

Canterbury

District Health Board

Te Poari Hauora o Waitaha

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COMMUNITY AND PUBLIC HEALTH**

Investing in Public Health

**A Briefing Paper for the
Canterbury District Health Board**

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1.0 Executive Summary

- 1.1 Access to medical care is a less important determinant of health than behaviour and the environment but paradoxically, spending on health in most countries suggests the opposite.
- 1.2 In New Zealand, expenditure on population health initiatives is tiny compared with total spending on health. Ministry of Health spending on prevention and public health is only 5.9% of total health and health-related expenditure.
- 1.3 Part of the problem leading to inadequate resourcing of public health is that public health interventions are sometimes required to meet a higher standard of economic effectiveness than health care services; public health is expected to save money (or at least break even) whereas health care services are not expected to meet this standard.
- 1.4 To allocate health resources ethically and effectively, and in order to obtain the greatest benefit for the resources used, resources for public health strategies should be allocated in the same way as resources for other health strategies; public health strategies should not have to be cost-saving, but *cost-effective*.
- 1.5 There are public health interventions which have been shown to save money, and many which have cost-effectiveness ratios better than or equivalent to those of health care interventions. These include tobacco control initiatives, cardiovascular disease prevention, communicable disease control, and workplace health promotion programmes. These interventions should be funded since they produce the greatest health gain for the resources available.
- 1.6 The effects of public health interventions are often long-term rather than immediate. Ignoring interventions with long-term outcomes in favour of those which produce rapid outcomes means we risk ignoring opportunities to reduce need in future, and this may be unethical. If we spend solely on immediate need and neglect public health initiatives, it is possible that more people will die prematurely.
- 1.7 Research into the impact of initiatives to improve people's health generally supports the "compression of morbidity" hypothesis, suggesting that the incidence of disability will decline as the population ages, so that people will live longer and healthier lives.
- 1.8 In the face of an epidemic of obesity and chronic disease, and ageing populations in most developed countries, reports from countries such as Australia, Canada, the US, and the UK consistently find that increasing their investment in public health is economically efficient; reduces health care costs, and will deliver the best health outcomes.

2.0 Introduction

This briefing paper explains why investing in public health is a sensible economic strategy, and how investment in public health makes an important contribution to improving the health of individuals and of our population. The paper shows that for resource allocation to be ethical and effective, public health interventions need to be assessed using equivalent criteria for effectiveness and cost-effectiveness as health care interventions when health funding is allocated.

Access to medical care is a less important determinant of health than behaviour and the environment^{1, 2} but paradoxically, spending on health in most countries suggests the opposite. For example, in the US only 8.1% of total health spending is on prevention and public health.³ Public expenditure on prevention and public health in OECD countries, as a percentage of total public expenditure on health, ranges from 0.7% in Italy to 10.5% in Canada.³

Similarly, in New Zealand, expenditure on population health initiatives is tiny compared with total spending on health.⁴ In 2005/06 Ministry of Health spending on prevention and public health services was only 5.9% of total health and health-related expenditure. Other public sources of funding for prevention and public health came from central government departments other than Health, and local and regional governments. Local authorities spent 5.4% of their total health and health-related expenditure (which included food, hygiene and drinking water control, and environmental health) on prevention and public health services in 2005/06. Central government agencies other than Health spent 11% of their total health and health-related expenditure on prevention and public health services. Of total public health and health-related expenditure in 2005/06 (which includes the Ministry of Health, other central government agencies, and regional and local government), 6.6% was devoted to prevention and public health services. The private sector spent 1.6% of its total health and health-related expenditure on prevention and public health services.⁴

3.0 Allocating resources to public health

Part of the problem leading to inadequate resourcing of public health is that public health interventions are sometimes required to meet a higher standard of economic effectiveness than health care services; public health is expected to save money (or at least break even) whereas health care services are not expected to meet this standard:

In prioritizing policy initiatives, health care cost savings should not be the only way to rank the importance of interventions. Sometimes prevention will save money, and sometimes it will not. Instead, quality of life and health status of populations need to be what drives priorities in health policy. It is important that when funding is taken into consideration on matters of health and health care, relative returns of investing in health promotion and health care interventions should play out in concert. For rational public policy, and for good health, our social investment decisions that affect health should be made with a common calculus and with quality of life foremost in the value equation.¹

To allocate health resources ethically and effectively, and in order to obtain the greatest benefit for the resources used, resources for public health strategies should be

allocated in the same way as resources for other health strategies; public health strategies should not have to be cost-saving, but *cost-effective*.

