

1. Introduction

Closing the Gap

Since we began working on this report in December 2007, a new Government in Canberra has delivered an Apology to Australia's Indigenous Peoples.

The Prime Minister's address on 13 February 2008 to the House of Representatives, witnessed by a packed Parliamentary gallery and hundreds of thousands of people watching the broadcast live on television, was a dramatic and moving event. Few who were present or who watched the emotional scenes during and following the Apology doubted that this was an important turning point in the relationship between Indigenous and non-Indigenous Australia.

The significance of the Apology in more prosaic policy terms will develop over the months and years to come. However, part of the speech specifically committed the Australian Government to closing the gap in life expectancy between Indigenous and non-Indigenous Australians within a generation.

The specifics of how to achieve this goal will no doubt take some time to work out, and involve reviews not just of the formal literature, an evaluation and re-affirmation of what approaches have already been shown to work, and a commitment to new approaches where necessary.

We hope that this literature review will contribute to this process.

Here we will show how the international literature demonstrates that, notwithstanding the powerful effects of the social determinants of health in general and socioeconomic class in particular, primary health care has significant positive effects on the health of populations as measured by mortality and life expectancy.

We will also see how the evidence confirms the positive effect of primary health care systems on the health of Indigenous populations in other First World nations. However, in Australia (looking at the national and jurisdictional level) the evidence is less strong. We will argue that this is predominantly because Australia is yet to fully realise the health gains that primary health care is able to deliver.

Finally, we will present some local models of primary health care delivered to Aboriginal and Torres Strait Islander people, and draw from these some lessons about the place of primary health care in changing the health of Aboriginal and Torres Strait Islander communities.

We hope this information will contribute to knowledge about how to address the issue of health inequity between Indigenous and non-Indigenous Australia. However, what we have not been able to do in this review – because its shape and scope was determined before the delivery of the Apology in February 2008, indeed before the election of the new Federal Government – is to look in depth at the question of closing the life expectancy gap.

‘Closing the gap’ requires more than just improving the life expectancy of Australia’s Indigenous peoples. Aboriginal and Torres Strait Islander life expectancy has been slowly improving for some decades, yet the gap is not significantly narrowing because the life expectancy of the mainstream population is also improving. ‘Closing the gap’ obviously requires improving the life expectancy of Aboriginal and Torres Strait Islander Australians at a greater rate than that of the rest of the nation.

It is our view, supported by the evidence, that primary health care is a necessary part of doing this. But is it sufficient by itself? If all Australians had equal access to appropriate primary health care services compared with their need for health care (which surely should be an important aim based on social justice principles alone), by how much would the life expectancy gap be reduced? At this point, we would need to consider and quantify the effects – immediate and over time – of a whole range of other determinants of health besides access to health care: housing, education, employment, equality and inclusion, life control and choice, to name a few.

Unfortunately, it is beyond the scope of this Review to attempt to map out in detail the differential effects over time of all the factors that determine health, including primary health care. However, what we can show, supported by the evidence, is that access to primary health care *will* lead to better health outcomes measurable by life expectancy and mortality.

Our analysis also shows that for Aboriginal and Torres Strait Islander Australians there is a significant gain yet to be made in health outcomes through the delivery of well-designed, evidence-based, properly resourced primary health care that involves the community it serves and is appropriate to its needs.

Given the nature and scale of the health problems confronting Aboriginal and Torres Strait Islander people it is also sound to conclude that this gain would contribute to closing the gap in health outcomes in Australia.

The social policy background to Indigenous health

For decades, it has been common public knowledge that the health of Aboriginal and Torres Strait Islander peoples is significantly worse than that of the country as a whole. This has generated public sympathy, but has all too often been accompanied

by the assumption that nothing really can be done about it because 'nothing ever changes' in Aboriginal health.

This assumption has been powerful and surprisingly resilient, even in the face of significant changes in the health of Aboriginal and Torres Strait Islander communities. It has exerted a subtle but constant pressure on public policy, such that governments and policy makers have needed to be able to justify the continued (or increased) funding of health services for Indigenous communities.

However, the recent Parliamentary Apology to Australia's Indigenous peoples marks a change in public attitude and an opportunity to break free of scepticism about the possibilities of genuine improvements in Aboriginal health.

Of course, for many years the research community and the Aboriginal and Torres Strait Islander health service sector (amongst others) have argued that the better provision of primary health care *will* lead to, and is already leading to, improvements in the health status of Australia's Indigenous people. From the 1980s onwards, this view has generally formed the basis for Aboriginal and Torres Strait Islander health policy, with Aboriginal community controlled primary health care services at centre stage (especially following the 1989 National Aboriginal Health Strategy) and State and Territory governments committing to improving their own primary health care strategies for Aboriginal and Torres Strait Islander people.

Nevertheless, high-level evidence for primary health care improving the health of the Aboriginal and Torres Strait Islander population within Australia has remained sparse.¹

A significant attempt to review and summarise the evidence was the study commissioned by the Commonwealth Health Department in 2001. *Better Health Care*² found that the international evidence confirmed the effectiveness of primary health care in improving the health status of Indigenous peoples, and that comprehensive primary health care can improve the health of Australia's Indigenous population, provided that it is well planned, locally coordinated, supported by a competent workforce, and able to engage the local community in action for health.

Significantly, it concluded that

... there is a need to continue to ... gather evidence on effective approaches,

¹ We note here while the that the delivery of 'better health outcomes' has been the focus of Aboriginal primary health care policy (and is the reason behind this report), primary health care itself has a value beyond its contribution to health gain. This is its role in the alleviation of suffering and its ability to assist people to live productive and able lives – whether or not this is measurable in terms of the usual outcomes. This principle is, it seems, broadly supported for mainstream health services, where access to a doctor (for example) is seen to be a good in itself, and where the provision of such services is not seen as conditional on demonstrating their effectiveness in terms of outcomes.

² Commonwealth of Australia (2001). *Better Health Care: Studies in the successful delivery of primary health care services for Aboriginal and Torres Strait Islander Australians*. Canberra.

*in order to build on the foundations already established.*³

Six years on, a dozen years since the transfer of Aboriginal primary health care funding responsibility to the Commonwealth Health Department, and in the light of revived optimism about positive change in Indigenous Affairs in Australia, this Review attempts to revisit the international and local evidence that primary health care can deliver results for Indigenous peoples.⁴

The organisation of this report

The question at the core of this Review is simple: what is the evidence that primary health care services have positively changed Aboriginal and Torres Strait Islander health status? However, attempting an answer to this brings into focus two logically prior questions.

- **Is there evidence that health systems in general improve the health of populations?** Common sense says that the way to better health lies through better health systems. However, Thomas McKeown's theories in the 1970s, and the powerful evidence of the importance of the social determinants of health more recently, have significantly challenged such a simple view. These theories are of particular relevance in the Aboriginal and Torres Strait Islander policy field, which has also seen tendencies to reduce 'better health' to a matter of 'better infrastructure' (for example housing, water quality and sanitation), and to see health services as irrelevant or marginal to the process of building healthier communities.
- **More particularly, is there evidence about the extent to which primary health care services contribute to any such improvements?** In particular, if there is no strong evidence to support the contention that primary health care improves 'mainstream' population health, it would be unwarranted to expect the evidence to show such a pattern in Aboriginal and Torres Strait Islander communities.

