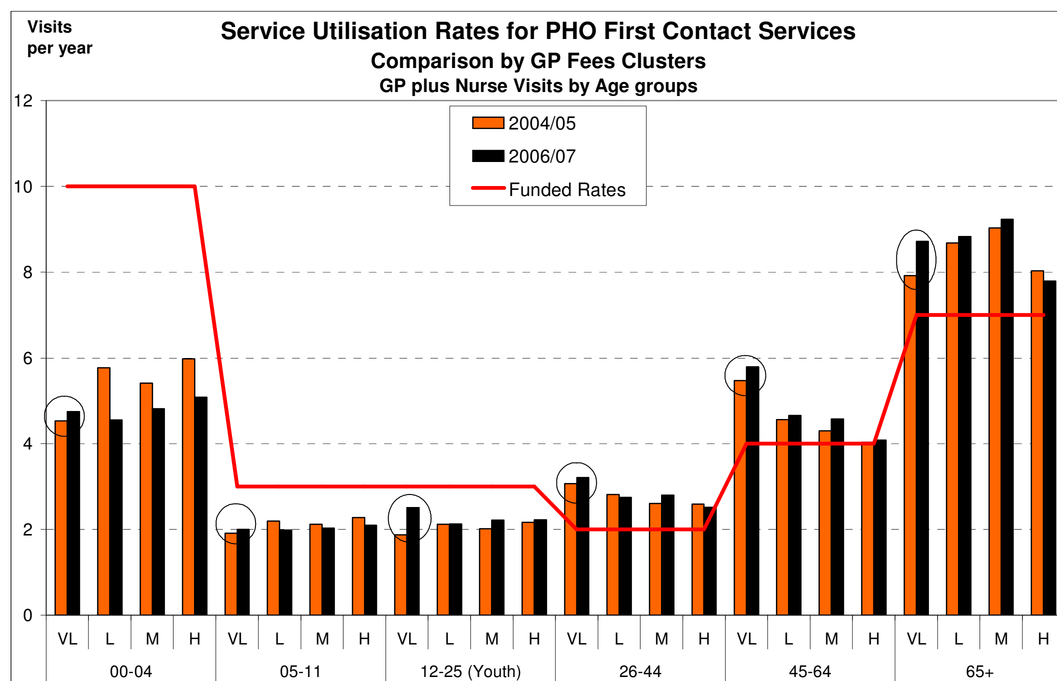

Figure 5 compares the number of consultations by age groups for those accessing Very Low (VL), Low (L), Medium (M) and High (H) fees PHO practices. "Funded rate" refers to the number of visits per year for each age band that is used in the PHO funding formula. These rates were based on the General Medical Subsidy (GMS) claims data prior to the start of PHOs. The circles are inserted to highlight where an increase in service uptake was observed.

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Trend analysis shows:

- that, nearly a year after the introduction of an additional subsidy to maintain Very Low Cost Access, in 2006-07, the Very Low fees PHO practices have provided more consultations across all the age groups than in 2004-05;
- although the consultation rates for very young children apparently declined in most practices following the introduction of PHOs, the Very Low fees PHO practices show a positive trend in providing increased consultations by 2006-07; and
- there was increased utilisation by people over 45 years of age in Low and Medium fee practices. This may reflect the effect of Care Plus and other strategies, using Services to Improve Access (SIA) funding, introduced in these practices to reduce the cost barriers for high need people.

There was evidence of increased utilisation by Māori and Pacific populations at VL fees practices over this period. This is illustrated in Figures 6 and 7.

Figure 6. First contact service utilisation - comparison by cost of access by Māori

