

### Cancer among people living in rural and remote Indigenous communities in Queensland

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### Introduction

This circular contains the first analysis of cancer incidence and mortality among Indigenous people in Queensland. The Queensland Cancer Registry (QCR) like the other population-based cancer registries in Australia, identifies Indigenous people based on passive reporting by pathology laboratories, hospitals and medical practitioners. Concerns about the completeness of reporting have meant that data on Indigenous cancer have only been published for South Australia (SA)<sup>1</sup> Western Australia (WA)<sup>2</sup> and the Northern Territory (NT)<sup>3</sup>. Even in these jurisdictions, some authorities consider that there is still likely to be underestimation of cancer incidence and mortality. Further, because of differences in circumstances from region to region, it is not clear whether data from SA, WA and NT are applicable to Queensland.

In Queensland, about 12,700 Indigenous people (12% of the state total) live in easily-identifiable communities in the rural and remote parts of the state. These communities provide a unique opportunity to analyse incidence and mortality for cancer among a group of Indigenous people without having to rely on passive reporting of Indigenous status.

The purpose of this circular is to examine the types of cancers that occur among people in the rural and remote Indigenous communities in Queensland and to consider what implications the results have for cancer control.

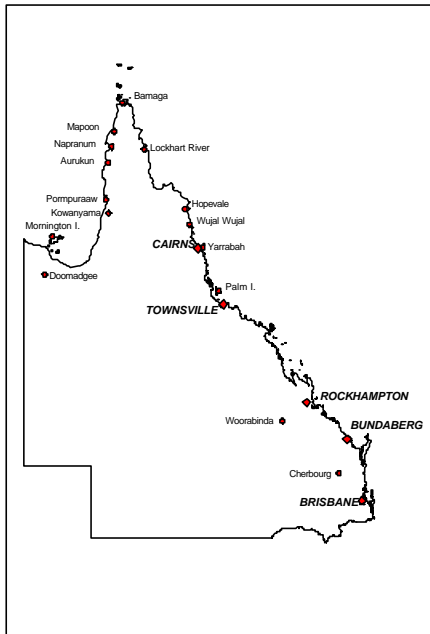
### Summary

- This circular contains the first analysis of cancer incidence and mortality among Indigenous people in Queensland.
- For Indigenous men, we found high rates of cancer of the lung and other smoking related cancers such as cancers of the mouth, throat and oesophagus. For Indigenous women, the cancers with high incidence and mortality included cancers of the lung, cervix and breast.
- These cancers are potentially amenable to preventive measures. The burden of suffering from cancer among Indigenous people could be reduced if it were possible to reduce the prevalence of smoking, to improve participation in screening for cancer of the cervix, and to increase participation in breast-cancer screening.

### Methods

Data were obtained from the QCR for the 15 years 1982 to 1996. Indigenous communities were identified based on the address reported to the QCR at the initial registration of the cancer. The Indigenous communities are shown in Figure 1. In these communities, more than 92% of the population are Indigenous. Torres Strait was not included because of continuing problems with the registration of deaths from this area. Registration of deaths from the Indigenous communities on the mainland is believed to be reasonably complete.

**Figure 1: Rural and remote Indigenous communities in Queensland (excluding Torres Strait)**



It is common practice to age standardise rates of cancer to allow for more valid comparisons between populations. This is especially important when comparing Indigenous rates of cancer with those for all of Queensland, because the age structures of the two populations are different. Specifically, the Indigenous population is much younger than the non-Indigenous population (Table 1). Because the risk of getting most cancers increases by several orders of magnitude as people get older, comparison of rates of cancer between a young (Indigenous) population and a much older (non-Indigenous) population are not valid unless the rates are age standardised.

Because the total number of cancers was relatively small, and the numbers for specific cancers (e.g., lung, prostate, breast) were even smaller, it was not possible to assess trends over time. Instead, the rates for the whole period, 1982 to 1996 were compared with those for the rest of Queensland.

**All cancer sites combined**

For the period 1982 to 1996, the incidence of all cancers combined was similar to that for the rest of Queensland. However, the corresponding mortality rate was 50% higher (Table 2). A similar pattern has been observed in SA, WA and the NT, the three other jurisdictions that have

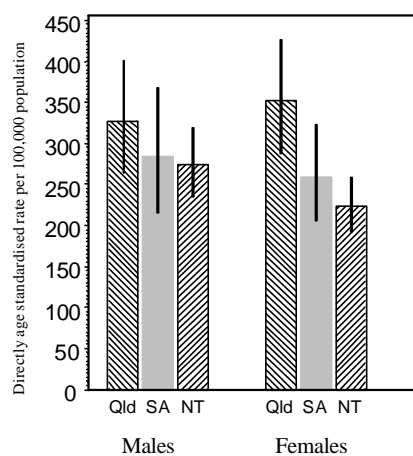
reasonably reliable data on cancer among Indigenous people. This suggests that Indigenous people with cancer have poorer survival than non-Indigenous people.

