Flier for *Advocacy and action in public health: Lessons from Australia over the twentieth century*

Public health is the organised response by society to protect and promote health and to prevent illness, injury and disability.[1]

Improvements in the health of the Australian population

The 20th century was a period of great social, economic and scientific development in Australia. These developments brought better nutrition and living conditions from the start of the century, and widespread immunisation and improvements in medical treatment in the second half. A dramatic decline in deaths of newborns and deaths from infectious diseases resulted, with death rates less than one third of what they were in the early years of the century. Life expectancy at birth has increased by over 20 years. Chronic diseases (e.g. cardiovascular diseases and cancer) however, have become more prominent. Some groups have not received the full health benefit of improvements in living conditions and in life expectancy, especially Aboriginal and Torres Strait Islander populations, and other socioeconomically disadvantaged groups. This reinforces the importance of societal inequalities on inequalities in health, and the challenge to remedy such injustices.

Although many factors lie behind this dramatic extension of life and improved population health, one key influence has been the success of the public health actions taken by public authorities and the Australian community. A selection of outstanding public health successes since the beginning of the last century is listed below (informed by a literature review and a survey of health experts).

The outstanding public health successes of the last hundred years:

- Control of Infectious diseases: 1901 onwards
  - Sanitation and hygiene
  - Screening and infectious disease surveillance
  - Organised mass immunisation
  - Aseptic procedures and antimicrobial medicines
- Maintaining a safe environment: 1901 onwards
  - Environmental lead reduction
  - Reduced exposure to environmental asbestos
  - Reducing the health effects of passive smoking
- Improved maternal, infant and child health
  - Safer birthing practices
  - Improved survival and health of infants
  - Promotion of breastfeeding
  - Preventing infant deaths from SIDS
- Better food and nutrition: 1901 onwards
- Preventing injury: 1970s onwards
  - Road traffic safety
  - Preventing injuries in the home
  - Preventing suicide
  - Gun control and reduction in gun-related deaths
- Reducing risk factors and chronic diseases: 1960s onwards
  - Decreased tobacco smoking
  - Decreased alcohol-related harm
  - Sun safety measures
  - Needle and syringe exchange programs
  - Reduction in fatal heart attacks
  - Stroke prevention and high blood pressure reduction
  - Organised screening for certain cancers
- Improving health and safety at work
- Universal access to healthcare, pharmaceuticals and technology: 1948 onwards
- Improving public health practice
  - Training the public health workforce
  - Aboriginal Community-Controlled Health Services
  - Research into public health
  - Monitoring the public's health

A selection made from the successes listed above, follows.

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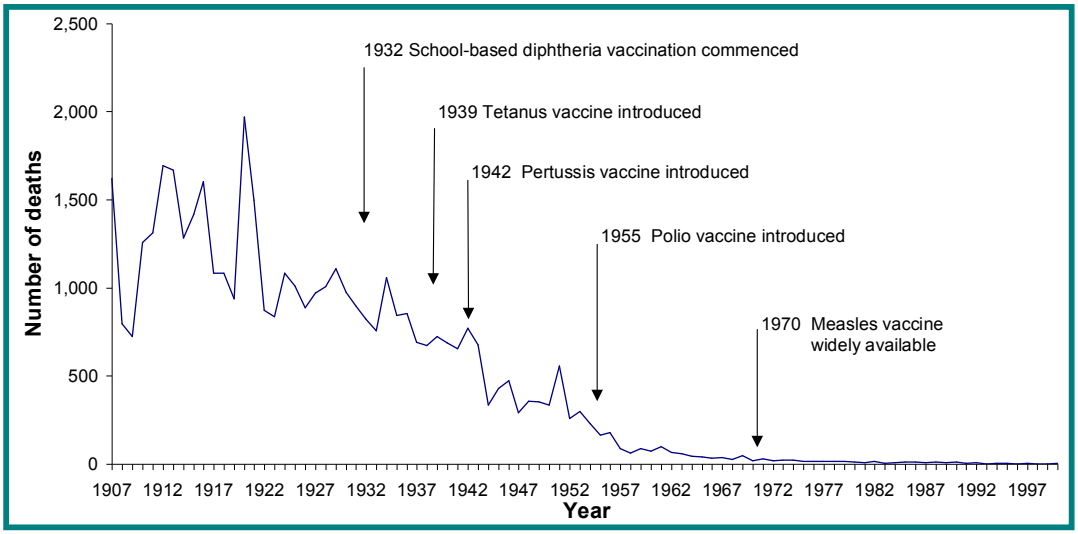
[1] National Public Health Partnership (NPHP), *Public health in Australia: the public health landscape: person, society, environment*, NPHP, Melbourne, 1998.