In answering this question and throughout this report, we note the diversity of definitions of "primary health care" in the literature. The Alma Ata Declaration of 1978 describes a comprehensive model of primary health care that includes notions of participation and self-determination. This comprehensive model – upheld strongly in Australia by the Aboriginal community-controlled health services – has strong claims as an ideal or best practice model of primary health care. Nevertheless, in order to take account of the literature, which is mainly

³ Ibid. p 15

⁴ Within the time frame specified for the preparation of this report (three months) it is, of course, not possible to reproduce a study of the length and depth of *Better Health Care*.

based on a narrower model of primary medical care, we adopt a definition of primary health care as being (still following article VI of the Alma Ata Declaration):

*... the first level of contact of individuals, the family and community with the national health system bringing health care as close as possible to where people live and work ... the first element of a continuing health care process.*⁵

This is necessary to capture the available research literature to answer the question asked. Of course any positive results from studies using a narrower definition of primary health care will understate the population health gain possible through a more comprehensive model.

As far as we are aware there has been no comprehensive attempt in the field of primary health care policy in Australia to stand back in this way and look in the broadest manner possible at the relationship between the provision of primary health care and the health of populations. However, answering these questions is necessary to set the theoretical and evidentiary foundations from which we can look at the more specific questions regarding Indigenous health and primary health care in Australia, as follows.

- **Is there evidence that the health of Indigenous populations, both here in Australia and overseas, has improved?** This question goes to the heart of any scepticism about the possibility of improvements in Aboriginal and Torres Strait Islander health. It also raises questions about absolute versus relative improvements in health status – for example, there may be positive changes in life expectancy for Indigenous peoples, but if these are the same or even less than improvements of mainstream life expectancy, the life expectancy gap will stay the same or widen.
- **To what extent can health services in general and primary health care services in particular be credited with such improvements?** It has become one of the truisms of Aboriginal health policy that many of the social determinants of ill health – poverty, poor education, poor housing, lack of nutrition, lack of meaningful employment – lie outside of the health sector itself. To what extent, then, are any health improvements among Indigenous peoples attributable to the social determinants, and what evidence is there for health systems and primary health care making significant contributions?
- **What particular aspects of primary health care services are effective?** The evidence is pointing more and more to certain key interventions as being the most critical for long-term improvements – for example, early childhood development, maternal health, chronic disease prevention and management, and

⁵ World Health Organization (1978) Declaration of Alma-Ata. International Conference on Primary Health Care, Alma-Ata, USSR, 6-12 September 1978. http://www.who.int/hpr/NPH/docs/declaration_almaata.pdf

social and emotional well-being. If this is the case, there is obviously a strong argument for including these as essential parts of the comprehensive primary health care model. We will consider some of the structural and organisational aspects of primary health care here – for example, the importance of local community involvement and control.

Chapter 2 will concern itself with answering the first two questions about the evidence for the effect of health systems and primary health care on the health of populations.

Chapter 3 will turn the focus to the health of Indigenous peoples both overseas and in Australia at a national or at least jurisdictional level, looking at how their health has changed and whether health systems including primary health care can be said to have contributed.

Chapter 4 will narrow the focus to a number of local case studies of primary health care services in Aboriginal and Torres Strait Islander communities, and seek to draw lessons about their effectiveness.

Methodology

There is a risk in carrying out literature reviews of this kind that they become reduced to a list of examples, often from the ‘grey’ literature, of those places where, for example, primary health care projects are held to have worked at a local level.

Evidence from this local level – and in particular, from Aboriginal communities and people themselves – is important as a guide to practice. However, policy-makers are often expected to back up such local-level evidence, much of which is not highly substantiated in the more narrow scientific sense, with verifiable information that can stand up in sometimes robust public policy debates.

Although we present a number of case-studies and draw some key lessons from their practice, this report has been prepared as a strategic review for policy makers of what matters in the literature, rather than as a systematic or meta-analysis of the literature. It includes material from the world of professional practice that would not necessarily be included in a systematic review and does not include all of the vast literatures in the field of Indigenous primary health care.

The literature review

We began by carrying out a systematic review of the published literature in peer-reviewed journals about the link between primary health care and health outcomes, concentrating on studies of mortality and / or life expectancy outcomes.

Our reason for limiting our review to life expectancy / mortality measures was twofold. First, with the agreement of the Office for Aboriginal and Torres Strait Islander Health, it was decided that this was necessary to reduce the amount of data to a manageable amount for this review. Second, life expectancy and mortality have the advantage of being the 'hardest' of epidemiological measures routinely collected in many countries, allowing greater comparability between different places and over time.

Nevertheless, we note the well-known limitations of using life-expectancy and mortality to measure health. In particular, we need to remember that the aim of health care is not just about preventing mortality but also about preventing and treating sickness and about improving well-being.

With this in mind, the PubMed database was searched using a series of search terms based on MeSH items listed as Major Topics. The search terms for mortality outcomes (Mortality, Mortality/trends, Life Expectancy, and Life Expectancy/trends) were combined with those that might investigate the association between primary health care and mortality (Primary Health Care, Delivery of Health Care/statistics and numerical data, Health personnel/statistics and numerical data, Community Health Services/statistics and numerical data, and Community Health Centres).

The search revealed a rich body of international evidence in the form of several hundred articles. In order to concentrate on articles of most relevance, the titles and (if available) abstracts were read to identify:

- studies of mortality trends to assess whether improved levels of primary health care provision over time are associated with increased health outcomes;
- cross-sectional comparisons of mortality which assess whether different levels of primary health care in different places are associated with differential health outcomes;
- articles that controlled for known confounders (e.g. income);
- studies from developed countries (especially Australia, New Zealand, North America and Europe);
- larger scale studies that compared mortality outcomes at either the national or jurisdictional level (e.g. USA counties or states).

These publications then formed the basis for the data for answering questions about the evidence for the effect of health systems and primary health care on the health of populations.

Once the evidentiary case for the efficacy of primary health care was examined at the broadest level, we turned the focus specifically towards the Indigenous experience, both overseas and in Australia. Two sources of data were brought together and analysed to provide this.

Literature on Indigenous specific mortality / life expectancy

The literature search described above, in our initial work plan and in discussions with the Office of Aboriginal and Torres Strait Islander Health, revealed very few studies directly focusing on Indigenous peoples.

A further examination of the literature was therefore then made specifically on the mortality / life expectancy patterns of Indigenous people in general and Aboriginal and Torres Strait Islander people in particular. These articles formed the basis of answering – on a national or at least jurisdictional level – the key questions about the shifting status of mortality / life expectancy in these populations.

Note that the modified ‘Delphi Method’ described below also yielded a number of research articles relevant to this section.

Capturing expert opinion, community experience and the ‘grey literature’

Simultaneously, we embarked on a process to capture the ‘grey’ literature and seek the views of key stakeholders in the Aboriginal primary health care field, using a modified version of the ‘Delphi Method’.

