HEALTH

General Introduction

Governments at all levels are striving to address a range of emerging health issues and to subsequently strengthen the nations' health system. A tiered policy approach to address future health issues seems to be emerging based on a 'whole of government' approach, coupled to a 'whole of community' commitment and linked to increasing 'individual responsibility'.[108]

A summary of Australian Health

Australia reflects the trends in other OECD countries with increasing spending on health services, with the majority of these cost increases covering pharmaceuticals, dental care, and aids and appliances; 9.3% of the Australian GDP ($66.6 billion) is spent (invested) on health (about $3,500 per person per annum), with 69% of this amount met by government[109].

Spending on health by Australians from their own resources grew at a greater rate (7.7%) than funding by government (5.7%) during the late 90's and early 2000's. Expenditure on pharmaceuticals also grew on average by 12% per year in the same period[110].

In 2002-03, 158.5 million community prescriptions were filled under the Pharmaceutical Benefits Scheme (PBS) which saw a 2.6% growth over the previous 12 months. However, this was 9 million fewer prescriptions than five years earlier, due to reduced prescription of antibiotics for respiratory infections. Medications most commonly prescribed under the PBS were those used to manage blood cholesterol levels[111].

Healthwise, Australia generally compares well to other OECD countries, ranking in the best to middle one third in most cases. However, in relation to deaths from colon and prostate cancer and diabetes, and for infant mortality, our national performance ranks in or towards the bottom third of countries compared[112].

108. This chapter was developed by Mr John Hearps, DSPPR.
109. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
110. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
111. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
112. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

There are areas of nursing and medical practitioner shortages as these workforces continue to age, and as doctors now choose to work fewer hours than previously[113]. The ageing of the population is shifting the dynamics of problems to be managed and the range of services being offered. The majority of aged people are in good health and maintaining this level of aged health is a national priority. Australians continue to live longer and can now expect to live for an average 80 years which is amongst the highest life expectancies in the world[114].

Infant mortality rates have halved in the last 25 years. There has been a marked improvement in the vaccination rates of children although only 81% of children have undergone the entire vaccination regime at the school entry stage.

Around 17% of Australians aged 14 years and over in 2001 reported using illicit drugs during the previous 12 months[115].

There were 6.4 million admissions to public and private hospitals in 2001-02. Around 50% of these were for day only admissions. 50% of people seeking elective surgery are treated within 4 weeks, although 4.5% wait more than a year[116].

In the wider population, smoking remains a significant health issue despite numerous public anti-smoking campaigns. Obesity and insufficient physical activity have gained prominence. The health of Aboriginal and Torres Strait Islander peoples has not significantly improved[117].

The major burden of disease in Australia arises from long term conditions such as cardiovascular diseases, cancers, mental illnesses and nervous system disorders. There is also a very small contribution from infectious diseases. The risks associated with antibiotic resistant super bugs (MRSA) and global pandemics such as SARS and 'bird flu' are increasingly of major concern[118].

---

113. Australia's Health Workforce. Productivity Commission Research Report, 22 December 2005.

114. *Australia's Health 2004.* Canberra, AIHW Cat. No. AUS 44.

115. *Australia's Health 2004.* Canberra, AIHW Cat. No. AUS 44.

116. *Australia's Health 2004.* Canberra, AIHW Cat. No. AUS 44.

117. *Australia's Health 2004.* Canberra, AIHW Cat. No. AUS 44.

118. *Australia's Health 2004.* Canberra, AIHW Cat. No. AUS 44.

Government focus since 2005 is on addressing obesity and other illnesses caused by inactivity. This focus will help address obesity related heart disease, asthma, diabetes and aging related illnesses. In 2000 more than 1 in 2 Australian adults did not undertake leisure time physical activity at levels recommended for health benefits, with 1 in 6 reporting no leisure-time physical activity. There have been improvements since 2004, with increasing numbers of Australians over 35 years of age playing active social sport as one way of improving longer term quality of life and reducing chances and impact of illness[119].

The ageing of the population is shifting the dynamics of problems to be managed and the range of services being offered.

Young people's health in Australia

In June 2003 there were 3.6 million young people aged 12–24 years in Australia, about 18% of the total population. Young people in Australia generally enjoy a level of health that is good and has improved in recent years, as indicated by levels of mortality, morbidity and disability. Furthermore, most young people in Australia rate their own health favourably. In 2001, approximately 65% of young Australians rated their health as either 'excellent' or 'very good' while a further 26% rated their health as 'good'. Only 9% reported their health to be either 'fair' or 'poor'[120].

