Submission to the Productivity Commission study of the impact of advances in medical technology on healthcare expenditure in Australia

The Cancer Council Australia
Clinical Oncological Society of Australia

The Cancer Council Australia is Australia's peak non-government national cancer control organisation. Its member bodies are the eight state and territory cancer councils, whose views and priorities it represents on a national level.

The Cancer Council Australia has a formal partnership with Australia's federal government through the National Cancer Control Initiative and also contributes to federal government policy through a number of committees and joint initiatives.

COSA (Clinical Oncological Society of Australia) is the peak multidisciplinary society for health professionals working in cancer research or the treatment, rehabilitation or palliation of cancer patients.

Affiliated with The Cancer Council Australia, COSA contributes to Federal Government policy through a number of initiatives and has been nominated to co-manage new Commonwealth funding for cancer clinical trials in association with the National Cancer Control Initiative.

Introduction

Cancer's impact on the community, both in financial and human cost, increases profoundly as people age. Demographic change and extended cancer survival times in Australia present a trend towards larger numbers of cancer patients and fewer taxpayers to support them.

As outlined in this submission, prevention, screening and treatment technologies have had a significant effect on cancer in Australia over the past 10 years and have the potential to make an even greater impact in the decade ahead.

Existing technologies, if better targeted or more accessible, could prevent up to half the cancers currently diagnosed in Australia or detect cases early enough to be treated successfully and at significantly lower cost. New technologies such as genetic screening are expected to start having a major impact on the prevention and early detection of cancer within 10 years.

For the thousands of cancer cases that are not prevented, advances in medical technology such as molecular pathology and gene therapy are set to revolutionise treatment within the decade, while increased patient numbers as a result of population ageing will put new pressures on the Pharmaceutical Benefits Scheme.

This submission, from Australia's peak national non-government cancer control organisations, summarises key cancer-related observations and recommendations according to the study's terms of reference. It is ultimately aimed at helping to ensure Australia is better placed to control cancer over the next 10 years and beyond, as technology and Australia's demographic makeup change.

Supporting documentation

More than 50 respected source documents are referenced in this submission (see page 32). The most directly relevant summary documents are:

> *Priorities for action in cancer control*, Department of Health and Ageing/Cancer Strategies Group (http://www7.health.gov.au/pq/cancer/pdf/pacc.pdf)
>
> *Optimising cancer care*, COSA, The Cancer Council Australia and the National Cancer Control Initiative (http://www.ncci.org.au/pdf/Optim_Cancer_Care.pdf)
>
> *National Cancer Prevention Policy 2004-06*, The Cancer Council Australia (http://www.cancer.org.au/content.cfm?randid=988667)

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Cancer: a key driver of medical technology demand

Cancer kills more Australians than any other single cause[1] and is the nation's biggest individual disease concern[2]. The human and financial costs of cancer in Australia will increase significantly as our population ages.

There were 88,398 new cases of cancer (excluding non-melanoma skin cancers) and 36,319 cancer deaths in 2001, compared with 65,966 new cases and 30,928 deaths in 1991. Cancer currently accounts for 31 per cent of male deaths and 26 per cent of female deaths in Australia and the loss of an estimated 257,000 potential life years[3].

Cancer causes an annual loss of nearly 480,000 disability-adjusted years of life, equivalent to about 19 per cent of the estimated total for all causes of death and disability[4].

Cancer expenditure in Australia in 2001, excluding public health costs, was $2.7 billion, representing a 31 per cent increase in inflation-adjusted cancer expenditure since 1993-94. Of this, 71.3 per cent ($1,988 million) was in hospital care; 9 per cent of all expenditure in Australian hospitals was on cancer[3].

Cancer and population ageing

The 34 per cent increase in cancer incidence between 1991 and 2001[1] is a direct consequence of population ageing. Cancer is predominantly an older person's disease, in terms of both human and financial burden. Cancer will therefore become an increasing driver of medical technology demand in Australia as our population ages.

Of people diagnosed with cancer (excluding non-melanoma skin cancers), 57.2 per cent are aged 65 and over, compared with 32.6 per cent in the 45–64 year age group and 9.4 per cent in the 15–44 year age group[3].

Cancer also becomes more costly to treat as people age, with health system expenditure peaking in the 45-64 year age group for females and 65-74 years for males[5].

Although developments in medical technology have contributed to improvements in cancer survival rates, until a cure is found, the disease is set to have an increasing impact on Australia due to the forecast change in demographics.

The number of new cases of cancer increased by 34 per cent from 65,966 in 1991 to 88,398 in 2001, while the number of deaths increased by 17.4 per cent from 30,928 in 1991 to 36,319 in 2001[3]. Cancer survival rates have been improving on average by about 1 per cent each year over the past decade.

The net improvement in cancer survival rates despite age-related growth in incidence indicates that more cancer patients are living for longer, a trend that will place significantly greater pressure on Australia's health system as our population ages.

According to Australian Bureau of Statistics projections, the proportion of Australians aged between 15 and 64 will grow somewhere between .02 and 1.1 per cent over the next 10 years, while the proportion of people aged 65 and over will grow between 2.9 and 3.7 per cent. In effect, this means that the number of people with cancer will increase in proportion to the number of people without cancer. In other words, fewer people (in relative terms) will be able to contribute to the cost of caring for growing numbers of cancer patients. The burden of cancer on Australia is therefore likely to increase exponentially.

Cancer and ageing: conclusions and recommendations

- Cancer is Australia's biggest killer and no.1 disease concern. It grew in incidence by 34 per cent between 1991 and 2001 as a direct consequence of population ageing.

- Cancer incidence and expenditure will continue to increase markedly with age, meaning the $2.7 billion spent on cancer health-care costs in 2001 is set to blow out over the next decade, while the proportion of taxpayers able to support the costs will decrease.

- Investment in improved cancer control now will substantially reduce the enormous burden that cancer is set to impose on Australia's health system as our population ages.

- The Cancer Council Australia and the Clinical Oncological Society of Australia provide the following information and recommendations, which, according to medical and epidemiological evidence, would reduce the longer-term financial and human impact of cancer in Australia through improved prevention, detection, treatment and care.

Prevention: pre-empting unsustainable future costs

A principal aim (a) of this Productivity Commission study is to "Identify existing mechanisms and processes for ensuring cost-effectiveness in the use of medical technology, and any gaps in these processes".

Fundamental to cost-effective medical technology are measures that avoid or delay the onset of chronic disease. The latest medical evidence shows that up to half of the cancers currently diagnosed in Australia could be prevented, or treated successfully through early detection, using technology we already possess. An increased investment in cancer prevention now would pay off substantially over the next 10 years, particularly in view of expected population ageing.

Tobacco control

The unaffordable price of smoking

A principal aim (b) of this Productivity Commission study is to "Identify the key drivers of medical technology demand". It is well-established that tobacco smoking is a major cause of preventable death and disease in Australia, with the treatment of tobacco-related illnesses placing an enormous burden on the healthcare system.

In Australia, the use of tobacco results in staggering health and societal costs. It is estimated that in 1998-99, over 19,000 deaths and 965,000 hospital bed-days were attributable to the use of tobacco, with healthcare costs in excess of $1 billion[44]. The total social costs of tobacco use for this period, including healthcare costs, were estimated to be over $21 billion[44].