The reasons for this are unclear, but one possibility is that Indigenous people are more likely to get types of cancer that have poor survival (e.g., lung) and less likely to get types of cancer that have good survival (e.g., melanoma). However, an analysis of case survival in SA found that, after adjusting for the type of cancer, the survival of Indigenous people was less than that for non-Indigenous people<sup>1</sup>. This raises the possibility that, for Indigenous people, the cancer comes to the attention of the medical profession at a more advanced stage. Again, the South Australian study took this into account (by adjusting for the spread of disease at the time of diagnosis) and found that the Indigenous cases still had lower survival than the non-Indigenous cases. Other factors such as access to medical care after the diagnosis of cancer has been made or the presence of comorbid conditions (e.g., ischaemic heart disease or obstructive lung disease) might play a role.

**Interstate comparisons**

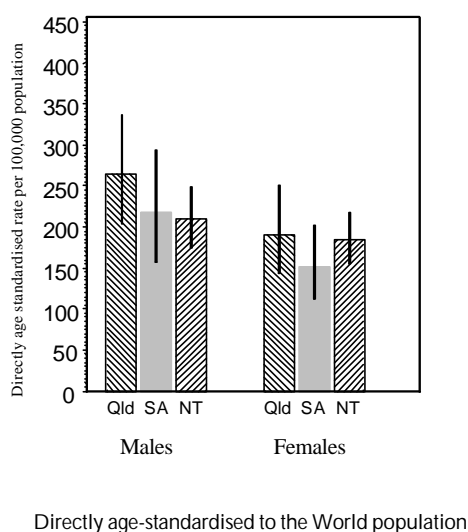
Comparison of incidence and mortality rates for the rural and remote Indigenous communities in Queensland with statewide data from SA and NT shows that the Queensland rates tend to be higher than the those from the other states, but not statistically significantly so (Figures 2 and 3). This might represent a real difference, a chance occurrence, or underenumeration in SA and NT.

**Figure 1: Incident rates for all cancers for Indigenous people by state**



Directly age-standardised to the World population

**Figure 2: Mortality rates for all cancers for Indigenous people by state**



For males, the incidence rate for the four cancers (oral cavity, pharynx, larynx & oesophagus) was twice the state average and the mortality rate was four times the state average. For females, incidence and mortality rates were not statistically significantly different from the state average (see Table 5). Alcohol tends to combine synergistically with cigarette smoking to increase the risk of these cancers<sup>5</sup> and this might explain the higher risk for males but not females.

### Breast cancer

There has been a long-standing but erroneous belief that breast cancer is not an important cancer for Indigenous women<sup>7</sup>. For these present data, the rates for breast cancer were not statistically significantly different from those for all of Queensland. Nevertheless, breast cancer was the second most common cancer diagnosed in women after cancer of the cervix and third most common cause of cancer death in women after cancer of the cervix and cancer of the lung.

### Stomach cancer

There was a statistically significant three- to four-fold increase in incidence and mortality for cancer of the stomach in females, but not for males. Stomach cancer is a common cancer in developing countries such as China and other parts of eastern Asia. In western countries, the rates have decrease markedly over the last two decades. This has been attributed to better preservation and storage of food and a decreased prevalence of *Helicobacter pylori*, possibly due to decreased transmission in childhood following a trend towards increased hygiene and a reduction in crowding<sup>6</sup>.

### Primary hepatocellular carcinoma

The high prevalence of infection with the hepatitis viruses, hepatitis B and C, among Indigenous Australians has been well documented<sup>8</sup>, as has the high prevalence of harmful and hazardous alcohol consumption<sup>9</sup>. It would therefore be expected that there would be high rates of primary hepatocellular carcinoma. For the current data, there were four cases reported in men and none in women for the 15 years 1982 to 1996 (Tables 3 and 4). The SIR for males was 319, but this was extremely imprecise with a 95% confidence interval from 87 to 816. It is possible that some cases of primary liver cancer were reported as *unknown primary site*, however, rates for *unknown primary site* were not much higher than the state average (Tables 3 and 4).

## Specific cancers

Tables 3 and 4 show the standardised incidence and mortality rates for specific cancers. A much different pattern of cancer was found than that observed in the rest of the Queensland population.

### Cervical cancer

The most prominent difference was for cervical cancer, which was the most common incident cancer and cause of cancer death among Indigenous women. In contrast, for all of Queensland and Australia, cervical cancer is the ninth most common incident cancer and the eighth most common cause of cancer death<sup>4</sup>. Incidence rates among Indigenous women were five times the Queensland average. For mortality there was a 13-fold excess.