The Delphi Method is based on a structured process for collecting and distilling knowledge by means of a series of questions to leaders and practitioners in a field. The technique can be summarised in six steps:

1. Select a diverse panel of experts to participate in the exercise.
2. Develop a questionnaire – in our case the questionnaire was organised around the following key queries:
 - Are there published studies and/or write ups in the grey literature that illustrate the effect in Australia of primary health care on the health of Aboriginal and Torres Strait Islander communities?
 - Do you have data / program / descriptive / anecdotal work from your own services that demonstrate an effect?
 - Who else do you suggest we speak to in order to understand the effects of primary health care on the health of Aboriginal and Torres Strait Islander communities?

3. Distribute the questionnaire to the panellists.
4. Follow up the information given to the panellists with an interview.
5. Distribute the questionnaire any further informants nominated by the original panel.
6. Follow up the responses and conclude the panel round.

See Appendices for details of the panellists and the questionnaire.

We also contacted the national and State / Territory representatives of the Aboriginal community controlled health services (National Aboriginal Community Controlled Health Organisation – NACCHO – and affiliates) to seek their views and any data they might have.

The Review Team

This review was commissioned by the Office for Aboriginal and Torres Strait Islander Health from Robert Griew Consulting (RGC). The team to carry out the Review were:

- **Associate Professor Robert Griew**, Managing Director of RGC;
- **Dr David Thomas**, Team Leader Chronic Disease Stream, Menzies School of Health Research, Darwin;
- **Mr Edward Tilton**, Senior Consultant, RGC;
- **Mr Nick Cox**, Research Associate, RGC.

Robert Griew led the Review Team. David Thomas and Edward Tilton completed the literature review. Edward Tilton, Nick Cox and Robert Griew conducted the interviews with experts and contacted community organisations. The team met regularly to discuss the review's findings and their policy implications. All team members reviewed and are responsible for the final report.

Acknowledgements

Although the primary source informing this report was the published literature, the review team also sought specific views from experienced professionals and representative organisations in the Aboriginal health field. They are listed in Appendix 1, and we gratefully acknowledge their contribution.

We would also like to acknowledge the constructive comments from Australian Government officials and in particular from the Office for Aboriginal and Torres Strait Islander Health's Mr Peter McInnes and Dr Joy Eshpeter.

Professor Ian Anderson of the Onemda VicHealth Koori Health Unit at the Centre for Health and Society (School of Population Health, University of Melbourne) and the National Centre for Aboriginal and Torres Strait Islander Statistics (NCATSIS) at the Australian Bureau of Statistics also provided lucid comments on a final draft of the report, for which we are most grateful.

Naturally, the report remains the product of the review team and does not necessarily represent the views of those who assisted us or of the Australian Government.

2. Health systems and health status

This report attempts to examine the health outcomes that can be attributed to the provision of primary health care in Aboriginal and Torres Strait Islander communities. However, strictly speaking, there are two prior questions.

First, is there evidence that health systems in general improve the health of populations?

And if so, *second*, is there evidence about the extent to which primary health care services contribute to such improvements?

These questions are necessary to set the foundations upon which the inquiry into Indigenous health and primary health care in Australia can be built. After all, if there is no strong international evidence to support the contention that primary health care (or indeed, health care systems as a whole) improve population health, it would be unwarranted to expect the evidence to show such a pattern in Aboriginal and Torres Strait Islander communities.

Therefore, the purpose of this chapter is to stand back and look in the broadest manner possible at the relationship between the provision of health care and the health of populations.

In doing so, we will be looking at some of the substantial literature that looks at this relationship. We will be using the 'hardest' measures of health status, that is, mortality rates and / or life expectancy. This is not because these measures are necessarily the best indication of the health of a population – they have their limitations – but as the most rigorous measure available we assume that changes in health systems or society that produce changes in mortality and life expectancy of populations are changing their health in a significant way.

We will also briefly examine a number of subsidiary questions, such whether overall national health system spending is related to health, and the relationship between the number of health care providers (and in particular primary health care providers) and the health of populations.

We will also introduce in this Chapter the important concept of 'avoidable' mortality as well as briefly examining the critical issue of the social determinants of health.

Does better health care lead to better health?

To the common sense view, the proposition that better health is the result of better health care – more spending on health systems, more health care workers, more

advanced drugs and treatments – is unarguable. It is simply assumed to be true, and a considerable amount of public and political discourse in Australia is based on the more-or-less uncritical adoption of this view.

However, there have been serious challenges to this apparently obvious assumption.

The McKeown Hypothesis and the Social Determinants of Health

Originally published in 1976, Professor Thomas McKeown's influential book *The role of medicine – dream, mirage or nemesis?*⁶ put forward a formidable and convincing argument to the effect that health care itself made only a minor contribution to the massive improvements in population health between the mid-nineteenth and mid-twentieth century in the developed world.

McKeown's argument was based on the fact that between roughly 1850 and 1970, the greatest decreases in mortality and advances in life expectancy for particular diseases occurred *before* the introduction of improved medical treatments for those conditions. McKeown argued that these advances were actually the result of better nutrition associated with rising living standards. He even rejected any significant role for public health measures such as improved hygiene and sanitation, again because they only became effective after the decline in mortality was well underway.⁷

At the time of their first publication, McKeown's theories flew in the face of accepted wisdom which saw scientific advance and better medicine as the principal drivers of better health. His controversial hypothesis helped revolutionise how the health of populations was viewed.

In the last fifteen years or so, a whole new theory and field of research has grown up that, like McKeown's hypothesis, locates the major factors determining the health of populations outside the health care system, but which goes much further in exploring and documenting these factors.

While explanations of illness cast in terms of exposure to certain individual risk-factors (for example viruses, bacteria, smoking, alcohol misuse, or being overweight) are a powerful way of understanding disease and illness, considerable evidence has now emerged that in addition to these individual causes lie other deeper causative factors. These are, of course, the social determinants of health.⁸

According to the theory of the social determinants of health – a theory now powerfully supported by numerous studies and substantial evidence reviewed by the World

⁶ McKeown, T. (1979). *The role of medicine - dream, mirage or nemesis?* Oxford, Blackwell.

⁷ Mackenbach, J. P. (1996). "The contribution of medical care to mortality decline: McKeown revisited." *J Clin Epidemiol* 49(11): 1207-13, Nolte, E. and M. McKee (2004). *Does healthcare save lives? Avoidable mortality revisited*. London, The Nuffield Trust.

⁸ For a concise examination of the social determinants of health, see Wilkinson, R. and M. Marmot (1998). *Social Determinants of Health: the Solid Facts*, World Health Organization Regional Office for Europe.

Health Organization – a person’s social and economic position in society, their early life experiences, their exposure to stress, their educational attainment, their employment status, their exclusion from participation in society, and transport, all exert a powerful influence on their health throughout life.⁹

In Australia, there have been a number of studies over the past two decades that have demonstrated the link between socioeconomic status and mortality, and the literature on the social determinants of health of Australia’s Indigenous population is growing.¹⁰

Implications for health policy

In locating the major drivers of health and ill health outside of the health system – whether in living standards or the broader social determinants of health – these theories and research findings have presented a major challenge to health systems and the health professions.

Simply put, if poor health is largely driven by the issues of poverty, nutrition, education, life control, racism, housing, transport, addiction, employment and all the other social determinants, what role does the health system have in creating better health?