While there have been substantial reductions in the prevalence of smoking among adults in Australia since World War II, the rate of decline has slowed. Projections of the burden of disease to the year 2016 highlight the continuing adverse trends in diseases caused by tobacco unless there are substantial reductions in the prevalence of its use[45]. According to the World Health Organisation, this will not be achieved through preventing uptake alone, because the future burden of disease is a result of past and current smoking. Unless current smokers quit, the death rates will continue, unabated, for the next 50 years[46]. Disappointingly, tobacco usage in Australia continues to be widespread, with almost 20 per cent of the adult population smoking daily in 2001[47].

The financial and human costs of smoking will continue to rise with the ageing of the population, adding to healthcare costs as tobacco-related health problems tend to manifest in later life[48]. Pharmaceutical Benefits Scheme costs for smoking-related cardiovascular disease alone are predicted to increase almost 14-fold, from $126 million in 2001-02 to $1.73 billion per year by 2041-42, unless the prevalence of smoking is significantly reduced[9].

Pre-empting economic and human costs

Investment in effective public health programs to reduce tobacco consumption can yield significant health gains for the individual and the community. It can contribute to improvements in health status and longevity leading to reduced demand on the health system and lower healthcare costs[50,51].

Applied Economics, in a study on the epidemiological and economic benefits of programs to reduce tobacco consumption implemented over the last 30 years, found that in 1998 an estimated 17,400 premature deaths were averted because of reduced tobacco consumption, including 6900 fewer deaths from coronary heart disease, 4000 from lung cancer, 3600 from chronic obstructive pulmonary disease and bronchitis, and 2900 from strokes and other cancers averted[50].

The estimated cost of public health programs to reduce smoking in year-2000 dollars discounted back to 1971 is $176 million; the estimated benefit, based on longevity gains, improved health and reduced health-care costs, is $8.602 billion. The net benefit is $8.427 billion. The study also found that every $1 of expenditure on public programs to reduce tobacco consumption provides a saving of $2[50].

Projected gains

A 5 per cent reduction in smoking prevalence in Australia over the next five years would yield significant benefits in the short and longer-term. It would immediately reduce infant deaths from SIDS and meningococcal disease and adult cardiovascular disease treatments. It would also generate substantial savings in the PBS. Over the next 15 years, $610 million would be saved in cardiovascular disease costs, and savings in the treatment of cancer and other diseases would total $1.15 billion over 30 years[51].

Improved tobacco control would also generate a significant decrease in smoking among young people and children, who represent 90 per cent of new smokers.

A 5 per cent reduction in smoking prevalence could be achieved through sustained and adequate resources being committed to tobacco control measures. It is well-accepted that the achievement of real and sustained reductions in tobacco consumption require comprehensive and multi-factorial approaches[46,53,53,54,55,56].

The *National Cancer Prevention Policy 2004 to 2006*[27] recommends a range of measures for reducing tobacco consumption, recognising the role of national, state and territory government and non-government coalitions in facilitating a coordinated and consistent approach. Such approaches include:

- Funding for tobacco control to a level commensurate with the size of the problem;
- Elimination of promotion and marketing of tobacco;
- Further real increases in the price of tobacco products;

- A community well-informed about the harms of smoking;
- Establishment of a regulatory framework for the production (and marketing, sale and distribution) of tobacco products, including:
  - contents, design and emission standards
  - generic packaging
  - requirements for consumer information, including rapidly updated warnings on (and perhaps in) packaging, information online and at point-of-sale, and warnings issued through mass media
- Accountability of tobacco companies for the effects of their unlawful conduct;
- Elimination of passive smoking in all workplaces and enclosed public places;
- Universal access to tobacco dependence treatment (for all Australians);
- A whole-of-government approach to tobacco control.

Conclusions and recommendations: tobacco control

- Current smoking rates cost Australia $21 billion per annum, a sum that will blow out as the population ages unless significant reductions in the smoking prevalence are achieved.
- A 5 per cent reduction in smoking rates over five years is feasible based on the success of public health programs implemented over the past 30 years, and would yield savings of $1.15 billion in direct health-care costs alone over the next 30 years.
- Real reductions in smoking prevalence could be realised in the medium term through:
  - An investment of $55 million over the next five federal budgets into a strong national media campaign to encourage smoking cessation;
  - Support of a complete ban on all forms of tobacco advertising, marketing and sales promotion, as outlined in The Cancer Council Australia's submission to the *Tobacco Advertising Prohibition Act* amendment bill review;
  - Promotion of tobacco-dependence treatment as an integral component of cost-effective healthcare.

Skin cancer: Australia's most expensive cancer

Australia has the world's highest skin cancer incidence and mortality rates. Skin cancer also places the most expensive burden on the health system of all cancers in Australia to diagnose and treat. With CPI, inflation and population adjustments to 1993-94 data[5], skin cancer costs Australia around $430 million each year.

Skin cancer is caused mainly by exposure to sunlight or other sources of ultraviolet radiation and is therefore preventable through protective measures. The Federal Government is to be commended for committing to $5 million per annum over the next four years[14] for a national skin cancer prevention campaign.

Victorian success

Independent evaluation of the SunSmart campaign, which has been running in Victoria since 1987, indicates that the campaign continues to pay for itself twice over and has helped to foster a more sun-safe culture. The first three years of the campaign saw a reduction in the proportion of sunburn from 11 to 7 per cent, with the trend continuing, albeit less markedly, in subsequent years[13].

The SunSmart campaign comprises three elements: a comprehensive public education strategy (including paid and unpaid mass media); building community capacity through training; and the provision of resources and advocating for sustainable environment change including the development of policies and shade structures in public places.

A 1999 study demonstrated that applying the Victorian SunSmart model nationally, at a cost of $5 million per annum over a 10-year period, would avoid 2000 premature deaths and save the Federal Government more than $50 million in health-care expenditure[13].

Conclusions and recommendations: skin cancer

- Skin cancer is largely preventable but remains the most expensive cancer in Australia, costing around $430 million each year.
- The Federal Government is commended for committing to $5 million per annum over four years for a national skin cancer prevention campaign.
- The Victorian SunSmart campaign is the recommended model for a national campaign, on the basis of proven economic and human benefits.
- Adopted as an ongoing initiative, a national SunSmart campaign would save $50 million over the next 10 years, preventing 2000 premature deaths, fostering a sun-safe culture and offsetting future health-care costs as Australia's population ages.

Obesity/overweight: an impending health crisis

The prevalence of illness associated with poor diet, physical inactivity and obesity is Australia's most rapidly growing health problem. It is therefore an increasing driver of medical technology demand, yet one that can be significantly reduced through public health promotion campaigns.

Almost 60 per cent of Australians aged 25 and over are obese or overweight – a doubling of rates in the past 20 years[15]. Poor nutrition and lack of physical activity are the reason for the obesity epidemic and are a key cause of cancer and a number of other major diseases in Australia[38].

Physical inactivity currently accounts for 7 per cent of the national health budget, while overweight and obesity are responsible for 4.3 per cent of the total burden of disease. Poor intake of fruit and vegetables accounts for around 2.7 per cent of the disease burden[25].

If trends continue, the escalating problems of poor diet and inactivity will coincide with the challenges of population ageing, potentially generating a dual burden on medical resources.