### Lung and other smoking related cancers

The rates of lung cancer, although not as extreme as those for cervical cancer were also high. For both males and females, there was a statistically significant two- to three-fold increase in the risk of lung cancer compared with the rest of Queensland. Because of the problem of small numbers, we combined data for the four other cancers, (cancer of the oral cavity, pharynx, larynx and oesophagus) for which cigarette smoking is believed to be the major cause. That is, smoking is responsible for the majority of cases and deaths from cancer at these sites<sup>5</sup>. Smoking also substantially elevates the rates for cancer of bladder, kidney and pancreas in both men and women and the rates for cancer of the cervix in women, but it is not considered to cause most of the cases or deaths.

**Table 1: Comparison of population structure of rural and remote Indigenous communities with that for all of Queensland, 1996**

	Indigenous communities	All of Queensland
Percent younger than 15 years	35%	22%
Percent 65 years or older	3%	13%
Median age	22 years	33 years

Source: Australian Bureau of Statistics. Census of Population & Housing CDATA96, CatNo 2019.0 Canberra, ABS 1996.

**Table 3: SIRs<sup>1</sup> by site for rural and remote Indigenous communities in Queensland, 1982 to 1996**

Site	Males				Females			
	Reported No.	Expected No.	SIR	95% confidence interval	Reported No.	Expected No.	SIR	95% confidence interval
Oral cavity	6	3.7	163	60 to 356	1	1.5	66	2 to 367
Pharynx	5	2.4	212	69 to 495	2	0.5	383	46 to 1384
Oesophagus	<b>7</b>	<b>2.1</b>	<b>337</b>	<b>135 to 694</b>	1	0.8	129	3 to 719
Stomach	3	4.4	68	14 to 199	<b>6</b>	<b>1.8</b>	<b>336</b>	<b>123 to 731</b>
Colorectal	<b>6</b>	<b>20.7</b>	<b>29</b>	<b>11 to 63</b>	<b>6</b>	<b>15.0</b>	<b>40</b>	<b>14 to 87</b>
Liver	4	1.3	319	87 to 816	0	0.5	0	0 to 599 <sup>2</sup>
Gallbladder	1	0.7	134	10 to 746	2	0.9	219	27 to 792
Pancreas	3	2.8	106	22 to 310	3	1.8	164	34 to 479
Larynx	4	2.6	152	42 to 390	0	0.3	0	0 to 998 <sup>2</sup>
Lung	<b>46</b>	<b>21.6</b>	<b>213</b>	<b>156 to 284</b>	<b>17</b>	<b>6.4</b>	<b>267</b>	<b>155 to 427</b>
Melanoma	<b>1</b>	<b>27.0</b>	<b>4</b>	<b>1 to 21</b>	<b>3</b>	<b>23.1</b>	<b>13</b>	<b>3 to 38</b>
Breast	-	-	-	-	24	34.3	70	45 to 104
Cervix	-	-	-	-	<b>33</b>	<b>7.1</b>	<b>467</b>	<b>321 to 655</b>
Uterus	-	-	-	-	9	4.6	195	89 to 371
Ovary	-	-	-	-	5	4.9	103	33 to 240
Prostate	<b>7</b>	<b>22.3</b>	<b>31</b>	<b>13 to 65</b>	-	-	-	-
Testes	3	4.3	69	14 to 203	-	-	-	-
Renal	1	4.7	21	1 to 118	3	2.8	109	22 to 318
Bladder	3	8.0	37	8 to 109	2	2.3	87	11 to 313
Brain	2	4.4	45	5 to 163	3	3.1	98	20 to 287
Thyroid	2	1.0	205	25 to 741	3	3.0	101	21 to 295
Unknown primary site	9	5.7	158	72 to 300	4	3.7	109	30 to 279
Lymphoma	5	8.4	60	19 to 140	5	5.5	92	30 to 214
Leukaemia	9	6.8	131	60 to 249	3	4.5	67	14 to 195

1. Standardised incidence ratio—a ratio of 100 indicates that the age-standardised incidence rate for the rural & remote Aboriginal communities is the same as that for all of Queensland. If the 95% confidence interval does not include 100, then the age-standardised incidence rate for the communities is statistically significantly different from the Queensland average.

2. One-sided, 97.5% confidence interval  
Statistically significant results are bolded

**Table 2: SIRs<sup>1</sup> and SMRs<sup>2</sup> for all cancers combined, rural and remote Indigenous communities in Queensland, 1982 to 1996**

	Incidence			
	Reported No.	Expected No.	SIR <sup>1</sup>	95% confidence interval
Males	137	169.3	80.9	68.0 to 95.7
Females	143	135.0	105.9	89.3 to 124.8

	Mortality			
	Reported No.	Expected No.	SMR <sup>2</sup>	95% confidence interval
Males	101	67.7	149.1	121.4 to 181.2
Females	69	42.2	163.7	127.3 to 207.1

1. Standardised mortality ratio—a ratio of 100 indicates that the age-standardised mortality rate for the rural and remote communities is the same as that for all of Queensland. If the 95% confidence interval does not include 100, then the age-standardised mortality rate for the communities is statistically significantly different from the Queensland average.
2. Standardised mortality ratio—a ratio of 100 indicates that the age-standardised mortality rate for rural and remote communities is the same as that for all of Queensland. If the 95% confidence interval does not include 100, then the age-standardised mortality rate for rural and remote communities is statistically significantly different from the Queensland average.