Health service providers and policy makers have had to deal with two common reactions to this challenge. On the one hand, all too often the reaction is to acknowledge the importance of these ‘upstream’ factors that so powerfully influence health, but then consign them to the background, as issues that are too hard to address and outside the responsibility of the health system.¹¹

Alternatively, while neither McKeown nor the researchers and theorists on the social determinants of health claim that health care has *no* effect on the health of populations, there have been times when their implicit or explicit critiques of the ‘medical model’ have led some to abandon the belief that the health system has any effect on the health of populations at all.¹²

While neither of these reactions may be very useful or strategic, the question remains about the extent to which health services contribute to population health. Fortunately

⁹ World Health Organization (2003). *Social determinants of Health: The Solid Facts*, 2nd edition, Marmot, M and Wilkinson, R (eds.), International Centre for Health and Safety, Denmark.

¹⁰ See for example, Booth, A. and Carroll, N. (2005) *The health status of Indigenous and non-Indigenous Australians*, Discussion Paper No. 486, Centre for Economic Policy Research, ANU, Canberra, and their estimate that income, employment status and education accounted for between one-third and one-half of the gap in health status between Indigenous and non-Indigenous Australia.

¹¹ Griew, R. and T. Weeramanthri (2003). *Investing in Prevention and Public Health in Northern Australia*. [UK Australia Seminar: Federalism, Financing and Public Health](#). Canberra, The Nuffield Trust and Australian Government.

¹² We note, for example, how following the 1989 National Aboriginal Health Strategy in Australia, there was a powerful emphasis in national public policy on the need for better infrastructure – especially improved housing, water quality and sanitation – as the way to make progress in Aboriginal health, almost to the detriment of the provision of health services at all. This is of course was very different to the intent of the Strategy.

there is a substantial international literature that deals with this point, and it is to this literature that we turn now.

The work of Thomas McKeown in the 1970s and more recently, substantial evidence of the importance of the social determinants of health, have critically challenged the 'common-sense' idea that improved population health is simply the result of better health care.

Updating McKeown – the contemporary landscape

Thirty years on, most workers in the field would agree in broad terms with McKeown's hypothesis. Nevertheless, his theory has been refined and updated, and most theories advanced in recent years see the provision of health care as at least a part of the explanation for better health. For example, in his highly influential book, *Development as Freedom*, Amartya Sen suggests that increases in life expectancy in 20th century Britain were particularly strong in those periods marked by a strong emphasis on social sharing, and the public provision of health care and nutritional support.¹³

It has also been convincingly argued that medicine, as well as having a greater *direct* effect than McKeown's analysis gave credit for, also had an *indirect* beneficial effect on population health. This was felt through the actions of doctors and others trained in or influenced by medicine, advocating successfully for the development of public health measures and the adoption of healthier behaviours.¹⁴

Last, and of particular relevance to the contemporary situation, McKeown's data only covered the period up to the 1960s. His analysis was based on a particular social, epidemiological and historical context, and the time since then has been marked by significant advances in health care treatments, technology and organisation. This has included, in particular, the development of safe and effective treatments for chronic disease, changes in the organisation of health care in developed countries (including, for example, the adoption of evidence-based medicine), the development of organised approaches to public health and the development of comprehensive primary health care.

Accordingly, there is now a general consensus that health care systems' contribution to population health is far from negligible.

¹³ Sen, A. (1999). *Development as Freedom*. New York, Alfred Knopf.

¹⁴ Mackenbach, J. P. (1996). "The contribution of medical care to mortality decline: McKeown revisited." *J Clin Epidemiol* 49(11): 1207-13.

Measuring the effect of the health system

Researchers have attempted to refine and elucidate the link between health systems and health status in a number of ways – for example, by relating national health status to health system spending or numbers of health professionals per capita.

A number of studies discovered by the literature search attempted to gauge the effect of health systems on the health of national populations by cross-national studies (mainly of developing countries) relating health status to national health spending or numbers of health professionals per capita.

Making such comparisons across national borders is fraught with methodological problems, most significantly the diverse nature of how health systems are organised and the confounding effects of numerous other determinants of health. It is not surprising, then, that the evidence is mixed.

National health spending

Many international studies have *not* been able to demonstrate a statistically robust link between national health spending and health outcomes. For example, one extensive cross-country study found that considerably less than 1% of the observed differences in infant and under-five mortality between countries could be explained by variation in national health care spending. Instead, the variation could be much better explained by the countries' income per capita, inequality of income distribution, extent of female education, level of ethnic fragmentation, and predominant religion.¹⁵ Nevertheless, as one study concluded:

*... researchers' inability to find a systematic relationship between health care spending and health outcomes should not be considered evidence that such a relationship does not exist.*¹⁶

This particular study overcame some of the methodological problems of cross-country studies by examining health care spending within one country over a number of years and controlling for a detailed list of confounders including lifestyle factors. It found a small but statistically significant association between reduced health care spending and increased death rates among children less than a year old, specifically that a 10% reduction in health care spending led to an increase in infant mortality of 0.5% for boys and 0.4% for girls.

¹⁵ Filmer, D. and L. Pritchett (1999). "The impact of public spending on health: does money matter?" [Soc Sci Med](#) 49(10): 1309-23.

¹⁶ Cremieux, P. Y., P. Ouellette, et al. (1999). "Health care spending as determinants of health outcomes." [Health Econ](#) 8(7): 627-39. p628

Density of health professionals

Another measure used in the literature to investigate the extent to which health systems impact on health has been the density of health professionals, that is the number of doctors, nurse and providers serving a given number of people in a population.

Here too, however, the evidence is not clear cut. In some cases there is, as we would expect, a positive association between a higher density of health professionals and better health; in others no statistically significant association has been found.¹⁷

Others have even found an alarming negative correlation: that the number of doctors in an area is associated with high mortality rates even when income is controlled for (the so-called 'doctor-death correlation'). Fortunately, this is assumed to be a construct of data and statistical analysis rather than a 'real' association linked by cause and effect; a recent paper proposes an interesting explanation for this effect in the United States and Japan based on migration and / or social exclusion and racism.¹⁸

However, the most comprehensive and methodologically sound attempt to unravel this issue looks at a large number of (mainly) developing countries, and finds that doctors per capita *are* associated significantly with lower maternal mortality rates, lower infant mortality rates and lower under-5s mortality rates – with the greatest effect on maternal mortality rates.¹⁹ However, this study failed to find a significant association between nurse density and the above measures, a result that has been duplicated in other studies.²⁰ Once again, this problem of the 'invisibility' of nurses is held to be a construct of limited data, and cannot be taken to mean that nurses are irrelevant to the delivery of health care.

Avoidable mortality²¹

If national health spending and numbers of health professionals provide only mixed evidence of the effect of health systems, fortunately the concept of 'avoidable

¹⁷ Anand, S. and T. Barnighausen (2004). "Human resources and health outcomes: cross-country econometric study." *Lancet* 364(9445): 1603-9.

¹⁸ Young, F. W. (2001). "An explanation of the persistent doctor-mortality association." *J Epidemiol Community Health* 55(2): 80-4. Note that controlling for these factors still did not result in a positive association between doctor numbers and decreases in mortality, a fact which the authors put down to the relative weakness of health care to produce changes in population health compared to structural and economic factors.

¹⁹ Anand, S. and T. Barnighausen (2004). "Human resources and health outcomes: cross-country econometric study." *Lancet* 364(9445): 1603-9.