The primary purpose of prevention is to improve the quantity and quality of life, and if it does so at a lower cost than other interventions, prevention expenditure is a perfectly rational use of the money from an economic perspective. Furthermore, prevention should not be held to a higher standard than medical care, where cost-saving is commonly not the prime objective. Any type of health intervention – prevention, treatment or rehabilitation – should ideally be evaluated by the same criteria, for instance, cost-effectiveness.³

There are public health interventions which have been shown to save money, and many which have cost-effectiveness ratios better than or equivalent to those of health care interventions. Clearly there is no question that these interventions should be funded since they produce the best health gain for the resources available. Section 3.1 provides some examples.

3.1 Examples of public health interventions which are cost-saving or have favourable cost-effectiveness

This section provides some examples of public health interventions which have been shown to be cost-saving or to have favourable cost-effectiveness ratios. It is not intended to provide a comprehensive review of the cost-effectiveness of public health interventions.

3.1.1 Tobacco control

There is strong scientific evidence that population-level tobacco control interventions such as increasing the unit price of tobacco products, mass media campaigns, school-based education programmes, and smokefree environments legislation are effective in reducing the prevalence of smoking.⁵ Not only do tobacco control interventions reduce the prevalence of smoking, but tobacco control is associated with decreased health expenditure, improvements in health, and reduced mortality from heart disease.⁶⁻⁹ An assessment of the Australian National Tobacco Campaign (NTC) found that it prevented around 55,000 deaths, gained 323,000 life-years and 407,000 QALYs, and saved \$740.6 million in health care costs.¹⁰ The NTC was both cost-saving and effective.¹⁰ Overall, public health programmes to reduce tobacco consumption in Australia are estimated to have saved \$2 for every \$1 spent.¹¹ Smoking cessation alone is one of the most effective public health interventions; “no other medical or public health intervention approaches this degree of impact, and we already have the tools to accomplish it.”¹²

3.1.2 Communicable disease control

Many immunisation programmes have been found to be cost-saving (for example childhood immunisation against diphtheria, tetanus and pertussis, and rotavirus, immunisation against influenza in healthy working adults), while others, such as immunisation against *Haemophilus influenzae* type b (Hib), and immunisation against hepatitis A in adults, have favourable cost-effectiveness ratios (defined as costs of US\$10,000 per QALY or less).^{13, 14} Sufficient economic data are still lacking for some immunisation programmes.^{13, 15} An economic analysis of two Australian immunisation programmes; immunisation for measles during 1970 to 2003, and immunisation for Hib disease during 1991 to 2003 found a net benefit of the measles

immunisation programme of \$9.1 billion, and \$10 million for the Hib immunisation programme.¹¹

Safer sex programmes to prevent HIV transmission in gay and bisexual men have been found to be cost-saving.¹⁶ In Australia, the present value of expenditures on education and HIV/AIDS prevention programmes in 2000 prices discounted back to 1984 has been estimated at \$607 million. The estimated present value of the benefits derived from these programmes is \$3.149 billion, with the estimated net benefit therefore being \$2.541 billion.¹¹

3.1.3 Cardiovascular disease prevention

Statistical modelling of coronary heart disease mortality estimated that modest reductions in cardiovascular risk factors in England and Wales during 1981-2000 resulted in gains in life-years which were four times higher than the gains in life-years resulting from cardiological treatments.¹⁷ There is economic evidence favouring cardiovascular disease prevention, but a recent systematic review of economic evaluations of primary prevention of cardiovascular disease highlighted a relative lack of economic evaluations of health promotion interventions.¹⁸ In Australia, the estimated net benefit of programmes to reduce cardiovascular disease from 1971 to 2000 was \$8.478 billion.¹¹

3.1.4 Workplace health promotion programmes.

There is good evidence that workplace health promotion programmes (which aim to increase fitness and decrease risk factors among employees) are beneficial, not only because they improve the health of workers, but also because they are cost-saving.¹⁹⁻²² A recent review of workplace health promotion programmes found that such programmes reduce absenteeism, and generate returns on investment of between \$2.50 and \$10.10 saved for every dollar invested.²³ In 2008 the Conference Board of Canada recommended that businesses take action on the socioeconomic determinants of health; stating that “Well-targeted investments in preventive measures have the potential to produce long-term cost savings through reduced demand on health care services and represent a more effective long-term strategy for spending scarce resources” and “Private and public sector *employers* who act strategically can expect cost reductions, gains in productivity, and better recruitment and retention outcomes”.²⁴

