

MINI-REVIEW

Cancer in Aboriginal and Torres Strait Islander People of Australia

David Roder*, David Currow

Abstract

Aboriginal and Torres Strait Islander Australians have a cancer incidence for all sites combined equivalent to or slightly lower than for other Australians. They have a higher incidence of cancers of the cervix, liver and gallbladder, oesophagus, unknown primary site, mouth and throat, lung and pancreas, but a lower incidence of cancers of the prostate, female breast, colon/rectum and skin (melanoma). Case survivals are lower for Aboriginal and Torres Strait Islander patients, partly due to an excess of cancer types with a high case fatality, relatively low numbers with a low case fatality, and due to more advanced cancer stages at diagnosis. After accounting for these factors, Aboriginal and Torres Strait Islander Australians still fare worse, probably due to elevated comorbidity and less complete care resulting from geographic remoteness, limited access to transport and accommodation services, and sometimes a cultural disconnect with mainstream services.

Key Words: Aboriginal Australians - Torres Strait Islanders - cancer - comparisons

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Introduction

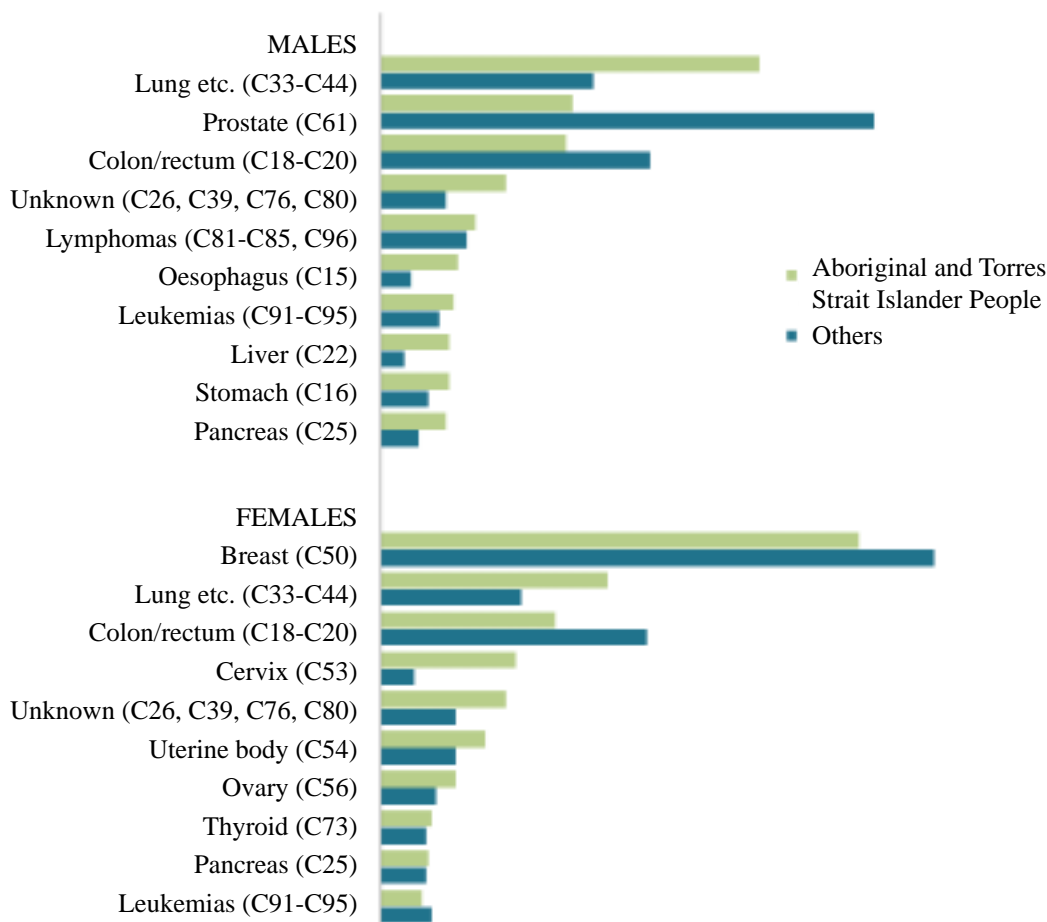
Indigenous Australians comprise Aboriginal and Torres Strait Islander people who represent around 2.5% of the Australian population (Australian Bureau of Statistics, 2008; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008; Cunningham et al., 2008). Relative to other Australians, they have a younger age distribution and tend more to live in remote or very remote areas of the country, often at large distances from specialised cancer services. Aboriginal and Torres Strait Islander Australians experience much more socio-economic disadvantage than normally applying to other Australians, which impacts negatively on their health (Australian Bureau of Statistics, 2008; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008; Cunningham et al., 2008). In this report, their cancer experience is described in the context of the cancer experience of the broader Australian community.