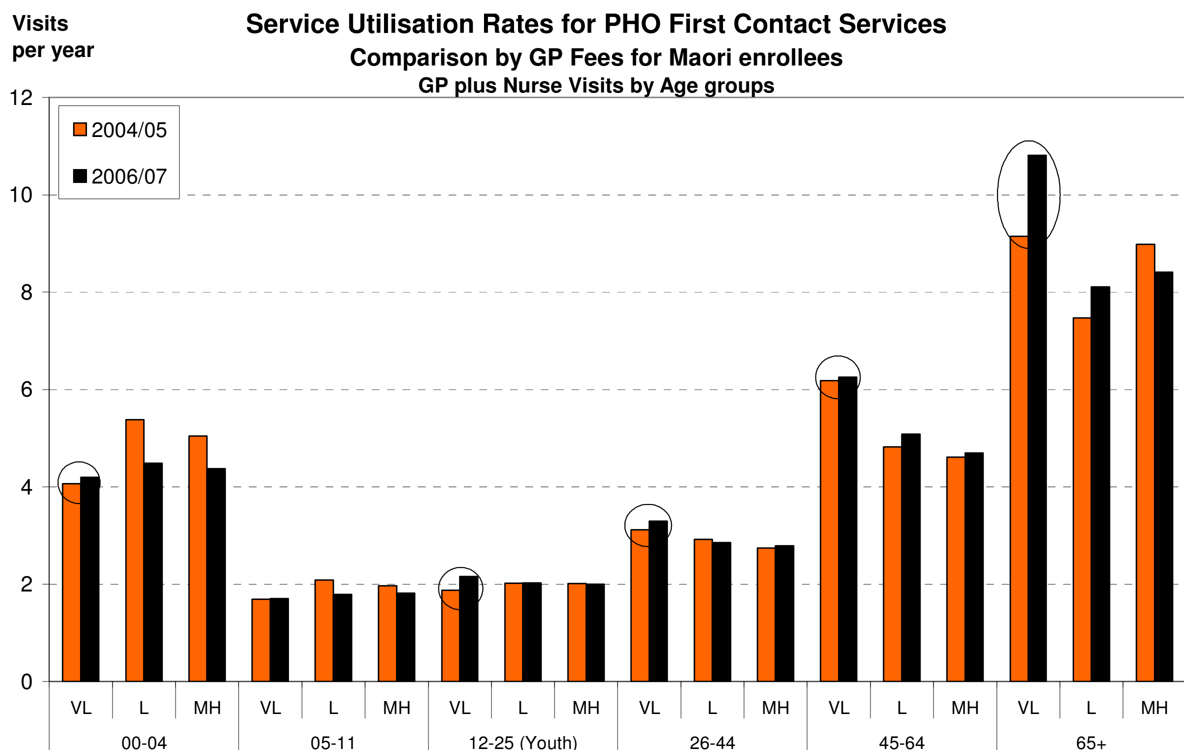

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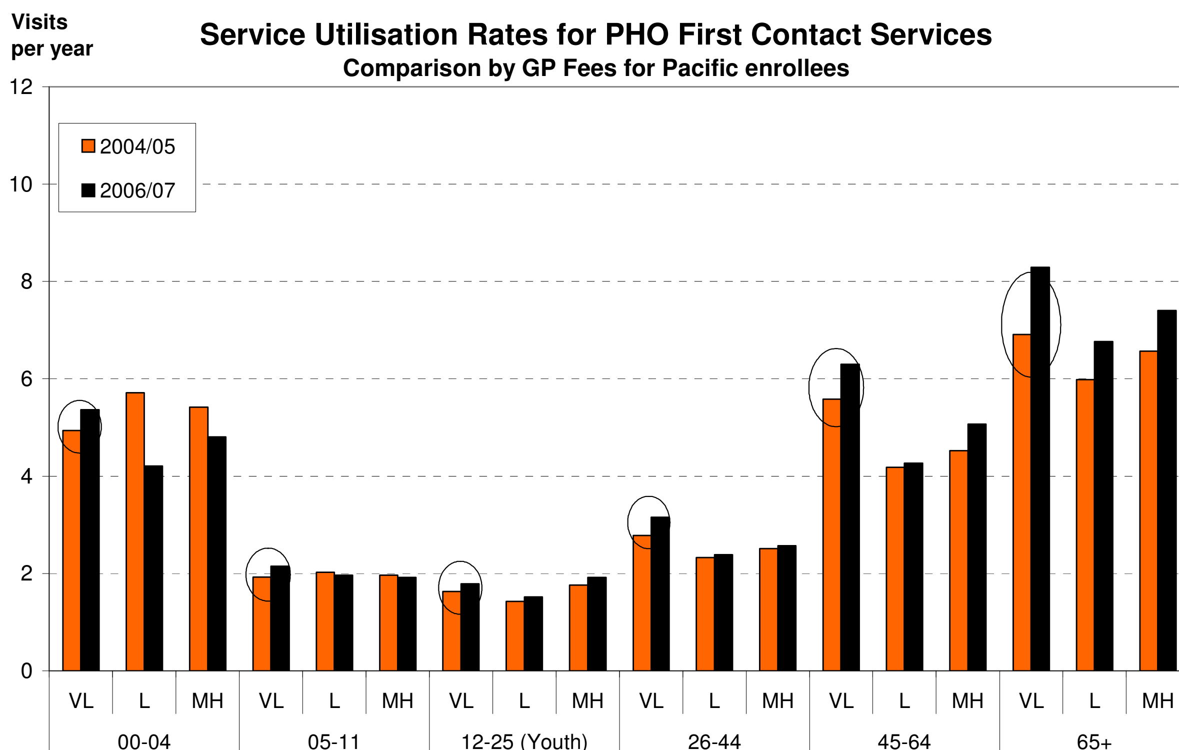
Figure 7. First contact service utilisation - comparison by cost of access by Pacific people

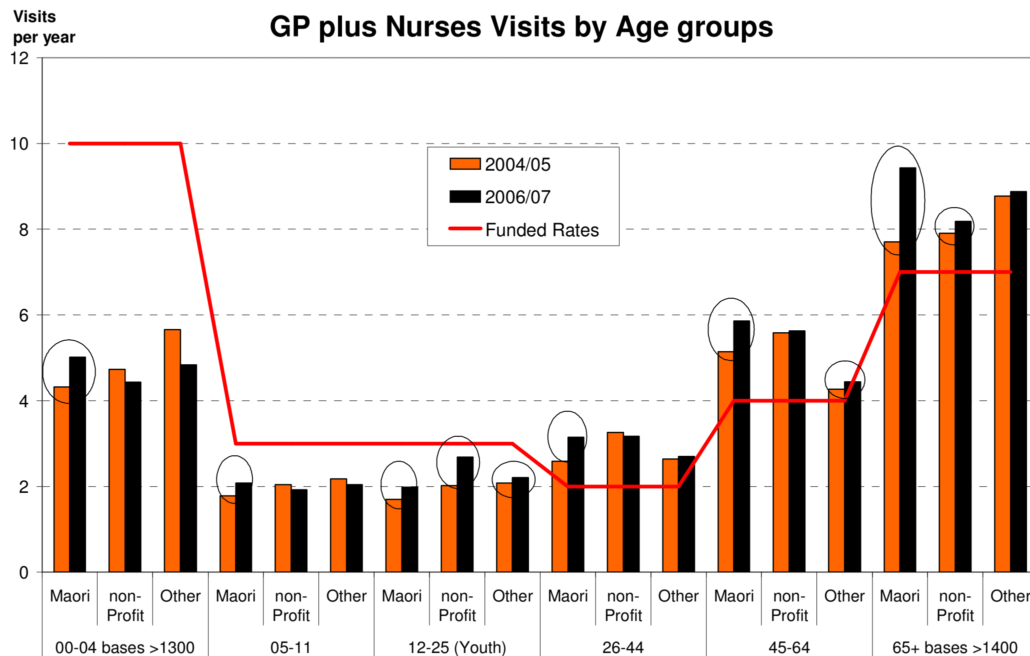


Increased utilisation was observed for Māori over the age of 45 years in Low fee practices. For Pacific enrolees, there was increased utilisation in Low Fee and Medium/High Fee practices in some age groups, possibly reflecting the targeted use of Care Plus and SIA funding to reduce cost barriers.