Economic case for intervention

There have been two major state-based campaigns aimed at increasing vegetable and fruit consumption in Australia, in Western Australia and in Victoria. Both campaigns used multiple strategies, including mass media and consumer education[39,40].

Evaluation of the campaigns was based on changes in consumer knowledge, attitudes and consumption levels of vegetables and fruit. Benefits were estimated according to the available data on the link between diet, physical activity and health[39,40].

National implementation of the state campaigns to increase vegetable and fruit intake would save 3626 DALYs a year and generate a net saving in terms of cancer costs alone of $12.5 million a year[41]. This is a conservative figure and excludes the substantial gains if reduced impact of other chronic diseases is added.

Estimates based on combining the impact of diet on four of the major cancers and cardiovascular diseases combined indicate that if the average Australian ate an extra daily serve of vegetables and fruit, the nation would save around $180 million a year in direct health care costs. (Between $8.6 million and $24.4 million would be saved each year from breast, colorectal, prostate and lung cancer costs, according to modelling done by the Australian Food and Nutrition Monitoring Unit[42]. Savings from reduced heart, stroke and blood vessel disease would be more than $150 million annually[43].)

Information and action

A national nutrition and physical activity campaign needs to be implemented and based on updated data. While the Australian Institute of Health and Welfare has conducted studies on physical activity, there has been no comprehensive survey of Australians' eating habits since 1995. Yet anecdotal evidence indicates that eating habits and food supplies have changed significantly in that time.

It is essential to understand people's attitudes and practices before developing responsive health promotion programs. The economic and social benefits demonstrate the value of conducting such a survey every five years and of running regular diet and physical activity campaigns to pre-empt the growing health burden of obesity/overweight and poor nutrition.

Conclusions and recommendations: diet, physical activity and obesity/overweight

- Rates of obesity/overweight in Australia have more than doubled in the past 20 years, making it the nation's fastest growing health problem and foreshadowing a potential medical crisis.

- Medical expenses associated with the wide-ranging health problems of obesity/overweight may be compounded by the health burden of population ageing, but can be offset through prevention.

- A national diet survey should be conducted at a minimum of every five years, to help inform ongoing health-promotion campaigns on healthy eating and physical activity.

Screening for early detection of cancer

Principal aims of this study include “Identifying key drivers of medical technology demand (a)”, “The net impact of advances over the past 10 years” (b) and “The impact of likely advances over the next five to 10 years” (c).

It is therefore essential to consider the success of screening programs in reducing the impact of cancer, in both economic and human terms, and future challenges in the context of population ageing.

Effectiveness of screening

Screening refers to the application of a test to a population which has no overt signs or symptoms of the disease in question, to detect unsuspected disease while a cure is still possible. The screening test does not diagnose illness, but is used to identify people who require further investigation to determine the presence or absence of disease.

For a screening program to be effective it must be accurate, and appropriate intervention at the time of early detection must have the potential to alter the course of the disease.

Bowel cancer

Cancer of the colon and rectum (referred to here as bowel cancer) is the most common potentially fatal cancer in Australia, with 12,844 new cases in 2001. Bowel cancer caused 4754 deaths in 2001[3], exceeded only by lung cancer (7039)[3].

While prevention (smoking cessation) is the best way to reduce lung cancer mortality, medical evidence shows that early detection through population screening is the most effective way to reduce the impact of bowel cancer. Around 90 per cent of bowel cancer cases are curable if detected early; the sooner bowel cancer is detected, the easier it is to treat, reducing treatment costs and generating productivity gains.

The Federal Government is commended for committing $25.5 million over four years to phase in a national bowel cancer screening program. The program’s aim of targeting every non-Indigenous Australian aged 55 and over, and Indigenous Australians aged from 45, every two years by 2008 has the potential to significantly reduce the human and economic burden of bowel cancer in Australia.

Breast cancer

Breast cancer is the most common potentially fatal cancer in Australian women, with 11,791 new cases in 2001 and 2594 deaths[3]. However, mortality rates have steadily declined since 1993, and the evidence suggests that further improvements will emerge when the positive effect of the national breast screening program becomes more measurable as the target group ages.

There is evidence that breast cancer screening in Australia would be more effective if two-yearly participation rates were lifted from the current estimate of 57 per cent of the target population to 70 per cent, with access on request to the program for women aged 40–49 years and 70 years or more. This could be achieved through further awareness raising and increased government support to help ensure targets are met and priority is given to women in groups with barriers to access, such as Indigenous women and women from diverse cultural backgrounds.

Cost savings

Cost savings and productivity gains in breast cancer screening may be achieved through the introduction of agreed performance outcomes that minimise recall rates, retake films, invasive procedures, false negatives and false positives, and maximise the number of cancers detected, particularly small cancers.

This may be achievable through government support of ongoing monitoring and periodic evaluation of BreastScreen Australia that address: overall impact of the program on breast cancer mortality and morbidity; economic outcomes relating to the cost-effectiveness of the program and barriers to optimising participation among women aged 50–69 years; process outcomes relating to the performance of the program in its stated objectives; potential barriers to evaluation, notably fast-tracking cancer registrations to facilitate timely evaluation of program outcomes; sufficient resources to enable these objectives to be achieved; periodic review of the target screening age group; effective data collection in all states and territories to enable a national program sensitivity rate to be calculated.

(MRI screening for young women at very high risk of breast cancer as part of a full surveillance program should be supported. See "Genetic testing/Risk management" section, page 19.)

Cervical cancer

In 2000 there were 835 new cases of cervical cancer in Australia and 332 deaths, the world's lowest population-standardised incidence and mortality rates[3].

Cost savings

The National Cervical Screening Program's policy is that to facilitate effective prevention of cervical cancer, all women who are at risk aged between 18 and 70 should be routinely screened every two years. However, there is growing evidence that screening at a three-year interval would have a negligible impact on overall cancer incidence and mortality rates, while enabling the redirection of public funds elsewhere in the health system where need is significantly higher.

It is therefore recommended that the Federal Government continue to review the cost-effectiveness of cervical cancer screening; examine the evidence for a change to a three-yearly screening interval; develop uniform national guidelines for follow-up of screening tests for cervical cancer; and investigate new technologies.

Emerging issues: HPV DNA testing and vaccine

Due to the growing evidence that human papilloma virus is a necessary factor in the development of cervical cancer, HPV DNA testing and an HPV vaccine for primary prevention are possible future developments for the cervical cancer screening program.

Commercially available HPV DNA testing kits can detect 13 high-risk and five low-risk types of HPV (MSAC 2003b). Identification of women with persistent HPV infection may reduce unnecessary colposcopy and biopsy in some women.

Screening intervals may also be altered depending on the presence or absence of HPV DNA. For example, in women aged over 30, screening to detect HPV might identify a small group of women who are at appreciable risk of cervical cancer and would benefit from closer surveillance. Women aged over 30 with no Pap test-detected abnormality and a negative HPV DNA test might be at a very low risk of cervical cancer and could be screened less frequently.

Prophylactic HPV vaccine clinical trials are under way and preliminary results are encouraging. If successful, the vaccination would be administered before the onset of sexual activity, preventing the establishment of HPV infection and potentially preventing cervical cancer.