²⁰ Robinson, J. and H. Wharrad (2000). "Invisible nursing: exploring health outcomes at a global level. Relationships between infant and under-5 mortality rates and the distribution of health professionals, GNP per capita, and female literacy." *J Adv Nurs* 32(1): 28-40, Robinson, J. J. and H. Wharrad (2001). "The relationship between attendance at birth and maternal mortality rates: an exploration of United Nations' data sets including the ratios of physicians and nurses to population, GNP per capita and female literacy." *J Adv Nurs* 34(4): 445-55.

²¹ This section owes much to a recent comprehensive review of the concept of avoidable mortality which is essential reading for those wishing to understand of this important concept: Nolte, E. and M. McKee (2004). *Does healthcare save lives? Avoidable mortality revisited*. London, The Nuffield Trust.

mortality' provides more robust evidence about the ability of health care systems – and primary health care in particular – to influence the health of populations.

The concept of avoidable mortality had its origin over thirty years ago in the work of the United States Working Group on Preventable and Manageable Diseases chaired by Dr David Rutstein. Primarily concerned with improving the quality of health care through an analysis of 'unnecessary, untimely deaths', the group proposed a list of conditions from which death should not occur if proper health care was available.

These conditions were those where mortality could be avoided through the actions of the health system in its broadest sense, including through medical personnel and institutions, governments, other agencies and even the individual themselves. Physicians were seen as having a crucial role, not just in providing direct medical care, but also indirectly through advocacy and leadership on health issues and as a conduit of health information to the community.²²

During the 1980s the concept – now labelled 'avoidable mortality' and widely accepted as meaning *those deaths that should not occur in the presence of effective and timely health care* – began to be used to analyse the overall effectiveness of health systems.²³

However, as the use of the measure spread through a series of national studies, so did the methodological diversity with which it has been applied.

No universally agreed upon list of conditions for which mortality is considered avoidable has been fixed upon, although it has become generally agreed to include such diseases as, tuberculosis, childhood measles, some malignant cancers such as breast cancer and skin cancer, chronic rheumatic heart disease, hypertensive disease, cerebrovascular disease, influenza and pneumonia, maternal death, and a substantial proportion of ischaemic heart disease.²⁴

It is also generally agreed that it includes conditions where mortality is preventable or treatable through primary care, hospital care and public health programs (for example, screening programs or immunisation) be included.²⁵

However, differences remain, even around such major methodological issues as the inclusion of conditions where the avoidance of mortality is essentially a matter of primary prevention – and in particular mortality from lung cancer, liver cirrhosis and

²² Rutstein, D. D., W. Berenberg, et al. (1976). "Measuring the quality of medical care. A clinical method." *N Engl J Med* 294(11): 582-588.

²³ Albert, X., A. Bayo, et al. (1996). "The effectiveness of health systems in influencing avoidable mortality: a study in Valencia, Spain, 1975-90." *J Epidemiol Community Health* 50(3): 320-5, Holland, W. W. (2003). "Commentary: should we not go further than descriptions of avoidable mortality?" *Int J Epidemiol* 32(3): 447-8.

²⁴ Nolte, E. and M. McKee (2003). "Measuring the health of nations: analysis of mortality amenable to health care." *BMJ* 327(7424): 1129.

²⁵ Nolte, E. and M. McKee (2004). *Does healthcare save lives? Avoidable mortality revisited*. London, The Nuffield Trust.

from motor vehicle accidents, each with their respectively strong associations with the use of tobacco, alcohol, and road safety. These causes of mortality are generally responsive to public health actions concerned with prevention, rather than to clinical intervention at the individual level. Some studies include these as 'avoidable' deaths, others do not, with even different editions of the *European Community Atlas of 'Avoidable Death'* taking different approaches.²⁶

Recent research has focused on differentiating more clearly between avoidable causes of mortality that are susceptible to currently available health care technologies (often called 'amenable' mortality) and avoidable causes of mortality which are susceptible to interventions that prevent the condition or disease from occurring in the first place (often called 'preventable mortality').²⁷

We will return to these distinctions later; in the meantime, let us turn to the overall evidence about avoidable mortality and what it can tell us about the effect health systems in general might have on the health of populations.

What avoidable mortality tells us about the effect of health systems

The concept of avoidable mortality has allowed researchers to investigate from a sound base the effect, or lack of effect, that health systems exert on the health of populations.

Most developed countries – with a few exceptions²⁸ – have been showing a fall in overall mortality rates (due to both avoidable and non-avoidable conditions) over the last few decades. Following McKeown and the now universally accepted theory of the social determinants of health, this fall in the 'background' mortality rate can be attributed to rising living standards, better nutrition, improved education, better housing, reduced poverty, increased control over life choices, etc.

To see whether health care also makes a contribution, researchers have looked at the differing changes over time in mortality rates for avoidable and non-avoidable conditions. They assume that if the effectiveness of health care remained constant, mortality from both avoidable and non-avoidable conditions would change at the same 'background' rate, as determined primarily by factors external to the health system.

In fact, what researchers find consistently is that mortality from avoidable conditions has been declining at a faster rate than that for non-avoidable conditions. They

²⁶ Ibid. p 25-26.

²⁷ Ibid.; for a recent Australian exposition on this point, see Page, A., Tobias, M., Glover, J., Wright, C., Hetzel, D., and Fisher, E. (2006) *Australian and New Zealand Atlas of Avoidable Mortality*. Adelaide, PHIDU, University of Adelaide.

²⁸ For example, in Russia during the 1990s. See Andreev, E. M., E. Nolte, et al. (2003). "The evolving pattern of avoidable mortality in Russia." *Int J Epidemiol* 32(3): 437-46.

therefore conclude that health care has contributed to at least part of this 'extra' decline.²⁹

In particular, Nolte and McKee's extensive review of empirical studies of avoidable mortality³⁰ finds a consistent pattern whereby mortality from 'avoidable' conditions decrease more rapidly than mortality for other causes; they conclude that while McKeown was correct in saying that curative medicine was a minor contributor to improvements in the health of nations up until the mid-twentieth century, since then it has played a more significant role.

In fact they describe a general pattern for the developed world whereby health care in the 1980s had a significant effect on reducing mortality rates from avoidable conditions, mainly through reductions in infant mortality, though to a lesser extent in middle-aged mortality.

(Interestingly, by the 1990s the reduction in mortality due to the effects of health were declining in importance, largely due to the fact that infant mortality had already been reduced to very low rates).³¹

Scale of the effect of health systems

A number of methodological problems make generalising about the scale of the effect of health systems difficult, in particular the lack of comparability between studies due to their focus on different countries over different periods. There are also diverse definitions of 'avoidable' / 'amenable' conditions, although generally studies use 'amenable' mortality as a measure, that is including those avoidable conditions susceptible to secondary and tertiary intervention, but excluding those conditions susceptible only to 'primary prevention' measures such as healthy public policy which lie outside the direct control of the health system.