Intermediate outcomes of primary healthcare investment: model of service delivery and impact on access for vulnerable populations—Reducing cost barriers to improve access to primary health care is important to reduce inequalities between populations. However, other factors influence accessibility and acceptability of services. The ownership, service model and service culture can also be influential.[5]

Over the period of the study, Māori providers and Not for Profit providers (who tend to serve more ethnically diverse communities and more deprived populations) demonstrated more change in service uptake across the adult population enrolled than mainstream services.

Figure 8. First contact service utilisation - comparison of models of care by age group



There was increased utilisation by Māori enrolled with Māori providers, in every age group. Interestingly, this increase in utilisation was also observed for Pacific populations and those of Other ethnicity enrolled with Māori providers. Māori providers achieved this increase in utilisation, despite relatively high baseline utilisation rates. This is illustrated in Figures 9, 10, and 11 that show utilisation rates for Māori, Pacific and Other populations, analysed by model of service delivery.

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Figure 9. First contact service utilisation - comparison by models of care for Māori uptake

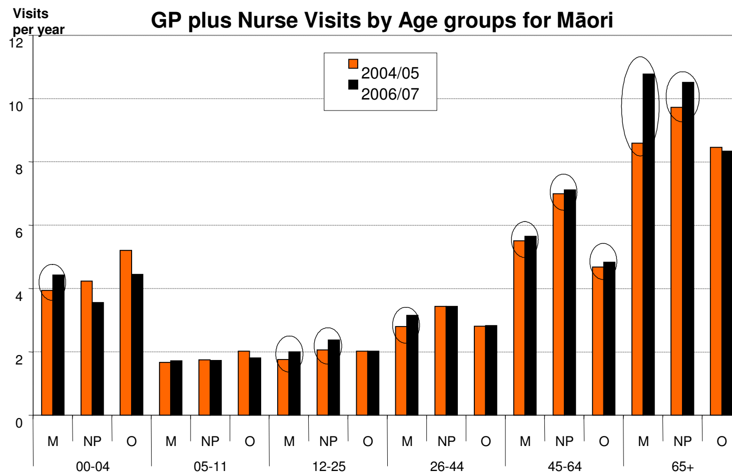

Figure 10. First contact service utilisation - comparison by models of care for Pacific uptake

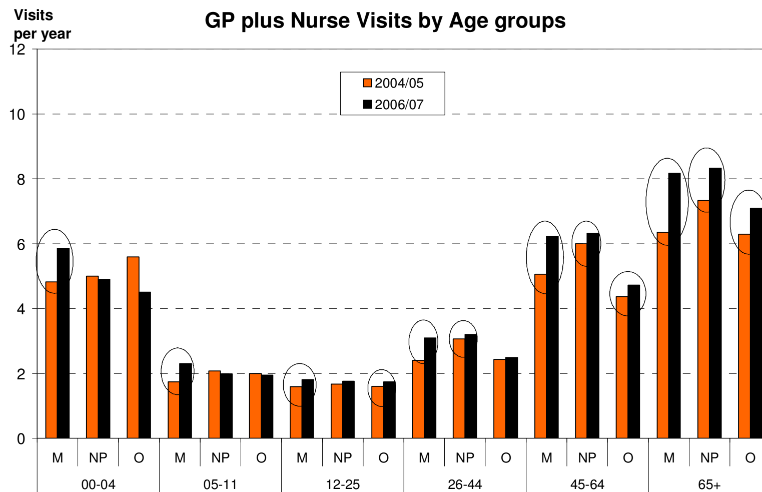

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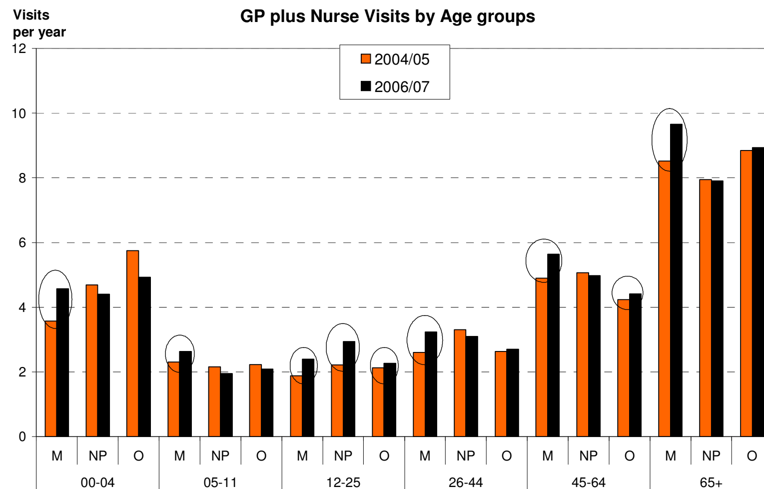
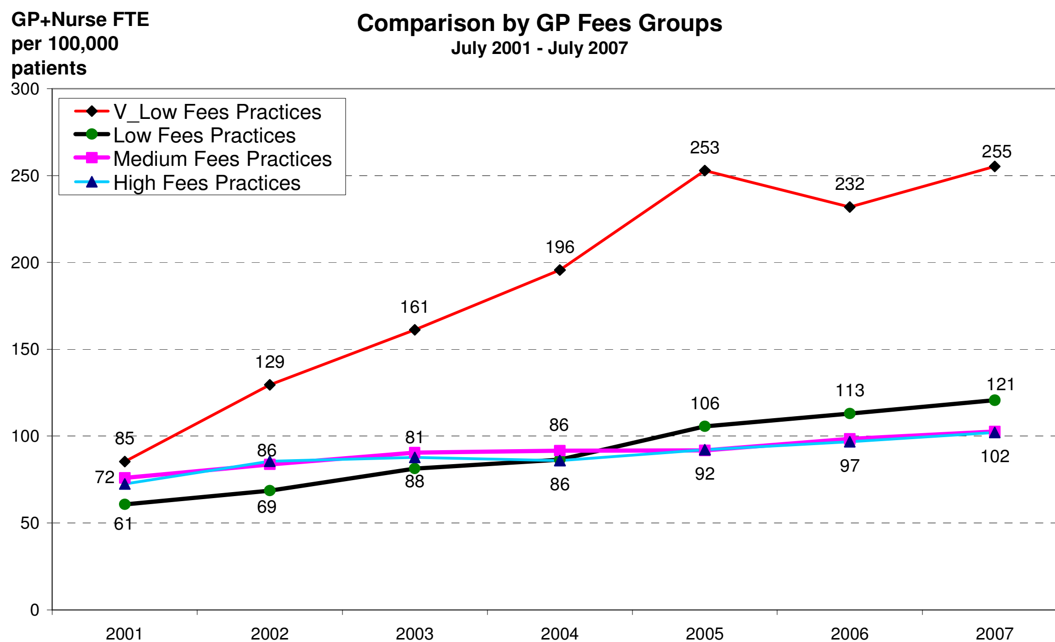
Figure 11. First contact service utilisation - comparison by models of care for non-Māori , non-Pacific people