Further trials are necessary to confirm efficacy, the existence or not of cross-protection, and the duration of protection provided by the vaccine (EUROGIN 2003). The introduction of the HPV vaccine and the identification of women at higher risk through HPV DNA testing are prospects for the future. If proven to be safe and affordable, they may represent a very different approach to the prevention of cervical cancer.

Melanoma

Australia has the world’s highest incidence of melanoma, with 8885 new cases diagnosed in 2001. Between 1991 and 2001 melanoma in Australia increased in terms of both incidence and mortality[3].

Melanoma cost Australia approximately 20,000 disability adjusted life years annually[25], while health system costs for melanoma in Australia in 1993-94 were $65.6 million[5]. Medical costs account for more than half of melanoma expenditure, with the remainder shared by hospitalisation and miscellaneous expenses.

Despite the significant burden melanoma places on the health system, the disease is almost entirely preventable through adequate protection from ultraviolet radiation (see also “Prevention/skin cancer” section, page 9).

Screening for melanoma

Screening tests for early detection of melanoma include total body skin examination by a health care professional or skin self-examination. Detection of a suspicious lesion constitutes a positive screening test for which further investigation is required. Melanoma is confirmed by skin biopsy.

A pilot study of population screening by GPs has been conducted in Queensland, but funding to complete the study is currently unavailable. It is recommended that this study be finalised, to provide an evidence base for assessing the cost-effectiveness of melanoma population screening.

Emerging issues

Dermoscopy

Dermoscopy (surface microscopy) is a well-researched technique for melanoma detection that uses inexpensive hand-held surface microscopes. It was shown to improve the sensitivity for melanoma diagnosis by 38 per cent in a study using Australian GPs[26].

Computer programs to analyse digitalised dermoscopy images are still in the research and development phase, and there is insufficient data as yet to show they are superior to a well-trained clinician using dermoscopy. Further research is required to determine their value in community screening for melanoma.

An NHMRC-funded trial of dermoscopy and digital monitoring of pigmented lesions in general practice is under way in Western Australia. Its aim is to determine whether dermoscopy and short-term digital monitoring in a primary care setting significantly reduces the proportion of pigmented lesions excised or referred to a specialist. The study will also investigate whether dermoscopy or digital monitoring improves the confidence of general practitioners in their diagnosis and management of these lesions.

Self-examination

Little information is available on patient self-examination. Studies have shown a tendency by subjects to under-report or demonstrate poor self-assessment of pigmented skin lesions.

Recommendations

Investment in prevention is clearly the most effective way to reduce the longer-term burden of melanoma (see also “Prevention/Skin cancer” section, page 9). However, current trends indicate that melanoma will continue to place significant pressure on Australia’s health system and generate productivity losses due to its impact on patients and their caregivers. Interventions to improve the early detection of melanoma are therefore essential to improving patient outcomes and reducing downstream treatment costs and productivity losses.

There may be a role for the Federal Government's planned new national cancer agency, Cancer Australia[14] (see "Treatment" section, page 16), in facilitating research into the potential value of new diagnostic technologies (dermoscopy and digital monitoring) in general practice. The results of the NHMRC-funded study in Western Australia are likely to be important in this context.

Research is also required to determine whether screening for melanoma in Australia would reduce illness and death and whether implementation would be practical and acceptable to the community. This could be achieved by the completion of a Queensland-based screening trial.

Prostate cancer

Prostate cancer prevalence

Prostate cancer is the most prevalent potentially fatal cancer in Australian males, with 11,191 new cases in 2001. Prostate cancer caused the highest number of male deaths in 2001 (2718), after lung cancer (4657)[3].

The number of new prostate cancer cases rose dramatically between 1990 and 1994, a trend attributed to increased detection of the disease through the introduction of PSA (prostate specific antigen) testing around 1990. However, from 1994 to 1997 age-standardised prostate cancer incidence rates fell by 30 per cent. There has been little change between the 1998 and 2001 rate[3].

The death rate from prostate cancer is significantly lower than the incidence rate, and decreased by 1.8 per cent each year between 1991 and 2001[3].

PSA testing

PSA tests are specifically designed to help identify cancers before the onset of clinical symptoms. Many of these prevalent cancers may not show any symptoms and would not be detected except for PSA testing. Much of the rise in prostate cancer incidence rates can be attributed to detection of these prevalent cancers. The recent decline in incidence rates indicates a return towards the underlying rate, removing the effect of these previously undetected cases[3].

PSA testing measures the amount of prostate-specific antigen in blood, since virtually all PSA is produced by the prostate gland. PSA levels can be raised due to a range of conditions and, depending on the PSA level, as many as two-thirds of all cases of elevated PSA will be due to a non-cancerous condition[27].

The question remains whether measurement of PSA provides benefits to patients in terms of treatment and quality of life outcomes. Randomised controlled trials of screening for prostate cancer are under way in Europe, Canada and the US, but results in terms of mortality are not expected to be available until about 2008.

Digital rectal examination

Another form of testing is digital rectal examination, which involves manual examination of the prostate gland through the rectum. Some abnormalities may be felt but it is not possible to feel all the prostate. A cancer in part of the prostate gland out of the doctor's reach, estimated to be 25-35 per cent of the prostate, may be missed. In addition, small-stage cancers cannot be felt. According to the Australian Health Technology Advisory Committee (AHTAC), wide variations in reporting occur between doctors.

Trans-rectal ultrasound and biopsy

Neither the PSA test nor digital rectal examination, alone or together, is a truly accurate prostate cancer test. If abnormalities are detected by PSA testing or DRE, patients will need further investigations to confirm a prostate diagnosis.

Other tests available are a trans-rectal ultrasound (TRUS) and biopsy. The TRUS gives an image of the prostate and assists accurate needle biopsy of the gland. However, there is no single test or combination of techniques that can detect prostate cancer and predict which cancers, if left untreated, are likely to result in few if any symptoms, require no treatment and have no effect on life expectancy; or progress to a stage of widespread and aggressive cancer.

The problem of over-diagnosis

A major concern with screening is that it will diagnose cancers which, if left undetected, would never have caused morbidity or mortality. One estimate using mathematical modelling puts the over-diagnosis rate as high as 50 per cent[28].

It has been estimated that most prostate cancer cases detected by commonly promoted testing strategies would not have caused morbidity or mortality[28], while over-diagnosis results in unnecessary treatment with high risks of urinary incontinence and bowel problems.

Population screening for prostate cancer has been widely debated, with conflicting views being expressed. The Cancer Council endorses the views of the expert reviews (AHTAC 1996; Weller et al 1998; Harris & Lohr 2002) that current evidence does not support population screening of asymptomatic men for prostate cancer.

Until evidence on whether available testing methods reduce mortality, it is recommended that GPs receive adequate information about the advantages and disadvantages of prostate cancer screening, enabling at-risk men to make an informed choice.

Genetic testing

Genetic science is rapidly advancing. Over the coming years our expanding knowledge of genetics and of the consequences of malfunctions of human genes will have a major impact on our ability to predict an individual's risk of developing a disease and on our ability to select treatments that are most effective. The genetic revolution may ultimately lead to ways of preventing chronic illnesses such as cancer and cardiovascular disease.