Control of infectious diseases: historic highlights

In the early 1900s, infectious diseases were a major cause of death. One in ten children died from diarrhoeal disease, or enteritis, before they were five years old. The first federal public health legislation in Australia, the Commonwealth *Quarantine Act 1908,* aimed to prevent the arrival and transmission of infectious diseases from other countries.[2] Public health measures to reduce tuberculosis began in the 1940s, and from the 1980s, there was a focus on HIV/AIDS. As a result of immunisation strategies through the century, Australia was declared polio-free in 2000; and measles, rubella and *Haemophilus influenzae* type b infection (Hib) were close to being eliminated.[3]

National programs for childhood immunisation developed over decades, from diphtheria vaccinations in 1932, to the present suite of standard vaccinations. In 2001, it was estimated that at least 78,000 Australian lives had been saved, and substantial illness prevented, through vaccinations for diphtheria, whooping cough, tetanus, measles and poliomyelitis.[4] Prevention was vital as many of these diseases are caused by viruses and had no specific treatments or had drug-resistant strains.

Figure 1: Fewer deaths from leading vaccine-preventable diseases, 1907-2000 (Burgess[4])



Vaccine expenditure under the National Immunisation Program in 2004-05, was estimated to be $285 million (a substantial increase on the $13 million in 1996). Some of the benefits and costs of universal childhood immunisation follow.[5]

Measles - cost of immunisation programs 1970-2003 estimated at $52 million;

- saved an estimated 95 lives over the same period and averted around four million cases. Measles notifications fell from around 100,000 to under 2,000 cases a year;
- savings to government included $8.5 billion, mainly in health care expenditure;
- net benefit estimated at over $9.1 billion

Haemophilus influenzae type b infection (Hib) - cost of immunisation programs 1991-2003 estimated at $165 million;

- saved an estimated 78 lives over the same period and averted around 3,600 cases from 1993 to 2003. An estimated 350 cases were averted annually during the 1990s;
- net benefit estimated at $10 million.