Primary care workforce—There was a steady increase in the GP and practice nurse workforce over this period and additional funding for Very Low Fees practices resulted in a marked increase in workforce capacity in these services.

Figure 12. Comparison of GP workforce growth by fees groups



The workforce growth was particularly marked for practice nurses. Overall, practice nurse numbers increased by 86% between 2003 and 2007; (78% in High Fees

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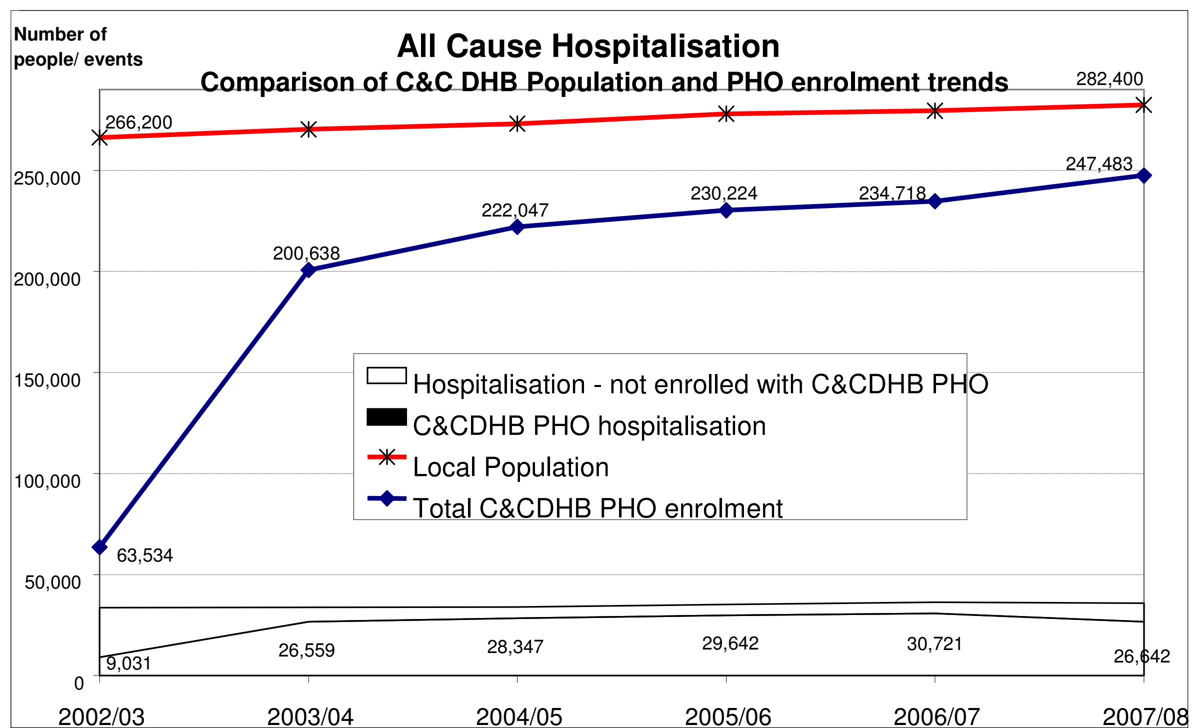
practices, 54% in Medium Fees practices, 132% in Low, and 122% in Very Low Fees practices). This demonstrates that differential investment in areas of high deprivation will result in a redistribution of workforce into these areas.

Very Low Fees practices employed a broader range of primary health workforce including community outreach workers to increase access to services. From 2001-2007, there was substantial growth in community based nurses, outreach workers and health promotion workers across all the PHOs. These workers facilitated more responsive services to the 'hard to reach' populations, extending services beyond the clinic settings, for example into homes, schools, marae, churches, kōhanga reo, schools, sports clubs and some council flat complexes.

Impact of primary care investment on population health outcomes

Hospital admission trends—By 2004/5, most of the population was enrolled with a PHO, six PHOs were established and a range of new service developments were in place.