While the health status of young Australians is generally good, there are areas where health gains need to be made. The most prevalent health conditions reported were hay fever and allergic rhinitis, myopia, asthma, and back pain and neck problems. Approximately 232,000 young persons (9%) aged 15–24 years had a disability in 1998 - 10% of males and 8% of females. Of those with a disability, 22% had a severe or profound core activity restriction.[121]

Youth is a period of rapid emotional, physical and intellectual change. As young people progress from childhood to adolescence and young adulthood, a number of risk factors affect their health and wellbeing[122]. Motor vehicle accidents, suicide, mental health and behavioural problems, pregnancy and substance misuse pose risks to many young people. In addition, a number of the risk and protective factors that exist for children are also faced by young people, including obesity, physical activity and sun protection[123].

9% (232,000) of people aged 15–24 years had a disability in 1998.

119. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
120. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
121. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
122. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
123. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

Asthma

Asthma affects about 15% of children and 11% of adults. Steady increases in asthma in children during the 80's and 90's have now stabilised but asthma amongst adults has remained the same throughout[124].

Diabetes

Diabetes is Australia's fastest growing chronic disease. Diabetes prevalence has more than doubled over the past two decades and based on data from the Australian Diabetes, Obesity and Lifestyle study (AusDiab), it is estimated that almost one million Australian adults aged 25 and above had diabetes in 2001 (7.6% of the population). Approximately half of those diagnosed were not aware that they had diabetes.

Diabetes is the seventh highest cause of death in Australia. An average 55,000 people are diagnosed with the disease each year and by 2010, it is projected that 1.7 million Australians will have diabetes. An ageing population, early detection and underlying trends in risk factors such as obesity, physical inactivity and impaired glucose tolerance have contributed to an increase in the incidence, and hence prevalence, of Type 2 diabetes in Australia. Growing numbers of young people are also being diagnosed[125].

An average 55,000 people are diagnosed with diabetes each year and by 2010, it is expected that 1.7 million Australians will have diabetes.

Oral health

No single measure describes oral health comprehensively. However, at least 84% of people have 20 or more teeth, 80% rate their oral health as good, very good or excellent, and 83% experience no adverse effects of oral conditions on their quality of life[126].

Younger people are more likely to report positive oral health than older people. In addition, positive oral health is more likely to be reported by people in high-income households compared with those in low-income households, and this difference is apparent within each age group.

124. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
125. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
126. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

Mental Health

Mental health problems, including drug dependence disorders, are the major burden of disease for the 18-24 year age group. Of people aged 13–17 years, 13.4% of males and 12.8% of females were diagnosed with a mental health problem. In 1997, the prevalence of a mental disorder among those aged 18–24 years was 27%[127].

Suicide rates have declined in recent years in Australia, chiefly due to a reduction in rates for young adult males, whose suicide rates are the lowest since 1984. The suicide rate for males aged 15 to 29 peaked at 34.0 per 100,000 persons in 1997, after which it declined sharply to 24.2 in 2000. The rate was similar in 2001 (24.5) and declined further in 2002 to 23.1. The number of deaths corresponding to these rates was 711 in 1997, declining to 475 in 2002[128].

It is estimated that mental health problems and mental illness will affect more than 20% of the adult population in their lifetime and between 10-15% of young people in any one year. Many will recover spontaneously and, of the remainder, the vast majority can be treated and will fully recover. However, a smaller number of people will experience longer periods of distress and disability[129].

The Federal and State governments have developed a National Mental Health Strategy 2003-2008[130]; however, in April 2006 there were a number of announcements that sought to place mental health higher on the agenda for action.

It is estimated that mental health problems and mental illness will affect more than 20% of the adult population in their lifetime and between 10-15% of young people in any one year.

127. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
128. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
129. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
130. www.health.gov.au/internet/wcms/publishing.nsf/Content/mental-strategy

Drug use – Youth

Young people experience a greater risk of developing harmful drug use and experiencing drug-related harm. Data from the 2001 National Drug Strategy Household Survey indicated that 28% of young people aged 14–17 years had used an illicit drug at least once in their lives. In 2001, 21% of young people aged 14–17 years indicated that they had used cannabis in the last 12 months, 4% used amphetamines, 4% pain-killers for non-medical use, 3% ecstasy, 0.5% injecting drugs and 6% other illicit drugs. There is a strong relationship between illicit drug use and mental health difficulties[131].