It is also important to note that low socioeconomic status (including poverty and lack of access to employment) have, not unexpectedly, a strong association with higher levels of avoidable mortality.³²

Despite these limitations, some authors have been prepared to conclude that clinical services (including preventive services as well as treatment) can be credited with

²⁹ Korda, R. and J. Butler (2004). The Impact of Health Care on Mortality: Time Trends in Avoidable Mortality in Australia 1968-2001. Canberra, National Centre for Epidemiology and Population Health, Nolte, E. and M. McKee (2004). Does healthcare save lives? Avoidable mortality revisited. London, The Nuffield Trust.

³⁰ Nolte, E. and M. McKee (2004). Does healthcare save lives? Avoidable mortality revisited. London, The Nuffield Trust. p 48

³¹ Ibid. p 91

³² Ibid. p 36

approximately five of the thirty years of increase in life expectancy in the western world since 1950.³³

More cautious approaches note the consistently greater decline in avoidable mortality compared to non-avoidable mortality, and are only prepared to conclude that at least part of this decline is due to improvements in health care.³⁴

Studies of avoidable mortality conclude that, notwithstanding the powerful effects of the broader social determinants of health and socioeconomic factors in particular, health systems do have a significant effect on the health of populations.

Avoidable Mortality in Australia

While this approach has been common in overseas analyses, particularly in Europe and the United States for some time, there is comparatively little published literature in Australia using the concept of avoidable mortality.

However, the last few years have seen some studies³⁵ published which have confirmed the same pattern in Australia as that found so consistently overseas. These show that between 1968 and 2001, avoidable death rates fell by around 70% while non-avoidable rates fell by about 34%, allowing the conclusion that:

While the observed declines in avoidable mortality rates may also reflect changes in other factors that influence mortality such as environment and socioeconomic conditions, they are consistent with, and suggestive of, the health care system being an important determinant of health improvements in Australia in recent decades.³⁶

Also important was the inclusion of avoidable mortality as one of the National Health Sector Performance Indicators (NHSPIs).³⁷ These show that from 1980 to 2001 avoidable mortality declined steadily by a total of 55% for males and 48% for females. In contrast unavoidable mortality rates fell 22% and 17% respectively.

³³ Bunker, J. P., H. S. Frazier, et al. (1995). The role of medical care in determining health: creating an inventory of benefits. *Society and Health*. B. C. Amick, S. Levine, A. R. Tarlov and D. C. Walsh. New York, Oxford University Press.

³⁴ Nolte, E. and M. McKee (2004). Does healthcare save lives? Avoidable mortality revisited. London, The Nuffield Trust.

³⁵ Page, A., Tobias, M., Glover, J., Wright, C., Hetzel, D., and Fisher, E. (2006) Australian and New Zealand Atlas of Avoidable Mortality. Adelaide, PHIDU, University of Adelaide; Korda, R. and J. Butler (2004). The Impact of Health Care on Mortality: Time Trends in Avoidable Mortality in Australia 1968-2001. Canberra, National Centre for Epidemiology and Population Health, Korda, R. J. and J. R. Butler (2006). "Effect of healthcare on mortality: trends in avoidable mortality in Australia and comparisons with Western Europe." *Public Health* **120**(2): 95-105.

³⁶ Korda, R. and J. Butler (2004). The Impact of Health Care on Mortality: Time Trends in Avoidable Mortality in Australia 1968-2001. Canberra, National Centre for Epidemiology and Population Health. p 5.

³⁷ National Health Performance Committee (2004). National report on health sector performance indicators 2003. Canberra, Australian Institute of Health and Welfare.

Similar results for the period 1987 to 2001 have also been documented,³⁸ confirming that the health care system is responsible for at least part of this improvement. Importantly – especially given the large effect of social determinants of health on mortality patterns – this latest extensive study also documents a clear gradient in avoidable mortality between socioeconomic groups: those in the most disadvantaged areas socioeconomically speaking had age standardised death rates from avoidable conditions over 60% higher than those in the most advantaged areas.

This suggests not just that health care itself makes a significant difference to health, but also that access to and effectiveness of health care are strongly associated with broader patterns of poverty and disadvantage – a point that has been tellingly made in other publications.³⁹

Recent studies of avoidable mortality within Australia conclude that, consistent with the patterns seen overseas, the health system within this country has contributed significantly to improving population health over the last forty years.

Does better primary health care lead to better health?

We have now seen that, using the concept of avoidable mortality, the literature demonstrates that notwithstanding the powerful effects of socioeconomic class, poverty, and other social determinants, health care can and does have a significant effect on the health of populations.

We turn now to the key question for this report: is there evidence from the international literature regarding the effectiveness of primary health care in particular in improving population health? We find that there are three relevant sources of information in the literature.

- a major cross-country study on the effect of the strength of primary health systems on health status;
- a number of studies looking at the association of health status with primary health care resources, mainly from the United States and using a variety of health measures;

³⁸ Page, A., Tobias, M., Glover, J., Wright, C., Hetzel, D., and Fisher, E. (2006) Australian and New Zealand Atlas of Avoidable Mortality. Adelaide, PHIDU, University of Adelaide.

³⁹ Korda, R. J. and J. R. Butler (2006). "Effect of healthcare on mortality: trends in avoidable mortality in Australia and comparisons with Western Europe." *Public Health* 120(2): 95-105, Korda, R. J., J. R. Butler, et al. (2007). "Differential impacts of health care in Australia: trend analysis of socioeconomic inequalities in avoidable mortality." *Int J Epidemiol* 36(1): 157-65.

- examinations of avoidable mortality which have looked in more detail at the concept by attempting to determine the effect of the different levels of health care intervention on avoidable mortality.

Primary health care systems: a cross-country study

Comparing the performance of health care systems between countries is beset with methodological difficulties – largely to do with comparability of data and the diverse nature of the health systems themselves – such that demonstrating evidentially valid associations can be frustratingly difficult.

However, a major study by key researchers based at John Hopkins University⁴⁰, looks at thirteen industrialised countries, including Australia, to determine whether the strength of the primary health care system is related to a country's overall health status and its health care costs.

The analysis begins by rating the strength of primary health care systems of each of the countries against a wide range of variables, relating either to health system policy (for example, financing arrangements, requirements for cost-sharing by patients) or to good primary care practice (for example comprehensiveness, coordination, family-centeredness). The study then aggregates these to come up with an overall classification of whether each country has a low, intermediate, or high strength primary care system. (Australia falls into upper end of the group of countries with intermediate strength primary health care systems).

According to this study, it appears that the strength of a primary health care system is significantly associated with a number of important health measures, and in particular that:

- stronger primary health care is significantly related to lowered mortality of infants from 1 to 12 months of age;
- stronger primary health care is inversely related (though not significantly) to low birth weight, that is, high levels of primary care are associated with reduced rates of low birth weight;
- weaker primary health care is also associated with poorer results in regard to years of potential life lost; and
- stronger primary health care is associated with lower overall national health care costs.

⁴⁰ Starfield, B. and L. Shi (2002). "Policy relevant determinants of health: an international perspective." [Health Policy](#) 60(3): 201-218.

Interestingly, countries with intermediate strength primary care systems generally have overall levels of health comparable with those with strong primary care, except for those indicators pertaining to early life where primary care clearly has an impact in improved child health.

However, those countries with only intermediate strength primary care outperformed those with high levels of primary care when it came to life expectancy from middle age onward, perhaps because generally the intermediate primary health care group have higher overall health expenditures, leading the authors to conclude that

A certain level of health care expenditure may be required to achieve overall good health levels, even in the presence of strong primary care infrastructures.⁴¹

On an international level, stronger primary health care systems at a national level are associated with better health outcomes (especially relating to infant health indicators such as low birth weight and infant mortality from 1 to 12 months of age).