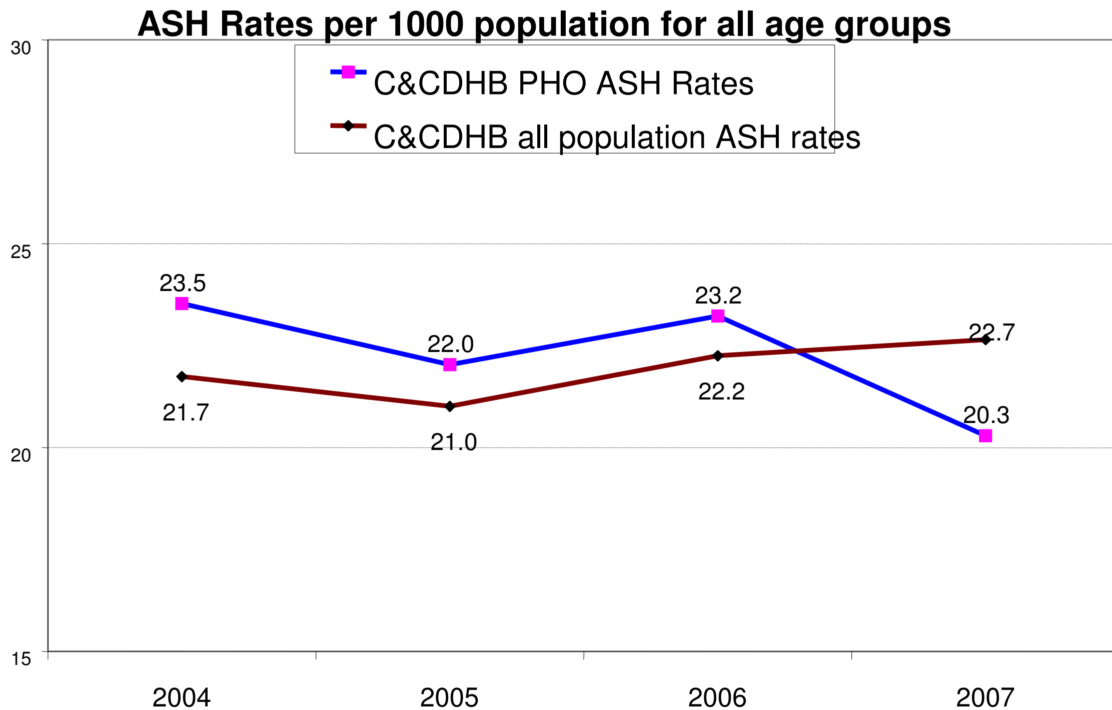
Figure 13. All cause hospitalisation



Despite steady population growth, all cause hospitalisation for those enrolled in a PHO was relatively stable and by 2007/08, there was a 4% decrease compared to 2003/04.

Ambulatory Sensitive Hospitalisation Trends (ASH)—Ambulatory Sensitive Hospitalisations (ASH) are admissions that can potentially be avoided through interventions delivered in primary care or through other ambulatory services. ASH rates fell over this period for the PHO enrolled population.

Figure 14. Comparison of ASH rates between local and PHO enrolled populations



ASH and inequalities

Across the country, ASH rates varied despite the same funding inputs. The long term trends in ASH for C&C DHB in the graph below indicates a narrowing of inequalities between Māori and Pacific and Other, in the 0-4 age range. This is a positive result compared to other urban DHBs where there are mixed results.

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Figure 15. ASH trends for 0–4 year old children, 2001-07 by urban DHBs

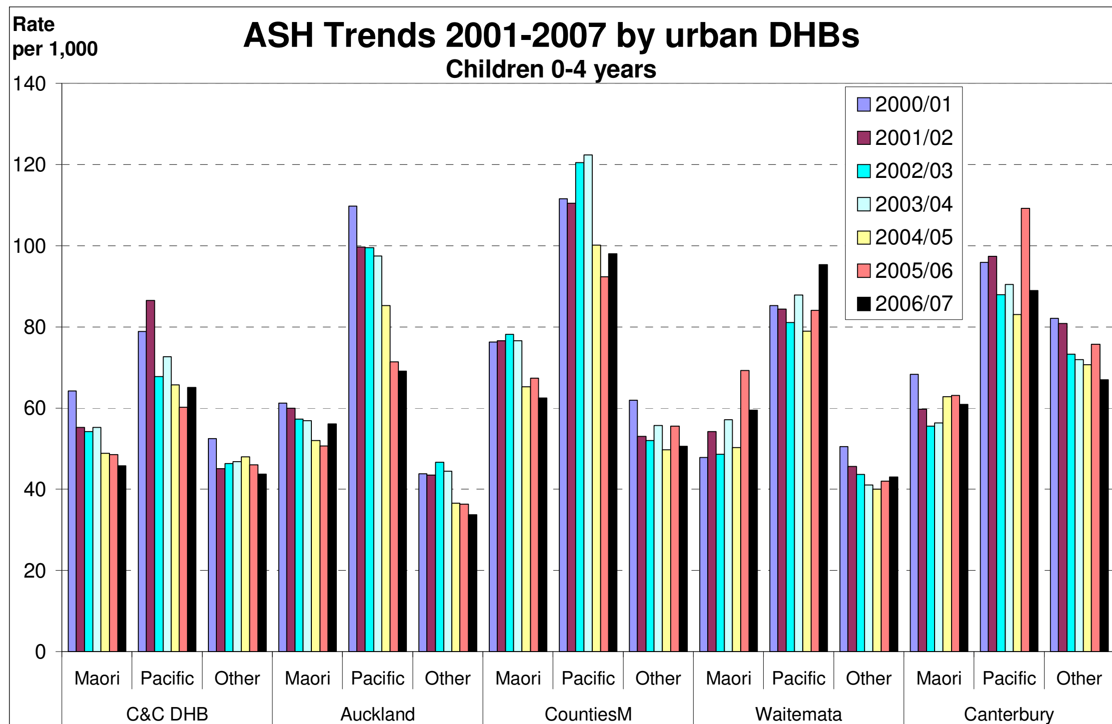
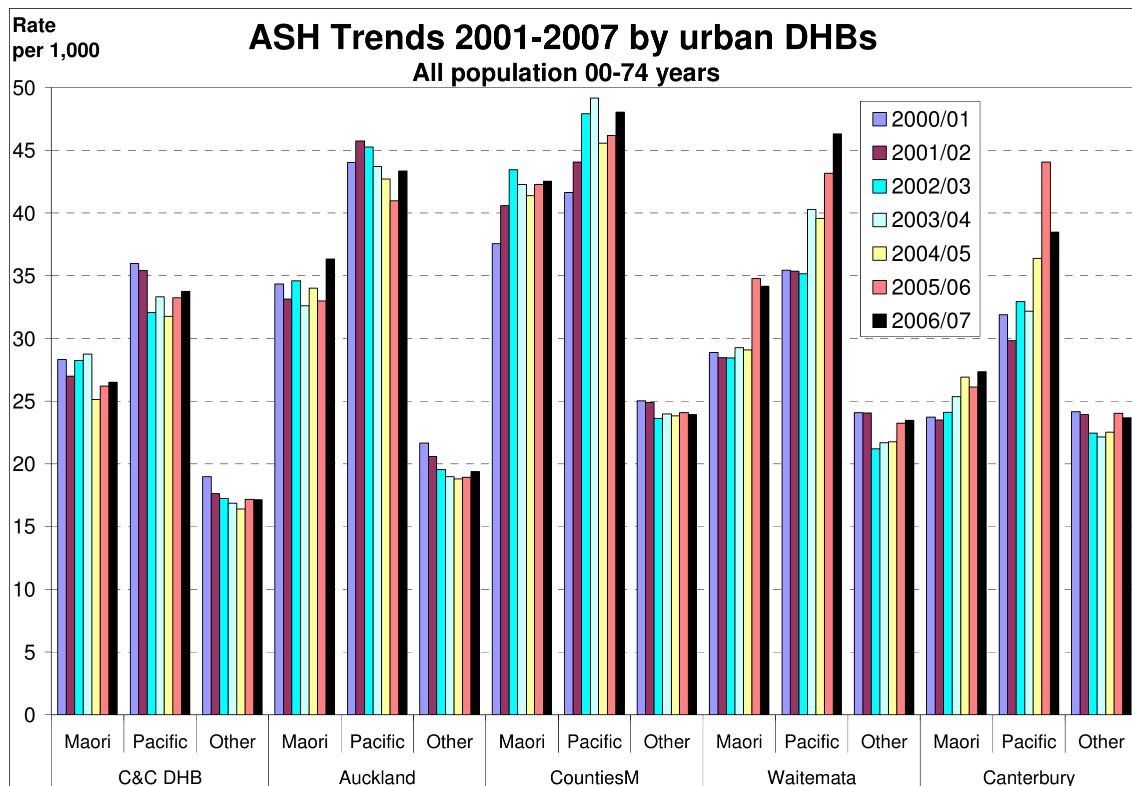