So far, much of medical genetics has been concerned with single-gene diseases and there is an increasing demand for genetic tests to detect pathogenic mutations in relevant genes – for example, BRCA1 and BRCA2 for breast and ovarian cancer, mismatch repair genes for colorectal cancer and HFE for hemochromatosis. While the list of genes and mutations will continue to expand, the current focus on individual genes is likely to be augmented by genome-wide genetic profiling in the next few years.

This global approach, where many genes are scanned simultaneously, has the power to predict the risk of developing common diseases whose aetiology (cause) is genetically complex.

There are uncertainties about the timing of these advances and the genetic-related therapies outlined in the "Treatment" section of this submission. While the extent to which prophylactic treatments or changes in lifestyle will reduce the impact of disease to those at genetic risk is as yet unclear, even the most conservative scientists and clinicians would agree that genetics will have a significant impact on medical services within the next 10 years. A major challenge for health care systems will be to garner the resources to implement such advances.

More research on, and planning for, the inevitable integration of genetics into clinical practice is urgently required.

Increasing demand for genetic tests for "single-gene" disorders

While general practitioners may order medical genetic tests, individuals in most circumstances cannot obtain direct access to testing. Currently most medical genetic testing is provided through state and territory genetic services and public sector laboratories associated with these services[30].

Genetic testing is available in Australia through 43 laboratories, and some 220 tests are available from them[31]. The Medical Benefits Schedule has only six items which encompass genetic testing and they are for the specific conditions of hemochromatosis, factor V Leiden, protein C or S deficiencies, antithrombin 3 deficiency and fragile X syndrome. (Approximately 37,000 genetic tests for hemochromatosis were conducted between 1987, when it was added to the MBS, and 2001.)[32] There is clearly a powerful case for expanding the catalogue of genetic tests that are included in the Medical Benefits Schedule.

Economic considerations

Costs of genetic tests may vary depending on the type of test, from $100 to $2,000 or more[33]. State health departments may provide limited funds for genetic testing from their budget allocations for non-MBS items. Specialised genetic testing is characterised by being generally complex with low throughput, may take up to six months and, in some cases, may be sent overseas for analysis at additional cost. Family cancer clinics (funded by state health departments) also receive small budget allocations for genetic testing, but this provides only for a limited application. In other cases, patients may be required to pay for their own testing.

Once a pathogenic mutation in BRCA1, for example, is identified in an individual, it is a simple and relatively inexpensive matter to screen family members. Mutation carriers identified in this way typically have a 20-fold higher risk of developing breast or ovarian cancer and are in need of ongoing and intense long-term surveillance. A genetically-based comprehensive program of surveillance for high-risk cancer families would save up to 800 lives in Australia each year, representing 20,000 life years saved annually at around $2000 per life year[34].

Risk management

At present, only a handful of clinics Australia-wide offer a comprehensive breast/ovarian cancer surveillance service for high-risk women. Risk-management clinics are urgently required in every state and territory to address this shortfall, thereby saving lives and pre-empting the high costs of treating diseases diagnosed at a later stage. To gain maximum benefit from genetic medical technology, similar services should be set up for carriers of other genetic diseases.

It is also essential that risk-management clinics adhere to world's best practice guidelines for surveillance. During the past three years conclusive evidence has been published from several large international studies showing that stereotactic magnetic resonance imaging is a far more sensitive method than mammography to screen women at very high risk of developing breast cancer. Despite this clear evidence, stereotactic MRI is not available for breast cancer screening in Australian public hospitals. MRI screening for young women at very high risk of breast cancer as part of a full surveillance program should be supported.

Health insurance issues

Public interest in genetic testing is growing, and private providers are expanding their promotion of testing services to an increasingly receptive market. Whether private health insurance will cover genetic testing in response depends on the cover defined by the insurance policy.

In Germany a private health insurance company offers all customers a genetic test for hemochromatosis, so customers could receive early treatment if found to have faulty copies of the two genes which increase risk of the disease. (The cost of treating someone with the disease when discovered late is very high – estimated at around $180,000.)

In Australia, private company Genetic Technologies Ltd offers a range of DNA tests for cancers, including breast and ovarian cancers, bowel cancer and melanoma, as well as other diseases such as heart disease, memory loss and metabolic disorders. The company also has a commercial licensing agreement with Myriad Genetics Inc, which gives it rights to perform commercial DNA disease susceptibility testing in Australia and New Zealand – most notably for the BRCA1 and BRCA2 genes linked to breast cancer[35]. The company has also expanded into a range of other genetic testing applications.

Given the rate of scientific discovery it is expected that pressure for the availability of genetic testing will increase. It is, however, difficult at this stage to accurately forecast the limits of these developments or the larger impact on health costs which will occur as the accuracy and reliability of genetic tests improve.

The development of automated “DNA chip” technology may yet enable testing for numerous genetic mutations that is both reliable and financially affordable[30].

Conclusions and recommendations: cancer screening

- The Federal Government is commended for committing $25.5 million over four years to phase in a national bowel cancer screening program.

- Awareness of breast cancer screening should be raised to lift participation rates in the program to 70 per cent; costs savings and productivity gains are achievable through agreed performance outcomes in breast cancer screening. MRI screening for young women at very high risk of breast cancer as part of a full surveillance program should be supported.

- Australia has the world’s lowest cervical cancer incidence and mortality rates. Reducing the interval of screening from two to three years would have negligible effect on overall cancer outcomes while freeing up funds for higher-need public health initiatives. Developments in HPV vaccine should be closely monitored.

- Australia has the world’s highest melanoma incidence and mortality rates. Further research into the value of melanoma screening is needed, while current studies into melanoma identification should be closely monitored.

- Men at potential risk of prostate cancer should be encouraged to make a fully informed decision about prostate cancer screening. The current evidence does not support population screening for prostate cancer.

- Genetic testing technology is rapidly advancing and is set to have an increasingly significant impact on medical services over the next 10 years. Emerging issues in terms of the potential cost pressures of genetic testing, offset by significant productivity gains achieved through improved treatment outcomes, should be closely monitored.

Cancer treatment: past successes, future challenges

The number of cancer cases in Australia increased by 34 per cent between 1991 and 2001, a direct consequence of population ageing[1]. Yet overall cancer mortality rates in Australia have remained stable or declined by about 1 per cent a year over the same period[3].

This trend has profound significance for future medical expenditure in the context of population ageing. Cancer patients will not only grow in aggregate and as a proportion of the population, they will also survive for longer periods and thereby place increasing demands on the nation's health budget. This will be compounded by the fact that cancer incidence is rising due to Australians living longer lives[16].

Investment in improved medical technology and infrastructure and streamlining of bureaucratic processes now would deliver substantial returns over the next decade and beyond, as Australia's population ages and cancer incidence and patient survival duration increase.

Essential to these improvements is a continuing move towards multidisciplinary care, which reduces costs through more effective, personalised management of each patient and generates productivity gains via improved patient outcomes.

The Clinical Oncological Society of Australia, the peak multi-disciplinary Society for cancer professionals, with the support of The Cancer Council Australia, its key stakeholders and the Medical Oncology Group of Australia, provides the following information and recommendations for optimising cancer treatment.

As an overarching comment, COSA and The Cancer Council Australia commend the Federal Government for committing $10 million over four years to the establishment of a national cancer agency, Cancer Australia[14]. In our view Cancer Australia would be an appropriate vehicle for overseeing a number of the improvements in cancer treatment required to meet the challenges ahead.

