

Financing the Canterbury Health System post-disaster

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ABSTRACT

The Canterbury Health System has invested substantially in its transformation to a patient-centred, integrated system, enabling improved performance despite the significant and long-term impacts of the Christchurch earthquakes in 2010 and 2011. Questions have been raised about whether this transformation is sustainable and affordable.

We argue that there is a need for a post-disaster health funding strategy that takes into account the challenge of following population movements after a large natural disaster, and higher costs resulting from the disruption and the effect on the population. Such a strategy should also provide stability in an unstable environment. However, funding for health in Canterbury has followed a 'business as usual' model using the population-based funding formula, which we view as problematic. Additionally, increases in funding using that formula have been below the national average, which we believe is perverse.

Canterbury has received an additional \$84 million government in deficit funding since 2010/11, and this has covered part of the extra cost attributable to the earthquake. However, without system-wide integration and innovation that was underway before, and that has continued since the earthquakes, it is likely the Canterbury Health System would not have been able to meet the health needs of its population.

If health funding for Canterbury had continued to increase at the average rate applied across New Zealand over the past five years, deficit funding would not have been required.

After a major disaster, is Canterbury's integrating model financially sustainable?

The Canterbury Health System has become recognised recently for its transformation toward integration.¹ Better health outcomes and greater efficiency have been achieved through this integration, and the use of the resources of the health system where they can provide the most benefit to people. Across a range of measures, the Canterbury Health System has improved its performance, particularly in key areas such as acute admissions, acute occupied bed days, length of stay, seclusion rates in inpatient mental health and admissions to long-term aged residential care.

The Canterbury Clinical Network, a high functioning health system alliance formed in 2010, is at the centre of this transformation and has won awards from the

Institute of Public Affairs of New Zealand, including the Prime Minister's Award for Public Sector Excellence and Treasury Award for Excellence in Improving Public Value through Business Transformation in July 2015. Other health systems are taking up Canterbury's innovations with tools such as the Electronic Request Management System (ERMS), HealthOne (shared health record) and HealthPathways (an innovative suite of patient pathways) extending across the South Island and, in the case of HealthPathways, across Australasia. These innovations and the ongoing transformation journey are part of a culture that has allowed Canterbury to provide better, more timely care.

Keene et al² have recently refuted the unsustainability of national health spending over time, and have suggested that health funding in New Zealand is low relative to OECD countries and has fallen as a proportion of GDP. They argued for increasing health spending to address increasing need, and highlight that if health needs are not met, the resultant costs are

still borne by the economy when there is government underfunding of health.

In turn, we raise the question of whether the Canterbury Health System is financially sustainable in the post-disaster context of the last five years. In a normal environment, with population-based funding, this would be an easy question to answer. But Canterbury, since the 2010/11 earthquakes, has been a far from normal environment and therefore answering this question becomes complex.

Immediately prior to the February 2011 earthquake, Canterbury DHB was forecasting its first surplus in a number of years, largely achieved by reducing costs through reducing hospitalisation and entry to aged residential care. The Canterbury Health System had reduced hospitalisation by decreasing occupied bed days in aged residential care, combined with a reduction in acute medical admissions and length of stay resulting from increasing integration and managing care for people in the community through an acute demand hospital avoidance service. Bending downwards the otherwise constant upward trend in the occupancy of aged residential care beds was directly related to the new model of restorative home-based support implemented in Canterbury from 2009. In 2011 Canterbury was in the middle of implementing a step change improvement in home-based care. This involved an integrated nursing and home-based support model—to help older people to stay in their own homes longer—and planning for a new customised home-based rehabilitation model (now known as Community Rehabilitation Enablement & Support Team or CREST) to allow older people to get home earlier after admission to hospital while continuing their rehabilitation.

The February earthquake changed many things but not the strategic direction of the Canterbury Health System. The Canterbury Health System has proven to be resilient and responsive in the face of unprecedented challenges.

In meetings held after the 2011 earthquakes with the Ministry of Health (National Health Board), Canterbury DHB executives specifically proposed that funding increases, in the interests of stability, be held at the national average growth rate to provide a level of certainty against which to plan.