Figure 16. ASH trends 2001-2007 by urban DHBs



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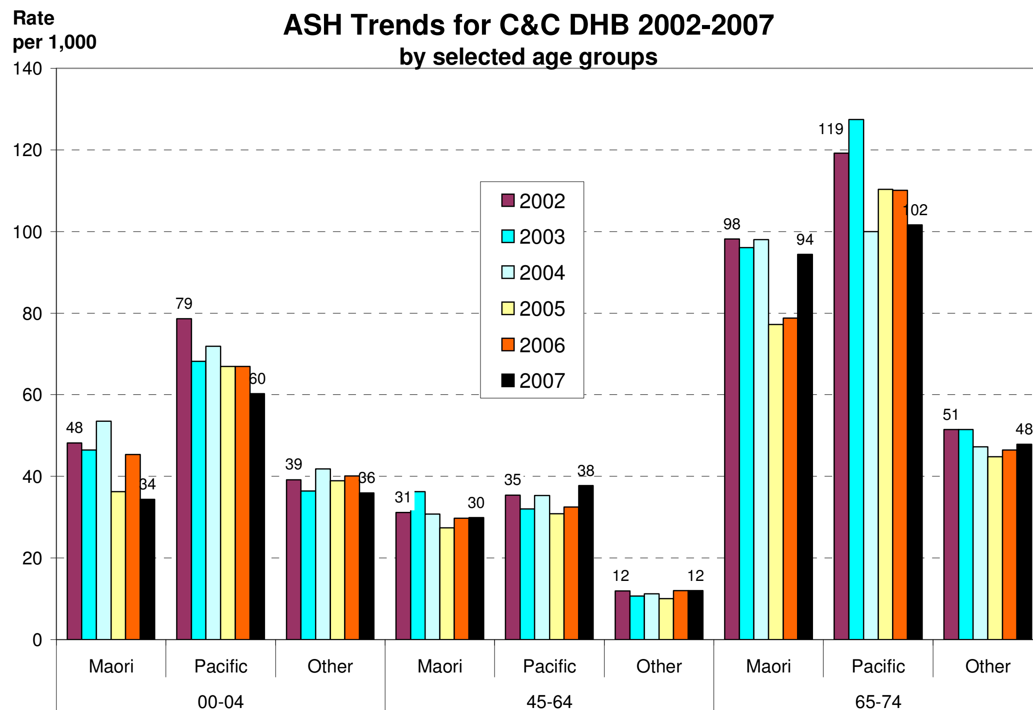
The ASH trends for 0-74 year olds in the District was consistently less than national average and decreased over this period. However, significant disparities remained between Māori, Pacific and Other adult populations over the period of the study.

Figure 17. ASH trends by selected age groups, 2002–07



Inequalities in C&C DHB slowly reduced both in absolute and relative terms. Both the rate and the trend were favourable compared to the results in other large urban DHBs over this period.

ED attendances

Total ED volume at Wellington Hospital was nearly 46,000 in 2007, with 14% of those attendances by people from outside of C&C DHB. ED attendances grew steadily at 2% per year over the period. The PHO enrolled population contributed to 0.2 % of the growth in total ED attendances, while those not enrolled, or outside of C&C DHB PHOs contributed 1.7% of the 2% increase. This suggests a link between primary care access and ED attendance.