Cancer in all Australians

Australia has a recorded age-sex standardised incidence of all invasive cancers (non-melanoma skin cancers excluded) 68% higher than estimated world-wide and 15% higher than estimated for countries classified as more developed than most by the International Agency for Research on Cancer (Ferlay & Parkin, 2005). The extent to which this elevation reflects differences in completeness of registry case ascertainment and/or differences in access to screening services or advanced diagnostic technology is unclear, although it is likely that

these factors would have led to higher measured incidence rates in Australia than in less developed countries. Due to high survivals, and potentially less variability in registry ascertainment of death than cancer-case data, Australia has an age-sex standardised mortality rate for all cancers combined that is not ranked as high in world comparisons as its incidence rate (Ferlay & Parkin, 2005). The Australian cancer mortality rate exceeded the world-wide estimate by only 7% and was 10% lower than estimated for more developed countries.

The four cancers most commonly recorded by Australian cancer registries, accounting for over half of diagnoses in 2005, are cancers of the prostate, colon/rectum, female breast and skin (melanoma) (Australian Institute of Health and Welfare, 2008). These cancers have five-year relative survivals of 85%, 62%, 88% and 92% respectively, which are higher than the collective 61% for all cancers in 1998-2004 (Australian Institute of Health and Welfare, Cancer Australia & Australasian Association of Cancer Registries, 2008). The high numbers of these "higher survival" cancers would have contributed to the lower mortality than incidence ranking of Australia compared with other countries for all cancers combined. Meanwhile leading causes of cancer death in Australia are cancers of the lung, colon/rectum, unknown primary site, prostate, and female breast, which accounted for 53% of cancer deaths in 2005 (Australian Institute of Health and Welfare, 2008). Lung and unknown primary site rank high, despite a comparatively low incidence, due to low survivals (e.g., five-year relative survivals of 12% and 9% respectively for 1998-2004) (Australian Institute of Health and Welfare, 2008; Australian Institute of Health



Based on 3,083 cancers in Indigenous and 457,742 in non-Indigenous Australians

Figure 1. Ten Most Common Primary Sites (ICD-10) for Invasive Cancers Diagnosed in Aboriginal and Torres Strait Islander people in 2000-2004 (% contribution to all cancers, with corresponding % contributions for cancers in other Australians, adapted from Australian Bureau of Statistics and Australian Institute of Health and Welfare (2008))

and Welfare, Cancer Australia & Australasian Association of Cancer Registries, 2008).

Cancer in Aboriginal and Torres Strait Islander People

Descriptors of Indigenous status are poorly recorded in Australian cancer registries (Condon et al., 2004; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2006; Cunningham et al., 2008). Nonetheless it is estimated from registry data for six of eight jurisdictions that the most commonly diagnosed cancers experienced by Aboriginal and Torres Strait Islander people in 2000-2004 were cancers of the lung (15%), female breast (13%), colon/rectum (9%), unknown primary site (6%), prostate (5%) and cervix (4%) (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008). Their respective percentage contribution to the total number of cancers are shown by sex and compared with corresponding percentages for the rest of the population in Figure 1. In males, Aboriginal and Torres Strait Islander cases showed a higher proportion of cancers of the lung, unknown primary site, oesophagus, liver, stomach and pancreas than other cases, but a lower proportion of cancers of the prostate and colon/rectum. In females, Aboriginal and Torres Strait Islander cases showed a higher proportion of cancers of the lung, cervix,

unknown primary site, uterine body, and ovary, but a lower proportion of cancers of the breast, colon/rectum and possibly leukaemias.