Multidisciplinary care

A continuing shift towards multidisciplinary cancer care would provide significant patient benefits and eliminate overlaps and gaps in services provision, generating productivity gains and cost savings. The case for multidisciplinary care is set out in detail in the joint COSA, Cancer Council and NCCI consultative report, *Optimising Cancer Care* (in PDF at www.ncci.org.au/pdf/Optim_Cancer_Care.pdf).

Independent cancer clinical trials

Australia's health care system has saved more than $250 million over the past five years as a direct result of clinical trials into one form of breast cancer treatment alone.

Cancer clinical trials are the only reliable, scientific method of testing which treatments provide the most effective results for patients and the best value for money for taxpayers.

While the pharmaceutical industry conducts its own trials to support commercial interests, independent trials are the best way to ensure that benefits are absorbed into the health system.

The Federal Government is commended for committing $15 million over four years to build Australia's capacity for independent cancer clinical trials[14]. It is recommended that, under the auspices of Cancer Australia, annual recurrent grants for clinical trials capacity-building become a long-term fixture for reducing treatment costs, investing in huge future returns and improving patient outcomes.

Proactive, coordinated approach to technological change

Of direct relevance to this study's terms of reference is the COSA/Cancer Council view that Australia is under-prepared for managing increasingly rapid changes in cancer treatment technology. Exponential increases in demand will drive even more rapid change, but opportunities to harness new technology may be compromised if we do not plan for anticipated developments now.

Australia is currently lacking a strong platform for the strategic and coordinated adoption of new technologies, with gaps in skills development and infrastructure, and a tendency to be reactive, rather than proactive, in adapting to change.

This systemic problem could be addressed in part by Cancer Australia, in partnership with COSA and the National Cancer Control Initiative, developing a small number of competitive sites for technological research and development, with the capacity to efficiently convert results into standard practice throughout Australia's oncological services.

Molecular pathology

An emerging example of the challenges of technological change is molecular pathology, a better targeted and more selective method than the empirical approach used in conventional pathology. Molecular pathology is expected to replace conventional pathology over the next decade. It is likely to have a profound effect in both diagnostic and treatment services.

At present Australia is critically under-prepared for the expected advent of molecular pathology. A coordinated, national approach is essential to prevent the fragmented and reactive phasing in of molecular pathology and a costly and counterproductive reliance on overseas expertise and infrastructure support.

Australia would profoundly benefit from a national development program to facilitate molecular pathology, to help prevent it from being introduced in a reactive and fragmented way. The existing skills base is capable but very limited in resources and infrastructure.

PET imaging

Positron emission tomographic (PET) imaging is a relatively new modality that uses computerised reconstruction of electronic signals to diagnose illness. Unlike CT and MRI scanning, which scan anatomical structures, PET imaging provides a physiological "overlay", imaging the body's uptake of radiopharmaceuticals.

PET imaging can identify cancer sites throughout the body, enabling clinicians and patients to make treatment decisions based on improved information about the local and metastatic presence of cancer.

A recent study by the Peter MacCallum Cancer Centre, commissioned by the Department of Health and Ageing[23], compared costs and outcomes between PET imaging and non-PET imaging patients with four cancer types (non-Hodgkin lymphoma; lung; head and neck; and bowel cancers).

PET-imaged patients cost an average of $1800 per month of life saved, while non-PET patients cost $1940. An average of 43 per cent of patients underwent changes in treatment based on the results of PET imaging, and PET-imaged patients survived on average five-to-six months longer than non-PET patients.

PET imaging also produced considerably more economic and human gains than these figures indicate, with patients receiving better targeted care based on information about metastatic disease and avoiding futile and costly surgery or radiotherapy (with consequent quality of life improvements and possible productivity gains).

Radiation oncology

Infrastructure to keep pace with change

Radiotherapy is a cost-effective and highly technical form of cancer treatment, which will be subject to significant advances in medical technology over the next 10 years. Developments such as the emergence of Intensity Modulation Radiation Therapy, currently being trialled in Australia, and proton radiotherapy, unavailable here but used in the US and Europe, may have a major effect on the cost and effectiveness of treating cancer.

With its relatively small population, Australia is not well-placed for trialling high-cost, technical treatments such as radiotherapy, and relies on overseas evidence for the introduction of new technologies. This contributes to the emigration of Australians skilled in the development and management of radiotherapy equipment, a "brain-drain" that could have an increasingly negative effect as new technologies emerge and Australia's ageing population puts added pressure on radiotherapy services.

The lack of Australia-based clinical evidence can also delay Medicare Services Advisory Committee approval of new equipment and techniques that might otherwise improve patient outcomes and thereby generate productivity gains.

Consistent approach

Inconsistencies currently exist in the purchase, maintenance and upgrade of radiotherapy equipment, with the public and private sectors, and federal and state/territory governments, playing different roles in different situations. A coordinated approach is recommended to help ensure cancer patients throughout Australia can access the same state-of-the-art radiotherapy services.

Exponential growth in demand

As well as the pressures of population ageing, demand for radiotherapy in Australia is likely to increase following evidence that dose escalation generates significant patient benefits and flow-on productivity gains.

A recent Swedish study[17] demonstrated that up to 40 per cent of radiotherapy patients would benefit from dose escalation achieved through enhanced irradiation techniques. The benefits of dose escalation are expected to increase further as improvements in radiotherapy technology are introduced.

There may be a role for Cancer Australia in reviewing radiation therapy workforce, technological development and funding arrangements, to help ensure the nation has adequate infrastructure to support the changes in technology expected over the next decade.

In summary, imaging technology and radiation therapy are becoming increasingly important to the diagnosis, treatment and post-treatment monitoring of cancer (and a number of other diseases and injuries). Investment in these technologies is essential to meeting expected increases in demand.

Gene therapy

Genetic technology is rapidly developing, with the emergence of gene mapping, genetic testing tools (see Screening/genetic testing section, page 18) and limited clinical trials of gene therapy over a relatively short time. The pace of discovery is likely to accelerate over the next five to 10 years, with wide-ranging implications in terms of health system infrastructure, costs and patient expectations.

Recent gene therapy (or “gene transfer”) trials have produced sufficient evidence to warrant further research. For example, the American Academy of Neurology has reported limited brain activity revival for gene therapy trials in Alzheimer’s patients; corrective genes have been implanted into foetal mice with the aim of developing the technique for humans; and the results of clinical trials into gene therapy to correct the abnormal gamma-c that causes X-linked severe combined immunodeficiency have encouraged further research.

Gene technology is expected to have an increasing impact on cancer treatment, with research currently being conducted into the potential role of genes, or drugs that could mimic genes, in slowing the growth of cancerous cells.

The problems of adapting to technological change in Australia (expressed throughout this submission) are also applicable to gene therapy. While gene therapy is now subject to preliminary clinical trials, its use as a mainstream treatment is expected to be up to a decade away. However, even conservative scientists accept that gene therapy as a medical technology for treating cancer will eventually become an essential part of the health system, generating a range of new and important considerations in terms of cost and infrastructure. Developments should be closely monitored, and systems put in place to help facilitate a proactive and structured approach to introducing genetic technologies.