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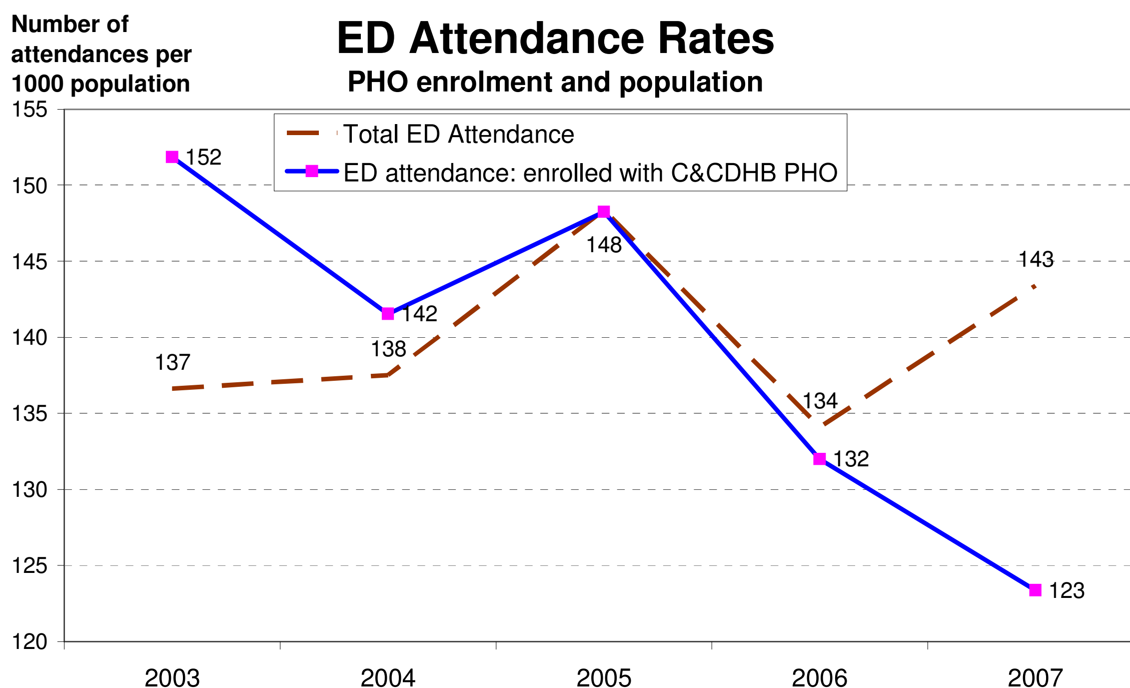
Figure 18: ED rates of local C&C DHB population by PHO enrolment status



Immunisation coverage as a marker of access and outcomes

From November 2007, C&C DHB had reliable data, based on the National Immunisation Register (NIR). By January 2008, the NIR data indicated that 85% of C&C DHB children were fully immunised at two years (national average 77%); 81% of Māori two year olds (national average 69%) and 82 % of Pacific children (national average 75%). Since this study was completed, the coverage has risen further and was 91% (national average 87%) in 2010.

Service mix and health outcomes for vulnerable populations

The mix of services operating at different levels of the DHB influences health outcomes for vulnerable populations. Young people attend general practice less than other populations, particularly youth living in high deprivation areas. Investment in a range of youth-specific services resulted in an increase in primary care service uptake by young people over the study period, but ethnic disparities in access were not reduced. (4% increase for Māori , 9% for Pacific, 12% Other and 9% high needs). ASH rates dropped steadily for young males, and dramatically for females from 2003-2007.

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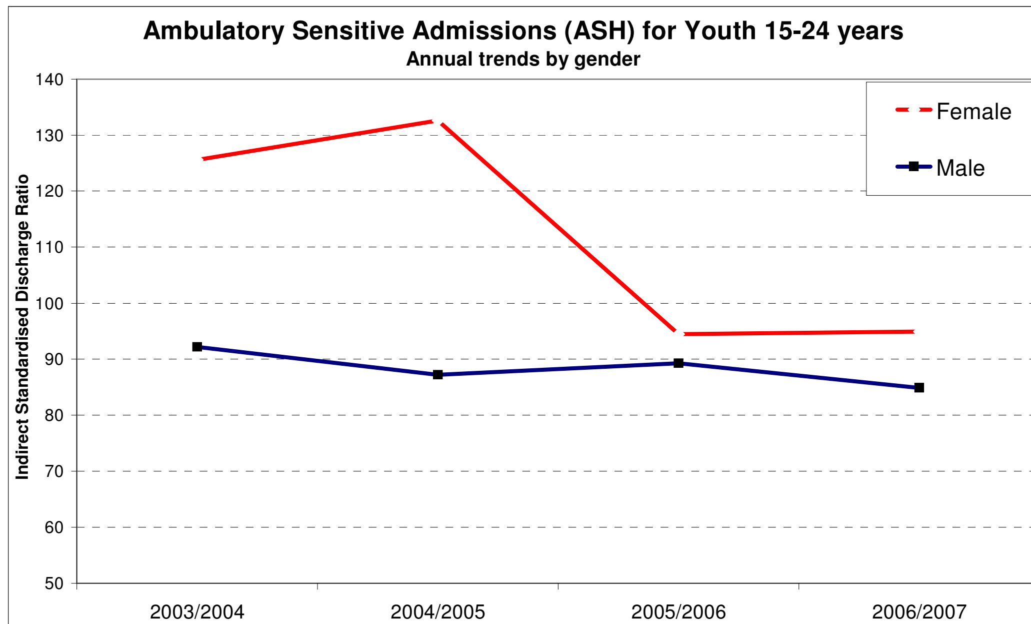
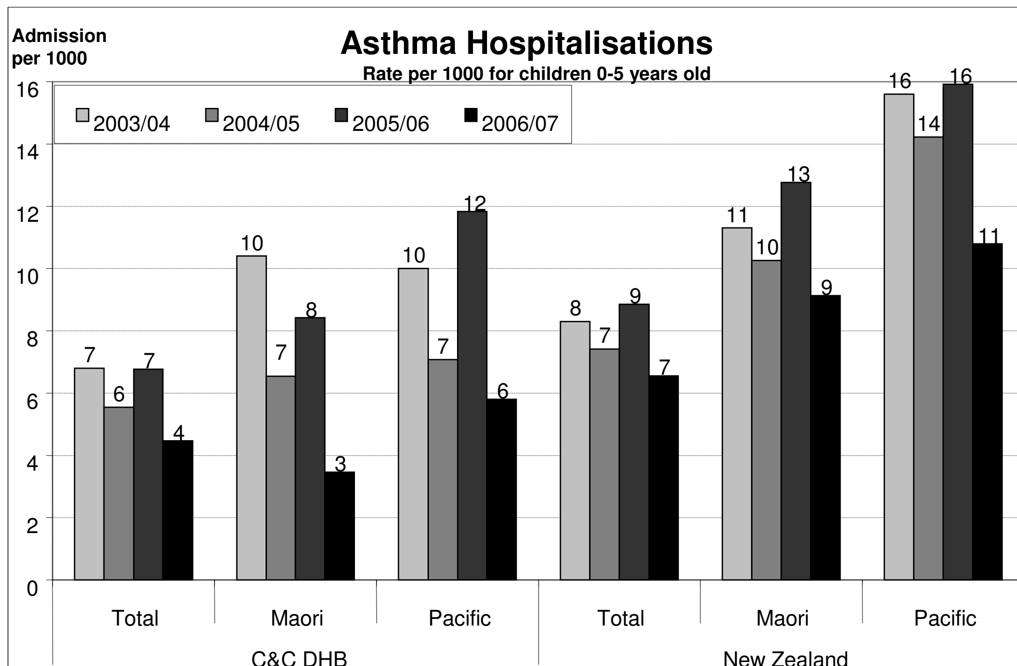
Figure 19. Ambulatory sensitive hospital admissions for youth