During 2000-2004, age-standardised incidence data for these six jurisdictions indicated that rates for all cancers combined were about 17% lower in Aboriginal and Torres Strait Islander cases than other Australians (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008), but it is likely that this difference was mostly if not entirely a result of under-ascertainment by registries of Indigenous status (Condon et al., 2004; Australian Institute of Health and Welfare and Australian Bureau of Statistics, 2006; Cunningham et al., 2008). After standardisation by age and, where applicable, sex, incidence rates were recorded to be higher for Aboriginal and Torres Strait Islander than other Australians for cancers of the following primary sites:

Cervix (+138%): Due in large measure to low cervical screening coverage of the Aboriginal and Torres Strait Islander population. These women warrant special priority in the implementation of vaccination programs for cervical cancer (Roder, 2005; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Liver and gallbladder (+128%): Potentially the elevation for liver cancer reflects high levels of serum

hepatitis infection in the Aboriginal and Torres Strait Islander population, and sometimes excesses in alcohol intake, and prevalent tobacco smoking, whereas the elevated gallbladder incidence may have been affected by raised levels of obesity, gallstones, chronic inflammation, and possibly multiple pregnancies (Centre for Cancer Control Research, 2001; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Oesophagus (+82%): Potentially due to high tobacco smoking prevalence, sometimes excess alcohol consumption, and possibly diets low in fruit and vegetables (Centre for Cancer Control Research, 2001; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Unknown sites (+77%): Potentially due to poor access to diagnostic facilities in remote Aboriginal and Torres Strait Islander communities, plus other factors that may lead to less intensive diagnostic investigation in remote locations, particularly for advanced cases where the primary site is less readily apparent (Roder, 2005; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Mouth and throat (+67%): Due to high tobacco smoking prevalence, sometimes excess alcohol consumption, and possibly diets low in fruit and vegetables (Centre for Cancer Control Research, 2001; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Lung (+51%): Due mostly to high smoking prevalence (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Pancreas (+43%): Potentially affected by high tobacco smoking prevalence and also a high prevalence of diabetes mellitus which is a risk factor for this cancer (Centre for Cancer Control Research, 2001; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Due to under-ascertainment of Indigenous status in cancer registries, it is likely that these elevations in incidence in Aboriginal and Torres Strait Islander people are under-estimates. Separate jurisdictional data also show elevated rates of gastric cancer in these people, but the results for this cancer have been inconsistent by region, possibly reflecting differences in prevalence of *Helicobacter pylori* infection (South Australian Cancer Registry, 1997; Coory et al., 2000; Condon et al., 2005a; Cunningham et al., 2008).

By comparison, during 2000-2004, incidence rates were recorded for the six jurisdictions to be lower for Aboriginal and Torres Strait Islander than other Australians for cancers of the following primary sites:

Prostate (-60%): These cancers are more common in higher socio-economic sections of the Australian

population (Centre for Cancer Control Research, 2003). The lower incidence in Aboriginal and Torres Strait Islander people is consistent with their lower socio-economic status and probably lower detection rates due to lower exposure to PSA (prostate specific antigen) testing and other medical procedures for early detection (Centre for Cancer Control Research, 2003; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Colon/rectum (-41%): The reasons for a lower incidence in Aboriginal and Torres Strait Islander people are unclear, but as for prostate cancer, socio-economic factors and lower cancer detection rates are likely to be involved (Centre for Cancer Control Research, 2001; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008).