Alcohol – Youth

Alcohol use by young people can also be detrimental to their health and community. Consequences of youth alcohol use may include unwanted and unsafe sex, violence, crime, road and traffic accidents, self-harm and death.

In 2001, 31% of males and 25% of females aged 14–19 years drank alcohol at least weekly. These proportions rose to 55% and 39% for males and females aged 20–29 years. In the 12 months before the 2001 National Drug Strategy Household Survey, 7% of persons aged 14–17 years drank alcohol in a way considered risky or a high risk to health in the long term[132].

HIV/AIDS/Hepatitus C

Around 13,000 people live with HIV/AIDS in Australia with the number of new cases now relatively stable at 200-250 each year. An estimated 225,000 Australians were living with Hepatitus C in 2002, with approximately 16,000 new cases of infection each year[133].

131. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
132. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
133. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

Physical Activity

Physical activity is an important factor in reducing the risk of chronic disease. According to the 2001 Household Income and Labour Dynamics in Australia survey, a sizeable proportion of young Australians participate in physical activity. Of the young people aged 15–24 years, 48% of males and 31% of females undertook exercise more than three times a week. This was higher among those aged 15–17 years than those aged 18–24 years (46% compared with 36%)[134].

Approximately 60% of young people undertook exercise three or fewer times per week (52% of males, 69% of females). The survey shows that young people aged 18–24 years exercised less than those aged 15–17 years[135].

Obesity - Youth

Based on self-reported height and weight, 8% of males and 11% of females aged 15–17 years were classified as overweight or obese in 2001. Of those aged 18–24 years, 16% of males and 25% of females were classified as overweight or obese. In an assessment of their own weight, 28% of males and 9% of females whose self-reported height and weight placed them in the overweight category thought their weight was acceptable. In addition, 13% of females and 1% of males whose height and weight placed them in the underweight category reported their weight was acceptable[136].

Of those aged 18–24 years, 16% of males and 25% of females were classified as overweight or obese

134. Sports Participation on the rise. *Australasian Leisure Management*, September-October 2005.
135. Sports Participation on the rise. *Australasian Leisure Management*, September-October 2005.
136. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

Smoking - Youth

Tobacco use is a risk factor associated in the short-term, with respiratory problems and loss of physical fitness and, in the longer term, a number of adult cancers as well as cardiovascular and respiratory diseases. Data from the 2001 National Drug Strategy Household Survey showed that, among those aged 14-17 years, 82% had never smoked, 15% were recent smokers and 3% were ex-smokers. Among 18-24 year old, 34% of males and 30% of females were smokers. The ABS 2001 National Health Survey reported that 36% of males and 27% of females aged 18-24 years were current smokers[137].

Mortality

There were 1,564 deaths of young people aged 12–24 years in 2002 in Australia, representing 1% of deaths among all ages in that year. Of these, nearly 75% of the deaths were of young males. The death rate for young males declined by 48% from 120.4 deaths per 100,000 in 1982 to 62.8 deaths per 100,000 in 2002. For females aged 12–24 years the death rate declined by 35% from 38.4 per 100,000 to 25.0 per 100,000[138].

In 2002, over 70% of the total deaths of young people was due to injury and poisoning, including transport accidents and suicide. Deaths from transport accidents as a specific cause were responsible for 36% of all deaths of young people (517 deaths, 394 males and 123 females). Deaths from suicide as a specific cause were responsible for 21% of all deaths (324 deaths, 264 males and 60 females). Deaths from cancer followed at 9% of all deaths of young people, and diseases of the nervous system a further 5%[139].

For young people aged 15–17 years, the most frequent causes of death were suicide and motor vehicle accidents as passengers, drivers or pedestrians. The major causes of death for those aged 18–24 years were suicide, car driver and passenger accidents, and accidental poisoning by drugs. Drug-related death rates fluctuated between 1982 and 2002, with a noticeable peak in 1998, and lower rates in 2001 and 2002[140].

Major underlying causes of death by life stage

The relative contribution of different underlying causes of death varies with age, as shown in Table 58. Conditions emerging from the perinatal period dominate the infant mortality statistics, followed by congenital anomalies. Similarly, injuries and poisoning are the most common cause of death in the age groups 1-14 and 15-24.

137. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
138. AIHW National Mortality Database.
139. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.
140. AIHW National Mortality Database.

Table 58 Leading Underlying Causes of Death[a] by Age Group, 2002.