Internationally, stronger primary health care systems at a national level are associated with lower overall national health care costs.

Primary health care resources and health

A number of studies have looked within nations – either geographically or over time or both – to see whether there is an association between presumed primary health care resources and health care outcomes.

The most extensive of these are again associated with the John Hopkins team, and comprise an exhaustive analysis of over 3,000 United States counties from 1985-1995, with rigorous attempts to control for confounding variables.

These studies⁴² measure primary health care resources by the number of primary care physicians (specifically doctors in family care, internal medicine and paediatrics) per capita. Obviously this can only be a proxy measure of better access to primary health care, and significantly it does not measure the presence of other primary health care workers – though in this case, the effect should be to underestimate the effect of primary health care. Nor, of course, does it measure other factors that may

⁴¹ Ibid. p201

⁴² Shi, L. and B. Starfield (2001). "The effect of primary care physician supply and income inequality on mortality among blacks and whites in US metropolitan areas." *Am J Public Health* **91**(8): 1246-50, Shi, L., J. Macinko, et al. (2003). "The relationship between primary care, income inequality, and mortality in US States, 1980-1995." *J Am Board Fam Pract* **16**(5): 412-22, Shi, L., J. Macinko, et al. (2004). "Primary care, infant mortality, and low birth weight in the states of the USA." *J Epidemiol Community Health* **58**(5): 374-80, Shi, L., J. Macinko, et al. (2005). "Primary care, social inequalities, and all-cause, heart disease, and cancer mortality in US counties, 1990." *Am J Public Health* **95**(4): 674-80, Shi, L., J. Macinko, et al. (2005). "Primary care, race, and mortality in US states." *Social Science & Medicine* **61**: 65-75.

affect the outcomes from primary health care, such as quality or models of care.

The results of these studies are extensive and sometimes complex, investigating not just associations between primary health care resources and mortality, but also the effect of socioeconomic variables, such as inequality in income, and race. Some of the key results include:

- increased primary care resources are associated with lower mortality rates (with an increase of one doctor per 10,000 population associated with a reduction in the mortality rate of 14.4 deaths per 100,000);⁴³
- increased primary care resources are associated with better child and maternal health (with an increase of one primary care doctor per 10,000 population associated with a 2.5% reduction in the infant mortality rate and a 3.2% reduction in low birth weight);⁴⁴
- increased primary health care resources are consistently associated with lower rates of mortality from heart disease and cancer;⁴⁵
- primary health care's association with lower mortality is consistent over time.⁴⁶

Important though these figures are, of equal interest is the relationship between primary health care and the social determinants of health, with the reduction in mortality in the presence of increased primary health care resources partially mediating the association between income inequality and mortality.⁴⁷ The authors go on to conclude that areas with high inequality benefit more from the increased presence of primary care resources than those with low inequality.⁴⁸

Throughout, the influence of socioeconomic variables – including income inequality – was powerful; but the influence of primary health resources to address its effects was not negligible, leading the authors to conclude:

⁴³ Shi, L., J. Macinko, et al. (2005). "Primary care, race, and mortality in US states." *Social Science & Medicine* **61**: 65-75.

⁴⁴ Shi, L., J. Macinko, et al. (2004). "Primary care, infant mortality, and low birth weight in the states of the USA." *J Epidemiol Community Health* **58**(5): 374-80.

⁴⁵ Shi, L., J. Macinko, et al. (2005). "Primary care, social inequalities, and all-cause, heart disease, and cancer mortality in US counties, 1990." *Am J Public Health* **95**(4): 674-80.

⁴⁶ Shi, L., J. Macinko, et al. (2003). "The relationship between primary care, income inequality, and mortality in US States, 1980-1995." *J Am Board Fam Pract* **16**(5): 412-22.

⁴⁷ Shi, L., J. Macinko, et al. (2005). "Primary care, race, and mortality in US states." *Social Science & Medicine* **61**: 65-75.

⁴⁸ Ibid.

From a policy perspective, improvement in population health is likely to require a multi-pronged approach that addresses sociodemographic determinants of health as well as strengthening primary care.⁴⁹

This series of studies represents the most comprehensive investigation of the link between the availability of primary health care resources and population health. However, other studies have found a similar relationship both in the United States⁵⁰ and in Canada.⁵¹

It should be noted, however, that some studies have not been able to demonstrate a statistically significant association between increased primary health care resources and reduced mortality. They have instead found that issues such as race, education and unemployment better explained health differences⁵², or that the risks of urban living outweighs any correlation between health service access and mortality⁵³, or even that it is the model of care that predicts whether there is an effect on mortality (private practice being associated with lowered mortality, public employment of physicians having no such association).⁵⁴

Nevertheless, the weight of evidence is clearly that increased primary health care resources (measured by numbers of primary care practitioners) has a positive effect on the health of populations.

Evidence from overseas – principally the United States – shows a strong correlation between increased primary health care resources and lower mortality rates, and in particular with better maternal and infant health.

Increased primary health care resources are also shown to be able to offset some of the harmful health effects of socioeconomic disadvantage and inequality.

Primary health care and avoidable mortality

Before ending this chapter, however, it is worth returning to the concept of avoidable mortality, which may itself provide evidence of the effectiveness or otherwise of primary health care on improving population health.

⁴⁹ Ibid.

⁵⁰ Farmer, F. L., C. S. Stokes, et al. (1991). "Poverty, primary care and age-specific mortality." *J Rural Health* 7(2): 153-69.

⁵¹ Cremieux, P. Y., P. Ouellette, et al. (1999). "Health care spending as determinants of health outcomes." *Health Econ* 8(7): 627-39.

⁵² Mansfield, C. J., J. L. Wilson, et al. (1999). "Premature mortality in the United States: the roles of geographic area, socioeconomic status, household type, and availability of medical care." *Am J Public Health* 89(6): 893-8.

⁵³ Suarez-Varela, M. M., A. Llopis Gonzalez, et al. (1996). "Variations in avoidable mortality in relation to health care resources and urbanization level." *J Environ Pathol Toxicol Oncol* 15(2-4): 149-54.

⁵⁴ Aakvik, A. and T. H. Holmas (2006). "Access to primary health care and health outcomes: the relationships between GP characteristics and mortality rates." *J Health Econ* 25(6): 1139-53.

Recently, there have been attempts to use the concept of avoidable mortality to focus not just on the overall effects a health system might be having on the health of a population, but on which areas of the healthcare system might be having that effect.

For example, a study comparing changes in avoidable mortality in the United States and Canada divided the avoidable mortality conditions into those upon which primary health care and/or public health has the greatest impact (for example, asthma, cervical cancer, hypertension and cerebrovascular disease, tuberculosis and maternal mortality) and those most often treated in hospital (for example, Hodgkin disease, appendicitis, cholecystitis, abdominal hernia, peptic ulcer). They concluded that the greater decline in mortality in Canada from causes amenable to primary health care might be traceable to a greater focus in that country on primary care and / or the provision of free health services at the point of use.⁵⁵

More systematic attempts have been made to differentiate 'avoidable' causes into those:

1. *Avoidable through primary interventions* (prevention) by reducing the incidence of disease through action on lifestyle factors such as smoking and alcohol consumption or on legal and societal measures such as traffic safety or crime reduction;
2. *Avoidable through secondary interventions* (early detection and management) including through screening programs;
3. *Avoidable through tertiary intervention* (treatment) largely requiring medical / surgical intervention but also including immunisation.⁵⁶

Examining the changes in avoidable mortality rates for the conditions in each of these three groups can indicate how the different levels of intervention are implicated in health improvements.