Lymphomas (-34%): A lower incidence of this cancer has also been observed in jurisdictional data (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008; Cunningham et al., 2008). The reasons are not known, although there has been speculation that Aboriginal and Torres Strait Islander Australians might have stronger immune systems from more common exposure to infection that are less vulnerable to this disease.

Female breast (-26%): Aboriginal and Torres Strait Islander women often have their first pregnancy at a younger age and have a higher parity, which may be protective (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008). They are also less likely to be screened by mammography and probably have a lower breast cancer detection rate. HRT (hormone replacement therapy) may be less common among Aboriginal and Torres Strait Islander than other women, which would also favour a lower incidence of breast cancer.

In addition, separate jurisdictional data point to lower incidence rates in Aboriginal and Torres Strait Islander Australians of sun-related cutaneous melanomas and lip cancers (South Australian Cancer Registry, 1997; Cunningham et al., 2008). This finding would reflect the protective effect of skin colouring in this population. Due to under-ascertainment, it is possible that the extent to which incidence rates are recorded as lower in Aboriginal and Torres Strait Islander Australians in these comparisons are over-estimates (Cunningham et al., 2008).

Data on cancer deaths in Aboriginal and Torres Strait Islander Australians are available from four jurisdictions, indicating cancer to be the third leading cause of death in males and the second leading cause in females (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008). Overall, cancer accounted for approximately 15% of all deaths during 2001-05, which was lower than the approximate 29% applying for other Australians. Nonetheless, data from these jurisdictions indicate that Aboriginal and Torres Strait Islander Australians had a 50% higher cancer death rate than

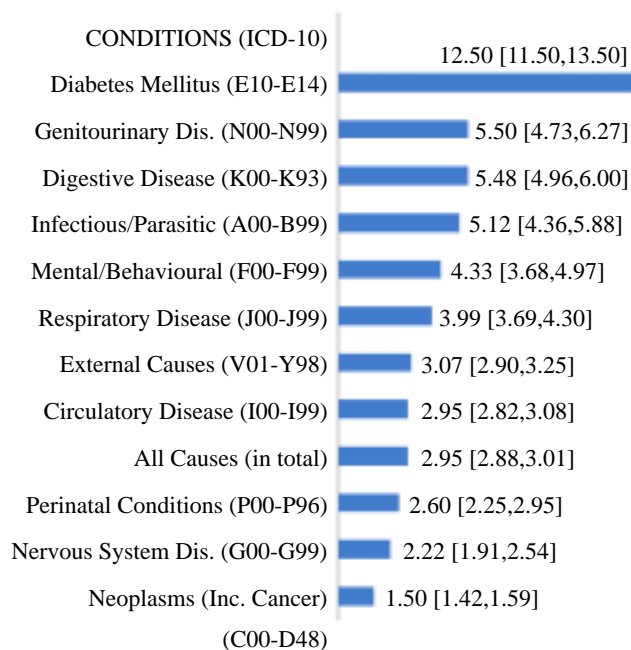


Figure 2. Age-standardised Mortality Ratios (95% Confidence Limits) for Aboriginal and Torres Strait Islander people Compared with Other Australians by Disease Category, in 2001-2005 (adapted from Australian Bureau of Statistics and Australian Institute of Health and Welfare (2008), death coding for 4 jurisdictions)

experienced by the rest of the population after adjusting for age and sex (Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008). Since overall incidence rates are not raised, it follows that there would be much lower survivals from cancer among Aboriginal and Torres Strait Islander than other patients. The elevation of 50 % in cancer mortality, although appreciable, was accompanied by much higher elevations for other disease groupings and an approximate three-fold mortality from all causes in combination in Aboriginal and Torres Strait Islander people (Figure 2). This is indicative of a high overall disease burden in Aboriginal and Torres Strait Islander people and the likelihood that cancer patients would have high levels of co-morbidity, which may include diabetes mellitus, cardio-vascular, respiratory, and renal diseases, and higher levels of infection.