Cancer and the PBS

The Pharmaceutical Benefits Scheme (PBS) is a pillar of the health system and a critical component for cancer treatment, enabling access to affordable life-saving or life-extending medicines for cancer patients.

The PBS currently costs $5.1 billion per annum (approx. 161 million prescriptions in 2003) and is expected to reach $5.5 billion in 2005. PBS expenditure is predicted to continue increasing, with open debate between the Federal Government, the pharmaceutical industry and the wider community on how best to manage the scheme in future years.

The PBS has a particularly important connection to cancer, as subsidised pharmaceuticals may significantly extend and improve a patient’s life and in some cases effect a cure. For example, the new generation of drugs classified as “targeted therapies” enable many patients to become active again, easing pressure elsewhere on the health system and boosting productivity through workforce participation.

While some of these drugs are expensive (Glivec, prescribed for a small number of cancers, may cost up to $50,000 per patient in a year), their contribution to saving and significantly extending lives makes their continued PBS listing essential.

Low investment, high death rate

In relative terms, PBS costs for treating cancer are negligible and demonstrate the need to expedite the availability of subsidised cancer drugs and look at new ways of using the system to treat cancer in ways that maximise patient outcomes. Cancer is the cause of most Australian lives lost, yet it involves the lowest direct health costs to the community and has the lowest drug expenditure of all major drug classes. (The PBS’s five most expensive drug groups are for weight control, mental illness, antacid/peptic acid, hypertension and asthma. Cancer did not appear on the scheme’s list of the top 17 costliest drug groups in 2003-04.)

Indirect economic benefits of pharmaceuticals

Under current arrangements, the Pharmaceutical Benefits Advisory Committee (PBAC) does not generally allow the indirect economic benefits of providing affordable access to a particular drug in its pharmacoeconomic analyses.

However, studies have indicated that subsidising medicines to treat illnesses like cancer provides a range of indirect economic benefits by pre-empting productivity losses. These include productivity losses associated with paid and unpaid work done by patients and their caregivers and friends[18].

A literature review conducted in 1999 showed that the majority of health economists worldwide supported the inclusion of indirect cost benefits into the economic evaluation of pharmaceuticals, and that most countries with similar economies to Australia's had implemented such a process[18].

It is therefore recommended that Australia's drug approvals processes incorporate an indirect cost-benefit analysis, which would be increasingly significant as our population ages and our workforce profile changes accordingly.

Coordination of drug evaluation

The Federal Government and the Department of Health and Ageing are commended for their ongoing efforts to reduce inconsistencies in the process for approving and providing subsidised pharmaceuticals.

Ongoing reform is becoming increasingly urgent, with current delays creating potentially avoidable but significant problems in terms of patient and economic outcomes. (These delays also place additional pressures elsewhere on the health system, which are likely to be compounded by population ageing.)

For example, under current arrangements the Federal Government may approve the introduction of a particular pharmaceutical but not fund a test of its efficacy, due to the fact that separate government agencies are responsible and may have differing perspectives and priorities. Similarly, delays between a drug's approval by the PBAC and its actual listing on the PBS may also generate productivity losses.

The expediting of HIV/AIDS inhibitor drugs has demonstrated that flexibilities can be found in the system in response to perceived demand. Cancer drugs should be made available with the same expedience as HIV/AIDS treatments, given that there were 88,000 new cancer cases and 39,000 deaths in Australia in 2001[3], compared with 823 new HIV cases and 91 AIDS deaths in 2002[18].

Cancer Australia, as an interface between government policy makers and the cancer clinical community and consumers, may consider conducting a stakeholder consultation aimed at streamlining cancer-drug approvals and provision.

Ensuring ongoing cost effectiveness of scheduled medicines

Drugs currently approved by the Pharmaceutical Benefits Advisory Committee are only evaluated in terms of cost effectiveness in initial controlled trials, with no follow-up to ensure they continue to provide value for money after their addition to the PBS.

The controlled clinical trials and open market environments may differ in terms of overall and long-term cost considerations. An ongoing evaluation would ensure approved therapies continue to provide the most effective use of taxpayer funds. One solution might be to oblige pharmaceutical companies to contribute a small fraction of sales revenue generated by a new therapy into an independent analysis of its performance after PBS inclusion. A funding pool could be established, with Cancer Australia authorised to manage the studies.

Continued drug affordability

It is understood that due to the PBS's long-term standing, Australians generally expect affordable access to essential medicines for themselves and their families and will continue to see this as a reasonable return on their tax dollar.

However, while the co-payment system and safety net thresholds enable people of limited financial means to gain access to effective treatment, essential pharmaceuticals remain very costly for many Australians. Therefore, The Cancer Council Australia does not support further increases in co-payment levels as a way to fund PBS growth, as this would be a significant disadvantage to many cancer patients on low incomes and could lead to markedly poorer patient outcomes.

The future

Research and development of new pharmaceutical treatments for chronic health conditions and life-threatening illnesses mean the PBS will always be under financial pressure. However, the benefits in terms of direct patient outcomes and spin-off gains outweigh cost considerations.

In our view, inherent to managing the future of the PBS is an acceptance that the scheme remains a pillar of Australia's health system and will continue to grow in response to demand. And, as the PBS grows, so too will cost offsets achieved through reduced reliance on other expensive treatments (such as surgery) and shorter hospital stays. Productivity gains from some PBS users returning to the workforce as a result of pharmaceutical intervention may also continue to offset the scheme's expense as Australia's population ages.

The PBS's existing tools for cost-effective application are pharmacoeconomic analysis, reference pricing, cost-limiting agreements and price-volume agreements. As discussed, in our view rigorous evaluation and reviews of drug performance in later years should also be standard practice for the scheme.

The PBS's role in ensuring life-saving and life-extending cancer pharmaceuticals remain affordable will become increasingly important as Australia's population ages and the numbers of cancer patients, and their survival rates, increase.

Patient monitoring

The quality of cancer patient data is restricted by under-resourced hospital facilities and the absence of a national data clearing house.

Hospitals are the main site for the treatment of serious cancers in Australia, yet do not have sufficient resources to gather adequate patient data to feed into the state/territory-based cancer registries.

Meanwhile, because the data that is available is administered only on a state/territory basis, Australia's capacity to manage patient information nationally and monitor trends is restricted due to cross-border problems.

Privacy provisions permitting, there are a number of reasons for monitoring cancer patients nationally, such as providing national trends on incidence and treatment outcomes; gaining better access to people with rarer cancer types (such as mesothelioma, ovarian and thyroid cancers); facilitating research and studies into care and palliation when patients have moved interstate; linking families across state/territory borders who share hereditary risk factors.

The challenge is therefore twofold: ensuring data collection at the hospital level is adequately resourced, and integrating cancer data nationally.

There may be a role for Cancer Australia in the administration of national cancer data, through coordination of state/territory cancer registry data.

Cancer workforce

There are current workforce shortages in almost every discipline of cancer care, including nurses, radiation therapists, pharmacists, pathologists, physicists, funded psychotherapists and all specialist clinicians. These deficiencies limit access to services throughout Australia, particularly in rural and remote areas[20].

In 2001 the Australian Medical Workforce Advisory Committee (AMWAC) estimated an existing national shortfall of 64 medical and haematological oncologists (using the medium clinician-population ratio). Demand is likely to increase by more than 2.6 per cent each year[21], and the shortfall is particularly problematic in rural and remote areas.