4.0 The impact of investment in public health

Another difficulty with prioritising spending on public health interventions when resources are being allocated is the timeframes involved. Often public health interventions require immediate spending but result in delayed outcomes, whereas the demand for health care resulting in immediate outcomes (for instance acute medical services, and pressure to reduce waiting lists for elective services) is constant and sometimes urgent. But focussing solely on the urgent, and devoting resources only to urgent matters, has the potential to ignore opportunities to reduce need in future, and also may be unethical. If we spend solely on immediate need and neglect public health initiatives, then it is possible that more people will die prematurely. This was elegantly addressed by Woolf, in a paper on the potential health and economic consequences of misplaced priorities, where he stated:

Just as errors of omission cause harm, inattention to how priorities are balanced can indirectly claim lives, contribute to disease, and generate costs that would not occur if priorities were in greater harmony with potential gains.²⁵

It is sometimes claimed that spending money on public health strategies is not a good investment, since such strategies may allow people to live longer but then become ill later and die from other causes, which drain health sector resources. However this argument is a misperception for three reasons. First, extra years of life have value, to which it is worth allocating resources. Secondly, this criticism applies not only to public health; health care interventions also have the potential to extend life, for example every time a hip replacement or an appendectomy is performed there is potential for an individual to live longer as a result of surgery (and potentially develop other health problems later which will require the use of health resources). Thirdly, it is possible that public health strategies will lead to compression of morbidity; so that people lead longer, healthier lives which do not necessarily lead to increased expenditure on health later. Section 4.1 describes the compression of morbidity hypothesis and other hypotheses about the impact of improvements in health.

4.1 Compression of morbidity, expansion of morbidity, or dynamic equilibrium?

In 1980 James Fries pointed out that, although life expectancy had increased in developed countries during the 1900s, the maximum life span had not increased.²⁶ Fries suggested that extension of healthy life within a fixed life span would lead to a “compression of morbidity”, with people living longer, healthier lives, with a shorter period of senescence near the end of life.²⁶ The compression of morbidity hypothesis suggested that, if the age at first infirmity, disability or other morbidity could be postponed, and if this postponement exceeded increases in life expectancy, then cumulative lifetime morbidity would decrease; compressed between later onset of morbidity and time of death.²⁷

An alternative hypothesis, the “expansion of morbidity” hypothesis, suggests that an increasing percentage of life-expectancy will be affected by ill health.^{28, 29} The assumption underlying this is that advances in medical care will lead to improved survival for people with chronic disease, but this improved survival will be at the cost of more years of morbidity. A third hypothesis is the “dynamic equilibrium” hypothesis, which suggests that, although the number of years lived with disability will increase, the number lived with severe disability will decrease.³⁰

Subsequent research in several countries and over different time periods predominantly supports the compression of morbidity hypothesis,^{26, 27, 31-36} or the dynamic equilibrium hypothesis.³⁷⁻³⁹ The New Zealand Treasury, in its latest document about New Zealand’s long-term fiscal position, summarised the various hypotheses and associated research and found that “from these studies, it is reasonable to assume that, in the future, the incidence of disability will decline as the population ages, meaning that people will be living longer and healthier lives”.⁴⁰

The final section of this paper, section 5.0, discusses prioritisation of spending on public health, with some examples from other countries.

5.0 Prioritising investment in public health

In 2001 a report on the long-term trends affecting the health service in the UK was commissioned by HM Treasury.⁴¹ This report, called the Wanless Report, quantified “the financial and other resources required to ensure that the NHS can provide a publicly funded, comprehensive, high quality service available on the basis of clinical need and not ability to pay”. The report modelled three scenarios (Table 1). The Wanless Report found that scenario 3, which required considerable investment in public health, was not only the least expensive scenario modelled, but also, by definition delivered the best health outcomes.⁴¹ A later report by the Wanless Committee found that funding needs in the short term would be similar under any of the three scenarios, but “funding increases could be reduced in the more optimistic scenarios in the following ten years through a combination of reduced demand, due to success in public health and preventative measures, and improved supply flowing from increased productivity”.⁴² The report also found that “Over the twenty-year period, the fully engaged scenario, by definition, delivered the best health outcomes, with life expectancy 2.9 years higher for men and 2.5 years higher for women than the slow uptake scenario, but it was also the least expensive scenario modelled”.⁴²