Cancer Survival in Aboriginal and Torres Strait Islander Patients

National data have not been published on cancer survival by Indigenous status in Australia. However, jurisdictional data provide a consistent picture (South Australian Cancer Registry, 1997; Condon et al., 2006a; Valery et al., 2006; Cottrell et al., 2007; Cunningham et al., 2008). Early data from South Australia showed a five-year survival from cancer for Aboriginal and Torres Strait Islander patients of 37% during 1988-1994, which compared with a corresponding figure of approximately 56% for other residents (South Australian Cancer Registry, 1997). Case survivals were affected by higher numbers of cancer types with a low survival in Aboriginal and Torres Strait Islander patients, including cancers of the

lung, pancreas, liver, gallbladder, oral/pharynx/oesophagus, and unknown primary site (South Australian Cancer Registry, 1997). Conversely, Aboriginal and Torres Strait Islander patients experienced relatively few cancers with a high survival, such as cancers of the prostate, female breast, colon/rectum and skin (melanoma) (South Australian Cancer Registry, 1997).

It is relevant to note, however, that adjusting other patient distributions in South Australia by age, sex and site to the distributions for Aboriginal and Torres Strait Islander cases gave a survival of approximately 48%, which was still higher than the 37% for Indigenous patients (South Australian Cancer Registry, 1997). Lower survivals were observed in Aboriginal and Torres Strait Islander patients from more remote communities than urban centres (South Australian Cancer Registry, 1997).

In a subsequent analysis of survival for Aboriginal and Torres Strait Islander patients diagnosed in 1977-2003, the five-year survival observed in these patients of 36% was lower than the approximate 45% expected from survivals for all South Australian cancer patients weighted by age, sex and primary site to the corresponding distributions for Aboriginal and Torres Strait Islander patients (Cottrell et al., 2007). The data for 1988-1994 showed a more advanced summary stage distribution in Aboriginal and Torres Strait Islander than other patients, which partly but not fully explained the differences in survival (South Australian Cancer Registry, 1997).

More extensive analyses of survival among Aboriginal and Torres Strait Islander patients in the Northern Territory have provided similar findings, in that Indigenous patients had lower survivals which persisted after adjusting for age, sex, and cancer site, and after stage adjustment - at least among Aboriginal and Torres Strait Islander patients whose first language was an Indigenous language (Condon et al., 2005a; 2005b).

Queensland data also showed lower survivals among Aboriginal and Torres Strait Islander cases patients after adjusting for more advanced stage at diagnosis (Valery et al., 2006). There was evidence in the Northern Territory and Queensland of less complete treatment among Aboriginal and Torres Strait Islander patients which may have contributed to poorer outcomes (Condon et al., 2005c; 2006b; Valery et al., 2006). Although efforts have been made to adjust for levels of co-morbidity, as in Queensland for example, the co-morbidity measures employed were based on hospital records where completeness and reliability of recording of co-morbidity would be suspect (Valery et al., 2006).

It is likely that elevated levels of cardio-vascular, respiratory and renal co-morbidities and diabetes mellitus would have contributed to the poorer survival outcomes of Aboriginal and Torres Strait Islander patients (Cunningham et al., 2008; Australian Bureau of Statistics and Australian Institute of Health and Welfare, 2008). Other likely contributing factors would be poor access to care due to geographic remoteness, lack of adequate transport and accommodation services, and sometimes a cultural disconnect between mainstream services and Aboriginal and Torres Strait Islander cultures (Australian Bureau of Statistics and Australian Institute of Health and

Welfare, 2008; Cunningham et al., 2008).

Conclusions

The cancer profiles and service requirements of Aboriginal and Torres Strait Islander cases Australians and their cultures differ sufficiently from other Australians to require special attention in cancer-service planning. There is a pressing need to improve the recording of Indigenous status in cancer registries and other health records for more accurate benchmarking and better monitoring of trends in service outcomes.

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