Age group	Males		Females	
	Cause of death	% deaths[b]	Cause of death	% deaths[b]
1–14	Injury and poisoning	40.4	Injury and poisoning	32.0
	Cancer	17.1	Cancer	22.1
	Nervous system diseases	9.4	Nervous system diseases	10.7
	Congenital anomalies	7.2	Congenital anomalies	7.4
15–24	Injury and poisoning	75.8	Injury and poisoning	59.4
	Cancer	7.0	Cancer	11.5
	Nervous system diseases	4.9	Nervous system diseases	4.2
	Cardiovascular disease	3.4	Endocrine disorders	4.2
25–44	Injury and poisoning	52.4	Cancer	34.7
	Cancer	14.0	Injury and poisoning	31.5
	Cardiovascular disease	13.5	Cardiovascular disease	11.1
	Digestive disorders	3.7	Nervous system disease	3.6
45–64	Cancer	40.8	Cancer	56.4
	Cardiovascular disease	28.6	Cardiovascular disease	15.8
	Injury and poisoning	9.7	Injury and poisoning	5.9
	Digestive disorders	5.0	Respiratory system diseases	5.8

Note 1: (a) - Organised at ICD chapter level.
Note 2: (b) - Per cent of deaths within each age and sex group.
Source: AIHW National Mortality Database.

Among those aged 25–44, injuries are the leading cause of death in males, but cancer is the leading cause of death among females. For both sexes, cancer is the most common cause of death among those aged 45–64, followed by cardiovascular disease, which includes both coronary heart disease and stroke. Cardiovascular disease becomes the most prominent cause of death among those aged 65 and over[141].

141. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

Injury-related deaths

Injuries accounted for 5.8% of all deaths in 2002. A total of 7,820 deaths (5,271 males and 2,549 females) were registered as being due to an external cause of injury or poisoning. Almost one-third (2,445) of these deaths were of males aged between 20 and 44.

Among those aged under 45, injury was the leading cause of death, representing 43.0% of all deaths in that age group. Injury death rates were the highest among young males and for both sexes in old age.

Suicide accounted for the largest proportion (2,320 deaths, 29.7%) of injury deaths in 2002, followed by deaths due to transport injuries (1,907 deaths, 24.4%) and falls (1,517 deaths, 19.4%). Age-specific rates of death due to transportation vary greatly, being highest among young adults, lower in middle age, and rising again at older ages. Among those aged 25–34, the male rate was five times the female rate. These differences can be explained in part by risk-taking behaviour in young males[142].

142. *Australia's Health 2004*. Canberra, AIHW Cat. No. AUS 44.

Global aspects of health now and into the future

As a percentage of global GDP Australia's medical research output is the highest in the world. There is a clear link between health research and development and, the health, productivity, improved economic and social benefits for Australian people. Medical research helps drive health improvements and in Australia health research and development, primarily from public sources, invested $1.7 billion. Economists estimate that 50% of the gains from life expectancy and improved productivity are directly attributed to medical research with the remainder coming from public education and awareness campaigns.

Economists estimate that 50% of the gains from life expectancy and improved productivity are directly attributed to medical research with the remainder coming from public education and awareness campaigns.

During the next 40 years, it is likely major health gains will be made against degenerative diseases and diseases of ageing in western societies. Genetics has allowed specific development of a range of new drugs targeting tumour pathways. Likewise, there is potential for developing cancer vaccines as therapeutic agents. Additional prophylactic cancer vaccines may address the impact of infectious diseases such as hepatitis B (liver cancer); *human papillomavirus* (cervical cancer) and *pylori* (stomach cancer).

New therapies will be developed to replace diseased tissues with the emergence of tissue engineering to replace diseased organs and tissues. Stem cell therapy will be critical to reduce risk of tissue rejection. Development of the drugs to hasten this process is already well underway. Likewise, it may be possible to combine stem-cell therapy and gene therapy to address hereditary immunodeficiencies.

Another new approach is to counter the impact of ageing and this will have a significant impact on society. Technologies and drugs to reduce the ageing process are being developed and although initially very expensive, they could prolong quality life from 5 to even 40 years.

In Australia and other wealthy countries, cohesive family and social structures will be further tested. People will need to stay in the workforce longer and pressure will mount for people to limit their family size. The widening gap between rich and poor countries will result in social division and further destabilisation[143].

143. www.health.new.gov.au/futuresplanning/

Global Health Threats

The World Health Organisation (WHO) has determined that infectious diseases (HIV, Tuberculosis, measles, malaria, diarrhoeal diseases such as cholera and dysentery, and acute respiratory infections such as pneumonia) are causing half of all deaths around the world[144].