Table 1: Scenarios modelled in the Wanless Report⁴¹

Scenario 1	Solid Progress People become more engaged in relation to their health. Life expectancy rises considerably, health status improves, and people have confidence in the primary care system and use it more appropriately. The health service becomes more responsive, with high rates of technology uptake and a more efficient use of resources
Scenario 2	Slow Uptake There is no change in the level of public engagement. Life expectancy rises, but by the smallest amount in all three scenarios. The health status of the population is constant or deteriorates. The health service is relatively unresponsive with low rates of technology uptake and low productivity.
Scenario 3	Fully Engaged Levels of public engagement in relation to their health are high. Life expectancy increases go beyond current forecasts, health status improves dramatically and people are confident in the health system and demand high quality care. The health service is responsive with high rates of technology uptake, particularly in relation to disease prevention. Use of resources is more efficient.

In Australia, the National Preventive Health Taskforce produced a discussion document “Australia: the healthiest country by 2020”.⁴³ The discussion document outlined a case for improving the prevention of illness and the promotion of health, and set targets for the healthiest country by 2020:

- Halt and reverse the rise in overweight and obesity
- Reduce the prevalence of daily smoking to 9% or less

- Reduce the prevalence of harmful drinking for all Australians by 30%
- Contribute to the ‘Close the Gap’ target for Indigenous people, reducing the 17-year life expectancy gap between Indigenous and non-Indigenous people⁴³

The decision to focus on obesity, smoking, and alcohol was the result of research showing that together, smoking, obesity, harmful use of alcohol, lack of physical activity, poor diet and the associated risk factors of high blood pressure and high cholesterol cause about 32% of Australia’s illness.⁴⁴ Three technical papers were produced to support the discussion document. These were “Obesity in Australia: a need for urgent action”; “Tobacco control in Australia: making smoking history”; and “Preventing alcohol-related harm in Australia: a window of opportunity”.⁴⁵⁻⁴⁷

An American report “Prevention for a Healthier America” found that investments in disease prevention yield significant savings and stronger communities.⁴⁸ The study on which the report was based was developed by a partnership between the Trust for America’s Health (TFAH), the Urban Institute, the New York Academy of Medicine, the Robert Wood Johnson Foundation, the California Endowment, and the Prevention Institute. The report found that “Keeping people healthier is one of the most effective ways to reduce health care costs.”

Therefore TFAH concludes that an investment of \$10 per person per year in proven community-based disease prevention programs could yield net savings of more than \$2.8 billion annually in health care costs in one to 2 years, more than \$16 billion annually within 5 years, and nearly \$18 billion annually in 10 to 20 years (in 2004 dollars). With this level of investment, the country could recoup nearly \$1 over and above the cost of the program for every \$1 invested in the first one to 2 years of these programs, a return on investment (ROI) of 0.96. Within 5 years, the ROI could rise to 5.6 for every \$1 invested and rise to 6.2 within 10 to 20 years. This return on investment represents medical cost savings only and does not include the significant gains that could be achieved in worker productivity, reduced absenteeism at work and school, and enhanced quality of life.⁴⁸

The Canadian “Healthy people, healthy performance, healthy profits” report found that:

Costs associated with the health-care delivery system are rising, and they are expected to account for even larger proportions of provincial budgets in the near future. But increased spending on the health-care delivery system alone will not necessarily result in healthier people who live longer. Among developed countries, there is no clear-cut relationship between the amount a country spends on health care and the health of its population. Shifting attention to strategic investments in the socioeconomic determinants of health promises to deliver not only improvements in health outcomes, but also cost-savings and economic benefits.²⁴

Public health agencies such as Community and Public Health can act as a catalyst or leader in intersectoral partnerships (for instance between the CDHB and other organisations) to increase investment in public health.

6.0 Conclusions

Interventions to improve health and extend life are worthwhile, and health care and public health interventions should be treated equally when it comes to resource

allocation. To allocate health resources ethically and effectively, and in order to obtain the greatest benefit for the resources used, resources for public health strategies should be allocated in the same way as resources for other health strategies; public health strategies should not have to be cost-saving, but *cost-effective*.

Many countries now recognise that increasing the resources allocated to public health initiatives, especially initiatives to reduce the prevalence of smoking, combat obesity, and reduce the harms associated with alcohol, is essential if health sector spending is not to spiral out of control.

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