Another allocation method could have been proposed, such as an agreed fixed percentage growth rate. Indeed, there may have been some rationale for a growth rate higher than the national average. However, the national average growth rate would have reflected the relative position of Canterbury DHB in terms of funding increases over recent previous years. The Ministry did not respond to the proposal, and subsequently followed a 'business as usual' population-based funding approach. Using population-based funding in a post-disaster context seems unwise on several counts:

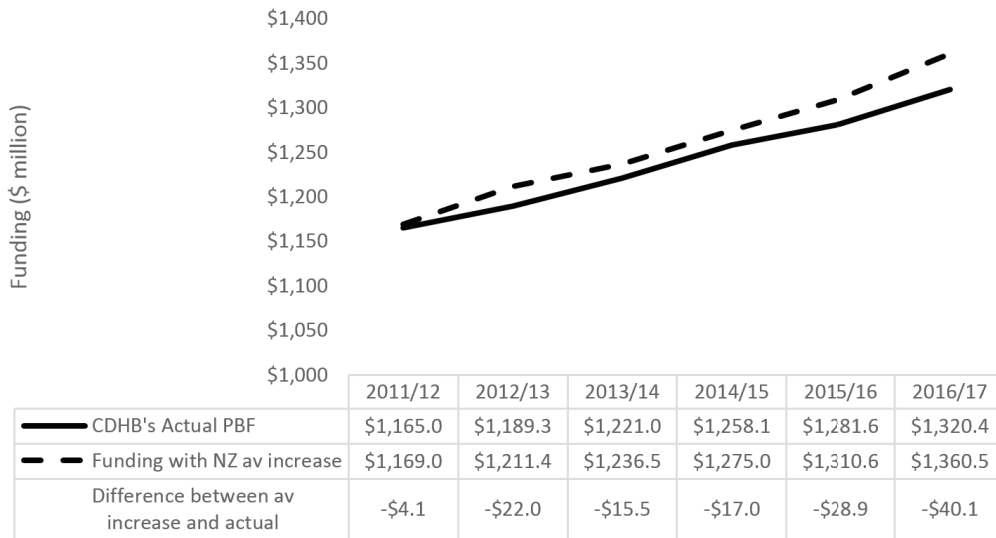
1. The likelihood that determining rapid changes in the Canterbury population over the next years was going to be challenging, and using a population-based funding formula would be consequently challenging;
2. When considering the likelihood of the health system having to carry higher costs than previously, related to
 - greater health needs among the population predicted by Gluckman³ and in international literature⁴⁻⁶ and
 - damage and disruption to services both in Canterbury's hospitals and for external health service providers;
3. A funding approach based solely on population estimates lacks stability and certainty in a post-disaster environment.

We address each of these factors in turn below.

Changes in the population

Firstly, we discuss the challenge of following population changes and the impact of those changes with New Zealand's population-based funding mechanism. This challenge was highlighted by evidence on population movement after a large-scale natural disaster, which predicted out-migration from Canterbury of less than 2.5% in the first one to two years, itself balanced by in-migration associated with post-disaster construction and background population increase.⁷ This was later reinforced in a report which highlighted the inappropriateness of using a population-based funding

Figure 1: Canterbury DHB funding 2011/12 to 2016/17 (\$ million).



formula (PBFF) in the context of rapid, short-term population changes related to a natural disaster.⁸ PBFF is a funding mechanism that is designed for a 'business as usual' environment marked by slowly changing demographic trends. However, Canterbury DHB was managing a health system in the middle of New Zealand's largest natural disaster and facing a challenging operating environment related to a population experiencing the consequences of ongoing earthquakes. The population challenge was exacerbated by the forced migration of 10,000 households from the red zone and the subsequent influx of the rebuild population.

If Canterbury DHB had received the national average increase in funding from 2011/12 to the current 2016/17 year it would

have received \$127.6 million more in population-based funding than what it actually received (Figure 1). This number is higher than the \$84 million in earthquake-related deficit support that Canterbury has received over the period since 2011/12 to ensure that it was able to break even each year.

The lower than average increase in funding needs to be considered in the context of the national district health board funding pool, which increases annually. There has been significant variation and lack of certainty in the share of the new funding that Canterbury has received each year with very low proportions of the new funding in three of the post-quake years and one year above average (Figure 2). This does not include the deficit funding provided by the government to allow break-even at each year end.

Figure 2: Population share and share of new funding in health.