In a 1997 report, AMWAC estimated a national shortfall of between 22 to 30 radiation oncologists, equivalent to between 14 and 18 per cent of the workforce[22]. These shortages are exacerbated by a population too small to support a culture of independent technological development, which leads to a loss of home-grown skills and a reliance on importing expertise from abroad.

Additional training places and infrastructure to support them are essential to help Australia's medical workforce meet current and expected increases in demands for specialist cancer treatment.

As put forward in *Optimising cancer care*, it is recommended that the workforce solutions proposed in the *National strategic plan for radiation oncology (Australia)* and the *Specialist haematological and medical oncology workforce in Australia* be implemented as soon as possible.

One step towards addressing these concerns in a coordinated way could be Cancer Australia's establishment of a national task force examining all cancer workforce and care issues, from the graduate level through to fostering standard models of multidisciplinary care in community settings.

Equity

Significant gaps between the advantaged and disadvantaged throughout Australia already exist in terms of equitable access to essential medical services. Unless steps are taken to urgently address these stark inequities on a needs basis, the gaps are likely to widen as medical technology advances and at an increasingly high human and financial cost as our population ages.

Among the most disadvantaged groups in Australia in terms of cancer outcomes are Indigenous peoples and people living in rural and remote regions. Australia's national record in cancer control could be significantly improved if support services for patients in these groups were given a higher priority in accordance to their demonstrated need.

Overall health care costs would also be reduced if patients in disadvantaged groups had improved access to early intervention services that could avoid the high downstream cost of managing a neglected or preventable condition. There are also clear productivity gains, given the major contribution that rural and regional communities make to Australia's export and domestic economy.

Indigenous Australians

Indigenous Australians with cancer are twice as likely to die from the disease than non-Indigenous Australians[36]. While Australia overall has better cancer survival rates than most other similar economies[1], patient outcomes for Indigenous Australians are worse than those in many developing countries.

The available evidence suggests that one of the key reasons for this unacceptable inequity is that Indigenous peoples face numerous barriers to accessing treatment services, including culture, language, location and poverty. (Indigenous peoples, like many other disadvantaged groups, are also less likely to benefit from evidence-based preventative and early detection measures to help avoid some of the most fatal cancers.)

The success of some cancer-related public health programs, such as the 50 per cent decrease in Indigenous cervical cancer mortality rates in the late 1990s following targeted screening, shows that barriers to access can be broken down through culturally appropriate services.

As advances in cancer technology gather pace over the next decade, it is imperative that the appalling cancer outcomes experienced by Aboriginal and Torres Strait Islander peoples do not become even poorer in comparison with non-Indigenous Australians. It is recommended that a strategic approach be taken to recruit more Indigenous people into the cancer workforce, and that benchmarks for improved cancer outcomes in Indigenous peoples be set and pursued to help prevent a further widening of the gap in cancer mortality rates.

Rural and remote communities

Studies show that Australians of all ethnicity living in rural and remote communities have poorer general cancer survival rates than their counterparts in urban and metropolitan regions[37]. (The higher proportion of Indigenous peoples in rural and remote Australia contributes significantly to this disparity. However, non-Indigenous Australians in rural and remote regions also have poorer cancer outcomes than urban populations, despite not facing the same cultural and socioeconomic barriers experienced by Indigenous peoples.) The main causes appear to be impaired access to treatment and delayed diagnosis, both a reflection of the relative lack of cancer treatment and detection services in non-urban areas.

The Federal Government is commended for committing to $9 million over four years to implement a mentoring program to transfer specialised cancer skills from urban cancer institutes to rural and remote hospitals.

However, if Australia is to address the disparities in urban and rural cancer outcomes and prevent further widening of the gap as city-based medical technologies advance over the next 10 years, a long-term, coordinated plan involving both tiers of government is required, as recommended in the "Workforce" section above and set out in the document *Optimising cancer care*[20].

Psychosocial oncology

People with cancer experience a range of physical, practical, psychological and emotional challenges. Similarly, partners who may play an integral part in the care of their loved one, experience levels of stress reported to be comparable to, or higher than, that of the person with cancer. Families are also vulnerable to cancer-related distress[57].

Evidence is accumulating that psychosocial support improves emotional adjustment and social functioning, and reduces both treatment and disease-related distress in people with cancer. By adequately supporting and funding the dissemination, implementation, evaluation and maintenance of clinical practice guidelines such as those developed by the NHMRC for the psychosocial care of adults with cancer, the quality of clinical practice and the outcomes of care for people with cancer can be significantly improved[58].

Conclusions and recommendations: cancer treatment

- Improvements in cancer survival rates, combined with increased incidence as the population ages and a proportional decrease in the number of taxpayers, will place exponential pressure on the health system over the next five to 10 years.
- Wide-ranging national reform of cancer treatment and care services is essential for coping with this increase in demand.
- A shift to multidisciplinary care, as proposed in *Optimising cancer care*[20], would lead to significant improvements in patient outcomes, cost reductions and productivity gains.
- The Federal Government is commended for committing $10 million over four years to establish a national cancer agency, Cancer Australia, which could lead national reform in cancer management.
- The Federal Government is commended for committing $15 million over four years to build the capacity of independent cancer clinical trials in Australia. Economic gains, particularly in view of population ageing, are likely to warrant ongoing recurrent funding support for clinical trials.
- Australia needs to be proactive and structured in introducing technological change. A national development program is essential for harnessing developments in areas such as molecular pathology, PET imaging, radiation oncology and gene therapy. Molecular pathology and gene therapy in particular may revolutionise cancer diagnosis and treatment, and Australia needs to prepare for their introduction in a structured and proactive way.
- Cancer Australia, in partnership with COSA and the NCCI, may be well-placed to develop competitive sites for technological research and development.
- The PBS's role in ensuring life-saving and life-extending cancer pharmaceuticals remain affordable will become increasingly important as Australia's population ages and the numbers of cancer patients increase and their survival times are extended.
- Processes for subsidising cancer drugs and other treatments should be streamlined and better targeted. This could include evaluating indirect cost benefits of drug availability; a more coordinated approach to approving treatment; and formally evaluating a drug's efficacy after PBS listing.

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- Cancer registry data should be coordinated nationally, to support improved research and facilitate preventative medicine for people with genetic cancer risks as they move across state/territory borders. Hospitals need additional resources to collect patient data at the primary source.

- Current shortages in cancer care workforce across all disciplines are likely to become critical, particularly in rural and remote areas, as Australia's population ages.

- Cancer Australia may be able to establish a task force to examine all workforce issues and to liaise with both tiers of government and the private sector to implement the AMWAC recommendations put forward in *Optimising cancer care*[20].

- Urgent steps need to be taken to address disparities in cancer outcomes between Australians in disadvantaged communities (particularly Indigenous peoples and people in rural and remote regions) to prevent a widening of the gap as our population ages and city-based technologies gather pace.

- Indigenous Australians diagnosed with cancer are twice as likely to die from the disease than non-Indigenous Australians, the result of complex barriers to service provision and cancer prevention. A strategic approach is needed to recruit more Indigenous people into the cancer workforce to help reduce these barriers.

- NHMRC guidelines for the psychosocial care of adults with cancer should be implemented as a standard part of clinical practice.

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