WHO researchers, including experts from London School of Hygiene and Tropical Medicine and the Public Health Laboratory Service in London have stated that *few countries have assessed the impact of climate change on human health.* Global warming would promote the spread of many diseases such as malaria and encephalitis as their vectors will be able to breed in new areas. There is a relatively low rate of vector borne disease in Australia, however climate changes expected in the northern areas of Australia could provide the opportunity for mosquito numbers to both increase and spread[145].

Few countries have assessed the impact of climate change on human health.

In 2002, in the UK alone, an outbreak of hospital-acquired Methicillin-Resistant Staphylococcus Aureus (MRSA) caused 5,309 cases of infection resulting in 800 deaths. Stringent hygiene is the only way to contain its spread with hospitals struggling to contain outbreaks[146].

MRSA has also emerged amongst groups of normally healthy and fit people who do not have exposure to hospitals. Athletes, schoolchildren and newborns have been amongst those to be infected. Last resort antibiotic vancomycin has been used to kill the MRSA, however strains of MRSA from eight countries: France, US, UK, Norway, Poland, Sweden, Japan and China have been found to be resistant (Vancomycin-Intermediate Staphylococcus Aureus – VISA). Nine strains of VISA have evolved from five different types of MRSA. This has major implications, particularly in the safe treatment of wounds in hospitals[147].

144. *Health - six diseases threaten world*. BBC News http://news.bbc.co.uk/1/hi/health/371522.stm
145. Global warming disease warning. BBC News http://news.bbc.co.uk/1/hi/sci/tech/372219.stm
146. *Superbugs resist 'last resort' antibiotics*. New Scientist.com http://www.newscientist.com/articles-ns?id=dn6033&print=true
147. *Superbugs resist 'last resort' antibiotics*. New Scientist.com http://www.newscientist.com/articles-ns?id=dn6033&print=true

From early 2003, two other infectious diseases of global significance have emerged: Severe Acute Respiratory Syndrome (SARS) and Avian Influenza Subtype H_5N_1 ('bird flu'). SARS, caused by a coronavirus, developed into an international outbreak in 2003. During this time, 8,098 cases were identified in numerous countries, a substantial proportion of which were among health care workers. Australia mounted a national response including strengthening laboratory and hospital preparedness, instigating screening at border entry points and disseminating information to the public[148].

Widespread outbreaks of avian influenza H_5N_1 have been reported in several Asian, European and African countries. Wild bird migration from Asia to Europe and Africa has seen the spread of bird flu and thus increased the risk of a major pandemic. The increasing use of air travel further increases the risk of bacteria and viral outbreaks on a global scale[149].

Wild bird migration from Asia to Europe and Africa has seen the spread of bird flu and thus increased the risk of a major pandemic. The increasing use of air travel further increases the risk of bacteria and viral outbreaks on a global scale.

The Lowry Institute has reported that there was 'enormous uncertainty' about whether the disease would mutate into a more contagious version spread via human to human contact. Under the worst case scenario about 1% (214,000) of Australians could die from such a disease mutation. World wide some 142 million people could perish and global economic losses could run to $4.4 trillion[150].

World wide some 142 million people could perish in a pandemic and global economic losses could run to $4.4 trillion.

The Australian government has put in place a pandemic action plan which addresses various stages of a possible virus infiltration, and how best to focus resources to deal with each of the stages. This plan is based on the WHO guidelines, which covers such issues as information sharing and gathering, quarantine alerts and procedures, police powers, transport contingencies, isolation procedures for schools, towns, suburbs, public gatherings, and the culling of diseased animals[151].

148. *Superbugs resist 'last resort' antibiotics*. New Scientist.com http://www.newscientist.com/articles-ns?id=dn6033&print=true
149. *Health - six diseases threaten world*. BBC News http://news.bbc.co.uk/1/hi/health/371522.stm
150. Battle to fight bird flu threat. *Canberra Times (Times 2)*. February 21, 2006.
151. *The threat of an avian influenza (bird flu) pandemic; key issues and resources* (e-brief issued 7 November 2005) via Parliamentary Library. www.aph.gov.au/library/intguide/SP/AvianInfluenzaPandemic.htm

Australian Health in 2025

The following information was developed from NSW Health Futures[152].

Improvements in health care will result in more people living successfully with chronic diseases such as diabetes but this also means people will live longer with infirmities and poor health. The health problems associated with an affluent society will affect 40% of the population. However, Australians in general will be living longer and healthier lives.