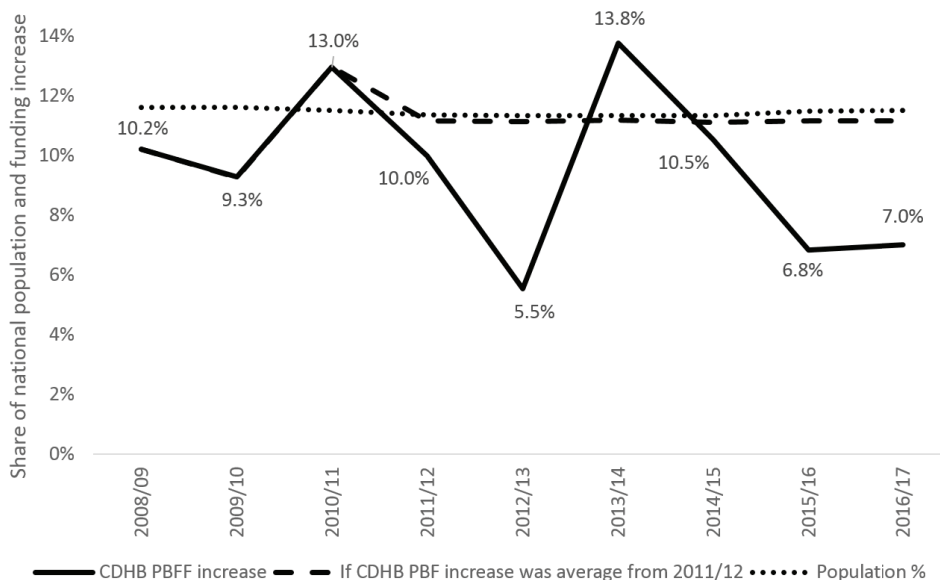
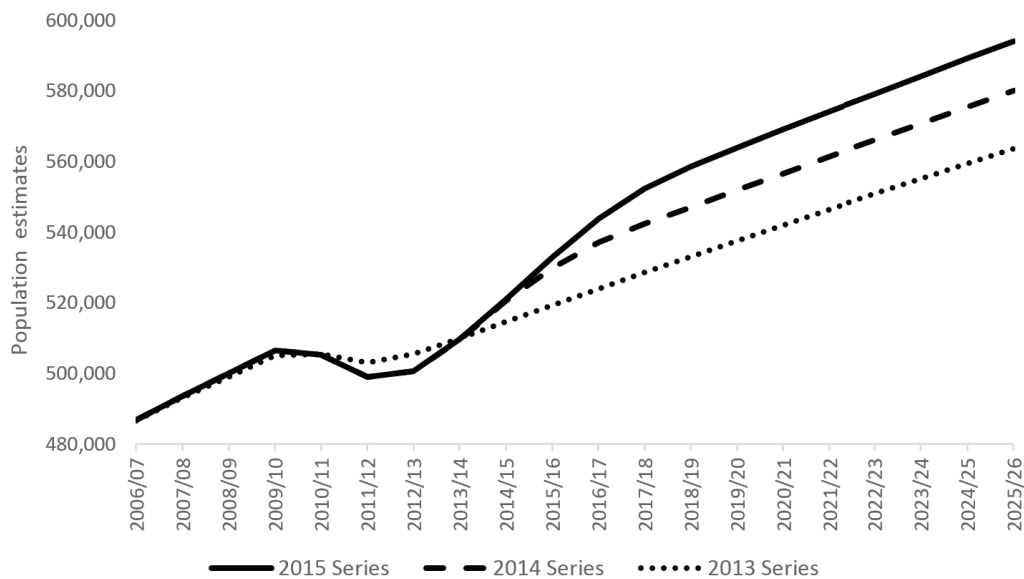


Figure 3: Canterbury DHB's annual predicted population changes with real growth 2011–2016.

In the 2016 budget, the government announced increased funding for health with an additional \$1.6 billion for district health boards over the next four years.⁹ Media releases included information for each district health board on the additional funding for 2016/17 and the increased investment over the last eight years; Canterbury will receive \$44 million additional funding in 2016/17 (including the mental health package announced in response to additional population need) and in total \$331 million over the last eight years.¹⁰ This equates to \$81 and \$609 per capita in Canterbury compared with \$99 and \$721 per capita on average nationally for 2016/17 and the last eight years, respectively.