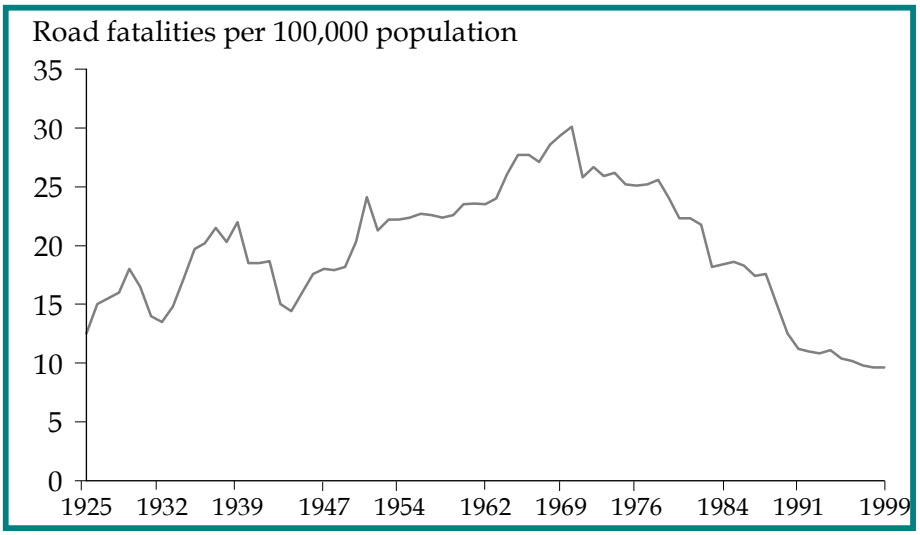
Road safety: historic highlights

The advent of motor vehicles at the beginning of the 20th century brought the advantages of more rapid transport and the ability to travel longer distances, but also resulted in a substantial burden of death, illness and disability for the population. The earliest motor vehicle deaths were recorded in 1924. Road deaths were responsible for a significant proportion of injury deaths for much of the

[2] C Reynolds, *Public health law in Australia*, The Federation Press, Sydney, 1995.
[3] T Adams, 'Farewell to polio in the Western Pacific', *Bulletin of the World Health Organization*, 2000, 78(12); P McIntyre, H Gidding, R Gilmour et al., 'Vaccine-preventable diseases and vaccination coverage in Australia, 1999-2000', *Communicable Diseases Intelligence*, 2002, 26(S1): x.
[4] M Burgess, 'Immunisation: a public health success', *NSW Public Health Bulletin*, 2003, 14(1):1-5.
[5] P Abelson, R Taylor, J Butler, D Gadiel, M Clements & S-L Mui, *Returns on investment in public health*, DoHA, Canberra, 2003.

century: fatality rates rose steeply in the 1950s and 1960s, peaking in 1970 with rates of 49 (male) and 18 (female) deaths per 100,000 population.[6] In 1970, this equated to a per vehicle rate of eight road accident deaths per 10,000 registered vehicles; by 1999 it had been reduced to a rate of 1.4 deaths per 10,000 registered vehicles, partly due to the many public health measures introduced to tackle the death and injury toll from road trauma[7] By 2000, the injury death rates were 14 (male) and 6 (female) deaths per 100,000 population.[6]

Figure 2: A trend reversed - road fatalities per 100,000 population, 1925-1999 (ATSB & ABS[7])



Successful public health measures have included:

- compulsory seat belts since the 1970s—fitted in cars, with mandatory wearing of seat belts;
- mandatory wearing of motorcycle helmets (since 1973 for motorcycle drivers and their passengers) and then of bike helmets (nationally from 1992);
- baby capsules and generally **improved** occupant restraints in motor vehicles;
- reductions in road speed limits, reduced speed zones (e.g. near schools), and traffic zones shared by motorists, cyclists and pedestrians;
- setting and monitoring of blood alcohol limits (e.g. random breath testing - introduced in 1976 in Victoria, and by other states and territories 1980 to 1988), penalties and fines for drivers);
- driver education and testing, and, road safety campaigns in schools and in the mass media.

Control of risk factors and chronic diseases: historic highlights

Life expectancy in Australia has increased substantially in two phases during the 20th century. The earliest phase saw major declines in infectious diseases and consequent reductions particularly in infant deaths. The second phase, since the 1970s saw decreases in the death rates of older age groups from some of the chronic diseases that had become more prominent as infectious diseases declined. The cardiovascular 'epidemic' peaked in the late 1960s and early 1970s; breast and cervical cancer screening started in 1991; and the first sun protection campaign against skin cancer began in 1981. Early in the 20th century, there was a rapid rise in circulatory system diseases, with increases occurring in most Western countries following economic prosperity, urbanisation, and modernisation, and associated changes in diet (greater fat and salt intake), reductions in physical activity, and more sedentary lifestyles.[8] The two major types of circulatory system diseases are coronary or ischaemic heart disease, and cerebrovascular disease (including stroke). In Australia, deaths from ischaemic heart disease (fatal heart attacks) rose sharply through the century for both males and females, peaked around 1970, and then fell rapidly. By 2004, rates were well below the levels seen in 1950.[9]