> The health problems associated with an affluent society affect 40% of population with many chronic conditions developing.

There is likely to be a decline in family based care for elderly relatives. In response, informal care will be given more recognition, support and funding, and local voluntary groups will be formed to provide care. It is predicted that there will be a growing number of single parent families and elderly people living alone[153].

The Australian Patient of 2025

About 20% of the population will be over 65 and this group's demand on health services will be five times the median. The typical patient will have changed, not only as a result of ageing, but as improved treatments are delivered, people with chronic illnesses will be maintained in the community. By 2025, diseases such as asthma, pre-senile dementia, cardiovascular disease, depression, diabetes, epilepsy, migraine, Parkinson's Disease, Multiple Sclerosis, prostate cancer, arthritis and other chronic illnesses will account for over 60% of the total cost of health services[154].

> By 2025, diseases such as asthma, pre-senile dementia, cardiovascular disease, depression, diabetes, epilepsy, migraine, Parkinson's disease, Multiple Sclerosis, prostate cancer, arthritis and other chronic illnesses will account for over 60% of the total cost of health services.

The increase in health awareness, knowledge and local family and community action, coupled with investment in health related education, housing and environmental improvements and social support will be the main reason why young Australians live longer and healthier lives[155].

152. www.health.new.gov.au/futuresplanning/
153. www.health.new.gov.au/futuresplanning/
154. www.health.new.gov.au/futuresplanning/
155. www.health.new.gov.au/futuresplanning/

Medical Technology in 2025

One major way of reducing costs will be to make it more possible for patients to be cared for at home. The services provided will ensure they have the information to 'manage their own health' and can make 'optimal use' of health services. Other related developments include[156]:

Portable patient diagnostic devices and tests.
Patient monitoring devices and services including bio-implants.
Patient knowledge based systems – home health advisors.
Telemedicine/tele-health services using video links and sensors.
Patient education and support for empowerment based behaviour change.
Physical and mental wellness programs.

Miniaturisation and less invasive surgical techniques, use of surgical lasers and glues in place of sutures, will allow day and major surgery to dramatically reduce the trauma to the patient and the length of stay required in hospital. Remotely operated devices will replace the hand scalpel for many complex procedures[157].

The requirement for specialised equipment and skills will lead to further centralisation of complex procedures. Nanotechnology offers radical developments in areas of medicine that previously have been untreatable. We will see the use of minute biomechanical implant devices that can monitor patient conditions and deliver drugs[158].

156. www.health.new.gov.au/futuresplanning/
157. www.health.new.gov.au/futuresplanning/
158. www.health.new.gov.au/futuresplanning/

Pharmaceuticals in 2025

The development of new drugs will be influenced by three main factors[159]:

Developments in combinatorial chemistry and equipment will make it possible to screen products one million times faster than in 1995.
Human Genome Project, completed in 2003, increased the potential target applications of drugs from about 500 to 2,500, and stem cell research leads to significant new areas of treatment.
State and Federal governments require proof of cost effectiveness of health solutions.

It is projected that there will be lower cost genetic screening and doctors will have the skills in interpreting and providing guidance on the basis of genetic indicators, matching treatments to genetic profiles. Major breakthroughs will be achieved in treating diseases once considered untreatable and improvements in combination therapies and staged drug regimes for many common diseases. A vaccine for AIDS will have been developed and other lifestyle drugs will be developed to combat ageing and depression[160].

Health and Care Economics in 2025

Health expenditure is likely to rise from 9.5% to 13% of GDP due to changing consumer expectations for higher quality care, the ageing population, and access to the latest medical technology, procedures and drugs, and wage inflation caused by staff shortages. States may introduce age limits for certain procedures, and limit services to smokers and the obese[161].

Information and Health in 2025

Health care has always been 'knowledge based' and by 2025 clinical staff recording of patient information will be supported more by computer systems. It is predicted there will be a move from local systems to integrated solutions with a capacity to assist with health planning, medical advice and scheduling delivered via web based solutions. Such systems will help to optimise limited resources.

It is predicted that specialists will hold clinics in local primary care centers with portable equipment brought in for specialist treatments. There will be more specialists in primary care, including pediatric, geriatric, rheumatology and psychiatric specialists. More specialist nurses will likewise be engaged and they will be able to prescribe medicines and treat straight forward cases under the supervision of doctors. Many nurses will also provide home based care to patients. Health and social care become much more integrated[162].