Why did Canterbury receive less than the national average increase in funding? The population changed and moved rapidly, in ways close to what had been foreseen.⁷ Out-migration temporarily resulted in a 2% lower population than predicted pre-quake in the first two years after the earthquake, but with little change in older age groups (who tend to be heavier users of health services), considerable movement within Canterbury (from Christchurch to surrounding districts) and a subsequent return to population growth.^{8,11,12} The methodology used by Statistics New Zealand to project demographic changes has not kept up with these changes, and a number of changes were not captured, such as

the large commuting rebuild population. That Statistics New Zealand was struggling to manage with the volatility of the Canterbury population is evident in their annual estimates. Figure 3 shows that each year, population projections have had to be revised upwards as the previous year's forecasts were too low, a pattern not seen to the same extent in other DHBs.

This resulted in Canterbury's share of national PBFF reducing inappropriately, which was combined with increases in the funding at the lower end of the scale of potential increase. Given the post-earthquake context, lower than average funding increases seem illogical. Put simply, if funding for health in Canterbury had continued to increase at the average rate applied across New Zealand over the past five years, as had previously been the case, deficit funding for the earthquake would not have been required.

Higher costs

Secondly, funding is only part of the picture, and it's necessary to consider the post-disaster expenditure side of the equation. Within the context of a continuous focus on containing expenditure, it is reasonable to assume that the Canterbury earthquakes have had some identifiable operational impacts on Canterbury workforce and physical infrastructure, and indeed an independent review¹³ identified in

excess of \$100 million in additional operational expenditure directly attributable to the earthquakes.

Greater health needs, particularly in mental health, have required higher investment in response.¹⁴ These extra needs and resultant additional expenditure were predictable and could be anticipated from disasters of a similar scale.⁴ Increased demand for mental health services has arisen, particularly for the more vulnerable, either directly from the disaster event or indirectly (financial uncertainty, reduced quality or temporary housing, disruption in support networks or daily life).⁸

Additional operational costs resulted from the lease of new spaces for health workers who were forced to vacate damaged buildings, decanting services and support people, outsourcing and outplacing of surgery, support for access to community services. This expenditure was necessary to ensure the population continued to receive the health services they required. A portion of these increased costs have been reported quarterly to Treasury and the Ministry of Health, and in addition clear trends in sick leave and other staff-related costs have been identified that the DHB has had to absorb.

There have also been effects on the capacity of the health system to deliver health care. Staff have faced increased demand while the majority managed their own stressful situations. Community and primary health providers have been affected, requiring support from the DHB for higher costs to continue services. Secondary care has faced prolonged disruption resulting from ongoing repairs and replacement of facilities. Canterbury DHB has received government support for new building and repair projects for its facilities. Among these, a new Burwood Hospital has recently opened (though this was largely financed by the DHB through prudent fiscal management in previous years); a new acute services building is under construction; and construction will commence soon on a new outpatients building. Funding has come from Canterbury DHB accumulated depreciation, insurance pay-outs (although the maximum possible pay-out was at least \$150 million short of the assessed repair and rebuild costs) and the Ministry of Health. All of this then attracts an 8% per annum capital charge.

Need for stability and certainty

Lastly, Canterbury requested stability of funding in a period of considerable instability. Several agencies and government departments in Canterbury have discussed the need for a post-disaster framework for funding, which would recognise the scale of inherent uncertainty resulting from the earthquakes. This would recognise the unprecedented response necessary for this and similar sized disasters, and avoid extreme movements in funding, which create distraction when the focus should be on the population and patient's needs, as well as being detrimental to morale. A large amount of time and effort has been focused on arguing for adequate funding instead of on patient care, and on continued integration and innovation.

Conclusion

In summary, if Canterbury had not experienced the 2010/11 earthquakes, large additional costs would not have been incurred. It could have projected to experience the national average growth in funding, and would have received an additional \$127 million in funding; it would not have required deficit support. Canterbury would have continued to implement its inflight transformation to an integrated patient-centred health system, and over the last five years it would have delivered a financial surplus. In that case, therefore, it is possible to answer the question of sustainability and affordability in the affirmative. Is an integrating health system in Canterbury financially sustainable? Yes it is.

More broadly, lessons should be learned from the experience of Canterbury DHB in the years after the 2010/11 earthquakes. The adequacy of post-disaster policies including funding mechanisms is relevant to all of New Zealand, not just Canterbury. A similarly disruptive disaster could affect any area of New Zealand—earthquake, tsunami, volcanic eruption, flood or storm. Such disasters will require higher levels of spending in the years afterward. A stable post-disaster funding mechanism would enhance the capacity of all DHBs to respond to such an occurrence.

Competing interests:

Both authors work for Canterbury DHB.

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