Asthma in children is a sensitive indicator of primary care access and quality. Note that the Māori rate in 2006/07 is less than Other which demonstrates the value of improved primary care access and Māori niche services.

Figure 20. Asthma admission rates for children—C&C DHB and NZ



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Discussion

This paper, based on the C&C DHB Framework report,[6] illustrates that sustained and targeted investment in primary care impacts positively on health outcomes, reduces avoidable hospital use and can reduce health inequalities. The results confirm international research findings and support the value of investment in comprehensive primary health care to drive effectiveness, efficiency, and equity in health systems.[1-2, 9-13]

High levels of enrolment, increased utilisation and affordability of primary care services, combined with active community engagement and a range of community-led initiatives led to reduced ASH and reduced ED attendances for the enrolled population, and improved immunisation rates across the District. Importantly, improvements were particularly striking for Māori, Pacific, high deprivation, and youth populations.

In short, increased investment in primary health care improved population health outcomes overall and, within two or three years of the increased primary care focus, was demonstrating promising impact on inequalities. Sustained investments over and above PHO funding and a collaborative planning approach with ongoing provider and community input were required to achieve these results. This is a case study of a comprehensive approach to primary health care and a participatory model that was implemented in one District. It is therefore not reflective of the whole New Zealand experience.

A striking finding of this study is that Māori providers improved utilisation for all ethnicities. Clearly, there are elements of the approach to service delivery in Māori providers that work to improve utilisation for the enrolled population, not just Māori .

A range of youth-friendly service developments, including school clinics in Porirua, youth health services in Wellington and Kapiti, subsidised sexual health services, youth-led health promotion initiatives and rangatahi engagement activities improved primary care utilisation by young people. The results, including a decrease in avoidable admissions was encouraging.

Further initiatives, being introduced at the end of the study period, included a 'boyz clinic' with male peer support workers, a male GP and periodic activities to draw in more young men to the youth health services. In the early stages of this development, the service reported that young men, particularly young Māori who were not registered elsewhere, were participating. This may reduce inequalities in utilisation and health outcomes for this age group.

It was expected that ED use would reduce with increased primary care funding to reduce cost barriers and increase primary care capacity. However, the impact on ED use was complicated by unintended or unanticipated factors such as workforce shortages, "closed books" or limited enrolment policies in primary care practices, intermittent increased pressure on GP capacity due to national programmes such as the MeNZB campaign, influenza vaccine shortage, and changed after hours arrangements. In many practices significant cost barriers remained for most patients.

Despite these factors, it was clear that ED use by the population enrolled in a PHO fell substantially.

The World Health Report 2008 outlined two strategies to address inequity: moving towards universal access to health services and working with communities to change social and environmental factors affecting community health.[14-15]

The workforce growth and redistribution observed in C&C DHB demonstrates the value of differential investment to improve services in areas of high need and traditionally poorer levels of primary care access and utilisation. Despite this, capacity issues affecting appointment availability, the ability to register with a general practice and continuity of care remained an issue in some parts of the district. These capacity issues were partly due attributable to the success of the primary health care strategy, with increased utilisation by existing enrollees, longer consultations to support chronic disease management, increased expectations of expanded primary care services and increased income allowing some general practitioners to reduce hours of work.

While improvements in utilisation were achieved for Māori, Pacific and low income populations, the developments fell far short of universal free access for any high need population or age group. Substantial co-payments remained for the majority of service users, reducing the accessibility of services for many in the district. However, there is evidence in this report that, even within two or three years of increased investment in primary health care and with a strong focus on inequalities, tangible results are possible.

Space does not allow description of the many tailored service initiatives nor the range of community-led action and intersectoral projects that were integral to C&C DHB's primary health care development over this time. Some initiatives were particularly designed to enhance participation by marginalised or 'hard to reach' communities and improve health outcomes in these groups. Others to improve housing, income and employment, urban planning, social inclusion and youth development involved a broad range of health professionals and community groups. During this period of primary care development, fostering community participation, engaging in intersectoral projects and supporting community action to address such issues came to be regarded as core business by PHOs and primary care providers.

The summary provided in this paper gives some indication of the scale of new investment in primary health care in C&C DHB as the national primary health care strategy was implemented. Across the set of results reported in this paper, there is evidence of improved access to primary care, reduced avoidable hospitalisations, better health outcomes and some promising progress in addressing inequalities.

This paper reinforces the value of the comprehensive primary health care approach taken in C&C DHB. It demonstrates the strength of the mix of services and strategies that were built around general practice-based first contact primary care. The tailoring of primary health care services to meet different needs in different communities, mechanisms for community participation,[14] and intersectoral action with communities and providers improved outcomes for all,[13] and most markedly for Māori, Pacific, youth and refugee populations, the most marginalised and those with the poorest health status.

The combination of these ingredients in C&C DHB's approach illustrates the potential to reduce avoidable admissions and acute demand through the correct mix of primary care services. It also shows a successful outcome of a more primary care oriented system anticipated in the Primary Care Strategy 2001.[16]

For a fuller description of the developments and outcomes, refer to the Report "Primary Health Care in C&C DHB".[17]

Competing interests: None declared.

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A full copy of Report is available on the C&C DHB website: http://www.ccdhb.org.nz/planning/Primary_Care/docs/PCF_Report_2009_Final.pdf

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