159. www.health.new.gov.au/futuresplanning/
160. www.health.new.gov.au/futuresplanning/
161. www.health.new.gov.au/futuresplanning/
162. www.health.new.gov.au/futuresplanning/

The 2025 Hospital

The hospital of the future will be characterised by the better use of technology and communications, by new structures and new ways of working with limited personnel. It is predicted that there will be an overall reduction in the number of acute care beds, and the length of stay will be significantly reduced due to less invasive surgery. There will be an increase in the need for a different form of care focusing on intermediate and respite care for elderly patients with chronic physical and mental health requirements.

Hospitals will specialise in therapeutic areas, delivering knowledge, diagnosis and advice via remote sensors and video to primary care clinicians. Specialist treatment units bring together the skills and resources for patients with similar requirements. These arrangements will be developed via economies of scale for the technology and specialist skills. A hospital complex may contain several specialist units[163].

The hospital will be the underlying area of greatest importance in health. Health and community care remain personal services, of which empathy, trust and family/community support are essential ingredients. Integration of health and community services are significantly improved with caring responses covering physical, mental, social and emotional needs[164].

Communications across the service providers will be such that a patient's total needs will be reviewed and contact is maintained. A vast range of 'health food' vitamins and supplements will be available and in high demand, with fitness centers expanded across the nation to cater for new types of clients. People will be helped to adapt to new healthy lifestyles[165].

The health system in 2025 will be technologically, organisationally, and structurally very different to that of 2005 mainly to cope with the challenges of supporting an ageing population.

163. www.health.new.gov.au/futuresplanning/
164. www.health.new.gov.au/futuresplanning/
165. www.health.new.gov.au/futuresplanning/

Future health - Defence implications

The health system in 2025 will be technologically, organisationally, and structurally very different to that of 2005, mainly to cope with the challenges of supporting an ageing population. Defence will need to integrate into this system. By mirroring the conceptual future approach noted in '*Australian Health in 2025*' the ADF could gain enormous benefit to its capacity to support both military specific tasks and other national support tasks[166].

Defence is actually well placed to achieve integration as it currently seeks to apply 'net centric warfare technology' over the next decade (see Chapter 11). This should allow the Defence to lead the nation into developing and delivering 'net centric technology' approaches. Areas such as health and education will develop more net centric systems and Defence would be seen as having the niche trade skills to deliver such services. However, experienced personnel may be recruited away to industry or other government agencies to activate their specific net centric systems. This would than place strain on Defence's capability to sustain its own net centric warfare systems. Again, workforce management of these emerging skills will need to be achieved.

The high end use of technology especially in communications could allow the ADF to deliver crucial health services to remote units in a myriad of operational situations.

Over the last 15 years, the number of deployments requiring significant levels of medical support has increased. These deployments have been into areas of significant distress (humanitarian relief due to natural disasters and failed states). Given the future domestic demands for health practitioners, initiatives to enhance the ADF health workforce are essential. Whilst many of the deployed health professionals have been reservists, the military requirement to use their services may increase (see chapter 12) at a time when the national health workforce is shrinking. Scarcity of medical staff may therefore restrict military deployments.

The major challenge to be faced, will be the recruitment and retention of civilian health personnel into the ADF Reserve Medical and Dental areas from the national health workforce.

Defence needs to ensure its 'base' hospitals and internal health system incorporates and mirrors the new approach used in civilian hospitals. It will continue to be a requirement for the ADF to recruit and retain civilian specialists, GPs, under graduate doctors and dentists, nurses, allied health professionals and administrators to support ADF operations. This will become much more difficult if the ADF is not appropriately part of, and clearly linked to the national health system. Linkages to State and National Health Departments, and Medical Schools and hospitals are an essential part of being better placed to both support and be supported by the 2025 health system concept.

166. This section was developed by Mr John Hearps, DSPPR and LTCOL David Thomas, SO1 Health Capability and Development.

As individuals, we will be expected to be more responsible for our own health. Under this new health regime Defence needs to ensure these new linkages are offered to serving members, APS personnel and to families. Access to health information systems will be essential.

Provision of health services, physical trainers and properly equipped facilities is an essential element to workforce sustainment. At risk members both in the ADF and Defence APS should be assisted to address their health concerns. Preventive approaches offer the most cost effective outcomes for all parties.

The rising awareness of health factors, particularly for younger people, provides promotional opportunities for recruitment. The provision of medical, dental and pharmaceutical services as part of the ADF member's conditions of service is of considerable incentive value to ADF applicants and also as an important incentive for retention. The focus by the ADF on team sports, health and fitness as part of one's career is of considerable interest to young people considering adventurous careers.