It is important to recall at this point the diversity of approaches to, and ongoing evolution, of the concept of avoidable mortality. The recent extensive study of avoidable mortality in Australia and New Zealand⁵⁷ did not disaggregate avoidable mortality in this way as it was felt to be too reliant on expert judgment. As we have noted previously, this is a common area of methodological concern and debate in the many studies that use the concept of avoidable mortality.

⁵⁵ Manuel, D. G. and Y. Mao (2002). "Avoidable mortality in the United States and Canada, 1980-1996." *Am J Public Health* 92(9): 1481-4.

⁵⁶ Nolte, E. and M. McKee (2004). *Does healthcare save lives? Avoidable mortality revisited*. London, The Nuffield Trust, Tobias, M. and L. C. Yeh (2007). "How much does health care contribute to health inequality in New Zealand?" *Australian and New Zealand Journal of Public Health* 31(3): 207-10.

⁵⁷ Page, A., Tobias, M., Glover, J., Wright, C., Hetzel, D., and Fisher, E. (2006) *Australian and New Zealand Atlas of Avoidable Mortality*. Adelaide, PHIDU, University of Adelaide

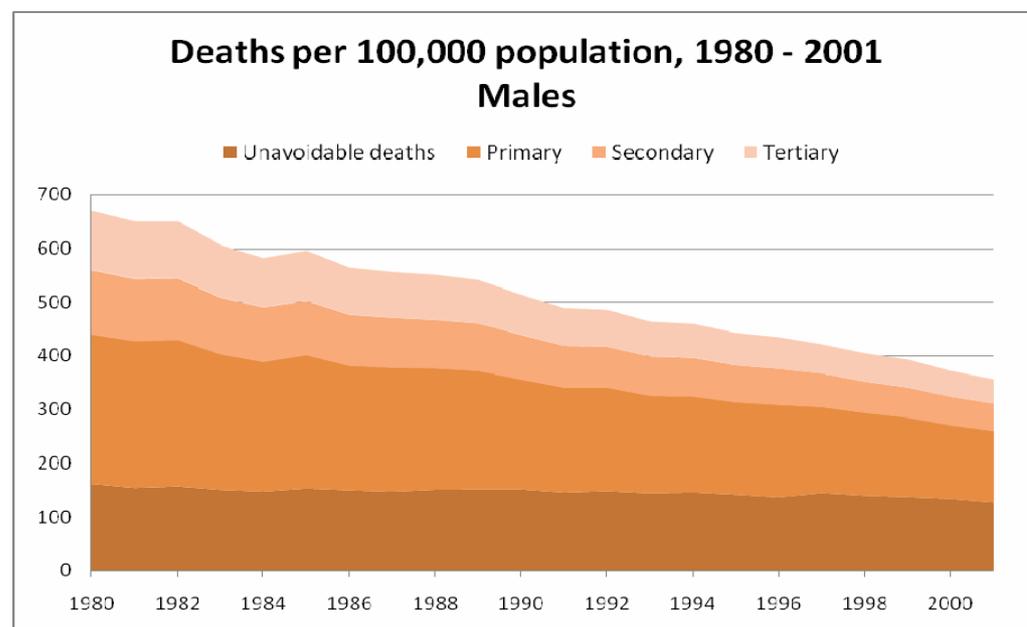
Nevertheless, the data using this method in the report on Australia's National Health System Performance Indicators provides important evidence.⁵⁸ The graphs on the following page show changes in potentially avoidable deaths in Australia from 1980 to 2001 for each of the groups of conditions for males and females.

Obviously, primary health care has a role across all three types of intervention.

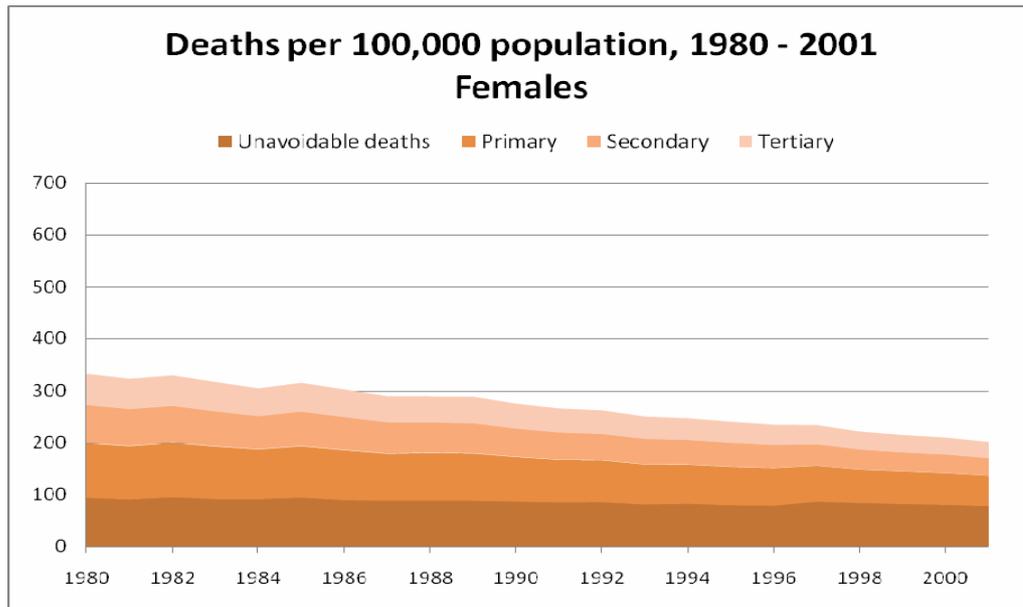
For example, primary health care clearly has an important role in interventions aimed at changing individual behaviour (for example, drinking or smoking) and a role in population level interventions / healthy public policy.

Primary health care clearly has a powerful role in immunisation, and is also important in ensuring successful hospital care through post-treatment monitoring and management.

However, primary health care's role is particularly important for those conditions where mortality can be avoided through early detection and management, that is secondary intervention. Therefore we can surmise that changes in avoidable mortality which is amenable to secondary prevention gives a strong indication of the effectiveness of primary health care.



⁵⁸ National Health Performance Committee (2004). National report on health sector performance indicators 2003. Canberra, Australian Institute of Health and Welfare.



In Australia, the NHSPI data tells us that mortality from conditions susceptible to secondary intervention – that is early detection and management – fell by 57.2% for males and 53.6% for females between 1980 and 2001. This evidence strongly suggests that the primary health care system in Australia has contributed significantly to improvements in health in Australia.

Evidence of reductions in avoidable mortality for conditions susceptible to primary, secondary and tertiary intervention in Australia since 1980 suggest that primary health care has made a significant contribution to improved population health in this country.