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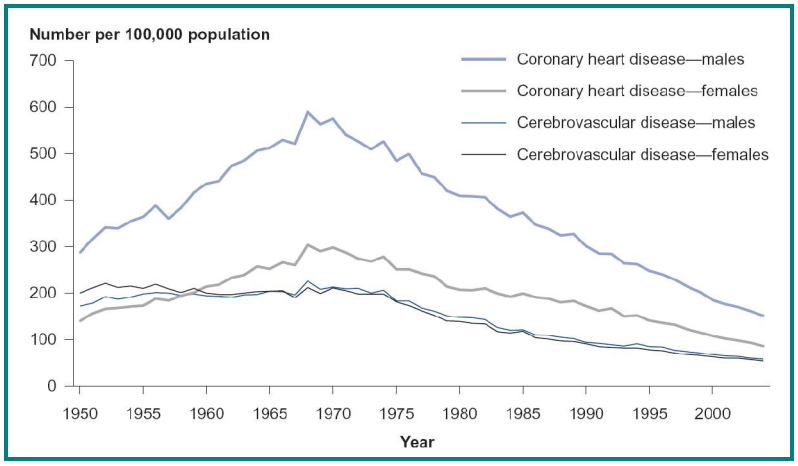
[6] AIHW, *Mortality over the twentieth century in Australia*, AIHW, Canberra, 2006, p. 72.
[7] Australian Transport Safety Bureau (ATSB) & Australian Bureau of Statistics (ABS), 'A history of road fatalities in Australia', in ABS (eds.), *Year Book Australia, 2001*, ABS, Canberra, 2001.
[8] S Yusuf, S Reddy, S Ôunpuu & S Anand, 'Global burden of cardiovascular diseases Part II: Variations in cardiovascular disease by specific ethnic groups and geographic regions and prevention strategies', *Circulation*, 2001, 104(23): 2855 2864.
[9] AIHW, *Australia's health 2006*, AIHW, Canberra, 2006.

Figure 3: Declining death rates from the main circulatory system diseases, 1950-2004, (AIHW[9])



From the 1960s, research led to increasing awareness of the part played by risk factors, such as high blood pressure and blood cholesterol, smoking and diet (saturated fat and salt intake), in the rapid increase in the incidence of circulatory system diseases. Successful primary prevention strategies to reduce population risk factors (e.g. tobacco smoking, uncontrolled high blood pressure and high blood cholesterol), together with improvements in acute treatment, have reduced related death rates.[10]

Public health investment in programs to reduce coronary heart disease has been cost-effective: the net benefit of public education programs to reduce coronary heart diseases was assessed at $8.5 billion for an investment of $810 million (1970-2010).[5] Ten per cent of the reduction in smoking and 30% of the reduction in high blood cholesterol were attributed to public health activity. Benefits attributable to public health programs were $994 million (in 1996), composed of longevity gains ($828m), improved health status gains ($100m), and lower health care costs ($66m). The return on investment of public health programs alone was, therefore, better than one to one, and when total returns were taken into account, better than ten to one.

The public health interventions described in this report share a number of common elements:

1. A focus on a public health problem adversely affecting a significant number of Australians;
2. An effective contribution, largely attributable to the public health sector, to problem amelioration;
3. Implementation at a national level, or across the whole population, through government action;
4. Leadership, stewardship and informed advocacy by public health practitioners and champions;
5. Approaches that were complex and required action across a number of different fronts;
6. Sustained efforts to effect change, often over many years; and
7. Support of the wider community.

A crucial success factor was investment: the capacity and will to invest significant money in complex multifaceted public health ventures, often over lengthy periods of time to ensure their success.

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[10] C Mathers, T Vos & C Stevenson, *The burden of disease and injury in Australia*, AIHW, Canberra, 1999.