Educating service personnel about illicit drugs, alcohol, smoking, stress management and the elements for achieving a healthy lifestyle should continue to be given high priority. Such educational packages could be extended to ADF families and Defence APS.

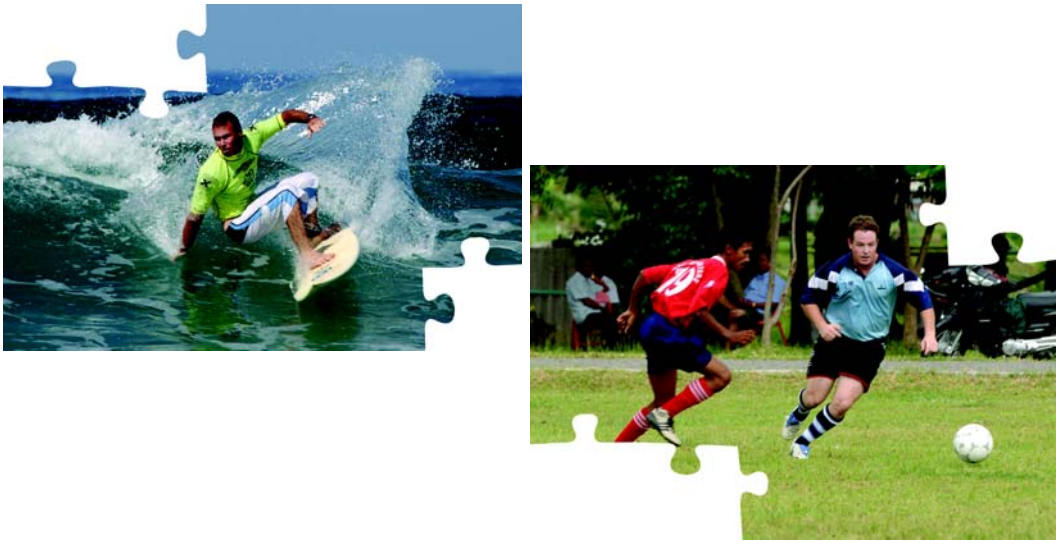
Some members will also have increased requirements to care for ageing parents or other relatives and locational stability for care support will become a stronger retention factor.

Growth in GDP percentage spent on health has been projected to increase to 13% by 2025. Increased health expenditure and pension payments will present a considerable challenge to government budgetary choices. Defence may come under additional pressure to become even more efficient with allocated funds at a time when global issues may require more and more resources from the Defence organisation.

The health of Australian youths and children has been declining due to rising levels of obesity. The government is now focusing on addressing these aspects but Defence may also be well placed to improve general health aspects of its targeted recruitment pool.

Internally, addressing the wider health of Defence personnel via annual medicals and fitness assessments as part of deployability requirement is a good way of motivating ADF personnel to maintain their fitness and general health whilst also ensuring capability. However, with an ageing Defence workforce health factors will become much more important. To help sustain capability and to enhance overall productivity, solutions for total workforce health may now be necessary.

Health education and risk reduction aspects of OH&S remain the best preventive approach for maintaining the Defence workforce, especially in areas such as suicide prevention, mental health assistance, drug misuse, alcohol abuse, gambling addiction and accident prevention.



For slightly older members of Defence, and noting the overall ageing of the workforce, the approach may be better focused on diabetes and cardiovascular disease prevention through education about diet and exercise. Provision of amenities to allow physical exercise at main working areas for both ADF and Defence APS should be considered. Programs designed to keep the mind fit and active should also be developed to delay the on set of degenerative brain disease.

Defence must ensure it has the capacity to contribute to addressing national health issues across a myriad of scenarios from natural disasters, isolated community health support, infectious disease containment, and preventive health support.

ADF overseas operations involve significant medical support. An understanding of the medical risks in many of these regions and being prepared is crucial to sustaining and maintaining the operational capability of the ADF. Health issues may have more significant risk levels than threats from enemy combat actions. Likewise, operations involving disaster relief may have significant risks due to disease, especially when global climate change factors and the spread of diseases are considered. In particular, increased focus on preventive and tropical medicine expertise is required.

In relation to a pandemics outbreak in Australia, the ADF would have a significant role to play. It would support medical health authorities with local security, additional medical expertise to some degree, as well as perhaps supporting major utility providers should their workforce be seriously reduced by illness. There could be roles in supporting police with crowd control and the containment of criminal activities.