**Table 4: SMRs<sup>2</sup> by site for rural and remote Indigenous communities in Queensland, 1982 to 1996**

Site	Males				Females			
	Reported No.	Expected No.	SMR	95% confidence interval	Reported No.	Expected No.	SMR	95% confidence interval
Oral cavity	4	1.2	347	95 to 888	1	0.3	294	7 to 1639
Pharynx	<b>5</b>	<b>1.1</b>	<b>439</b>	<b>142 to 1024</b>	0	0.2	0	0 to 1421 <sup>2</sup>
Oesophagus	<b>6</b>	<b>1.6</b>	<b>381</b>	<b>140 to 828</b>	1	0.5	188	5 to 1046
Stomach	2	3.0	66	8 to 240	<b>5</b>	<b>1.2</b>	<b>433</b>	<b>141 to 1011</b>
Colorectal	5	8.4	60	19 to 140	4	5.7	70	19 to 180
Liver	3	0.8	371	77 to 1084	0	0.3	0	0 to 998 <sup>2</sup>
Gallbladder	1	0.5	196	5 to 1091	2	0.7	280	34 to 1013
Pancreas	3	2.5	122	25 to 357	3	1.6	192	40 to 562
Larynx	<b>4</b>	<b>0.6</b>	<b>669</b>	<b>182 to 1713</b>	0	0.1	0	0 to 3310 <sup>2</sup>
Lung	<b>40</b>	<b>16.8</b>	<b>238</b>	<b>170 to 324</b>	<b>12</b>	<b>4.6</b>	<b>262</b>	<b>136 to 458</b>
Melanoma	1	2.7	37	1 to 204	0	1.2	0	0 to 258 <sup>2</sup>
Breast	-	-	-	-	8	7.8	102	44 to 201
Cervix	-	-	-	-	<b>17</b>	<b>1.3</b>	<b>1335</b>	<b>778 to 2137</b>
Uterus	-	-	-	-	1	0.7	146	4 to 814
Ovary	-	-	-	-	3	2.2	136	28 to 397
Prostate	6	5.6	106	39 to 232	-	-	-	-
Testes	0	0.2	0	0 to 1252 <sup>2</sup>	-	-	-	-
Renal	0	0.3	0	0 to 998 <sup>2</sup>	0	0.3	0	0 to 881 <sup>2</sup>
Bladder	1	1.5	67	2 to 373	1	0.5	208	5 to 1158
Brain	1	2.7	37	1 to 207	1	1.8	56	1 to 310
Thyroid	1	0.1	842	21 to 4691	1	0.1	1325	34 to 7383
Unknown primary site	8	3.9	204	88 to 402	4	2.5	158	43 to 406
Lymphoma	2	2.8	72	9 to 260	1	1.5	67	2 to 372
Leukaemia	5	3.2	156	51 to 363	1	2.0	51	1 to 284

1. Standardised mortality ratio—a ratio of 100 indicates that the age-standardised mortality rate for the rural and remote communities is the same as that for all of Queensland. If the 95% confidence interval does not include 100, then the age-standardised mortality rate for the communities is statistically significantly different from the Queensland average.
2. One-sided, 97.5% confidence interval

Statistically significant results are bolded

**Table 5: SIRs<sup>1</sup> and SMRs<sup>2</sup> for smoking related cancers other than lung cancer, (i.e., cancer of the oral cavity, pharynx, larynx and oesophagus)**

	<i>Incidence</i>			
	<i>Reported No.</i>	<i>Expected No.</i>	<i>SIR<sup>1</sup></i>	<i>95% confidence interval</i>
Males	22	10.7	205.0	128.5 to 310.4
Females	4	3.1	130.2	35.4 to 333.4

	<i>Mortality</i>			
	<i>Reported No.</i>	<i>Expected No.</i>	<i>SMR<sup>2</sup></i>	<i>95% confidence interval</i>
Males	19	4.7	401.8	241.9 to 627.5
Females	2	1.2	163.3	19.8 to 590.0

1. Standardised incidence ratio—a ratio of 100 indicates that the age-standardised incidence rate for rural and remote communities is the same as that for all of Queensland. If the 95% confidence interval does not include 100, then the age-standardised incidence rate for rural and remote communities is statistically significantly different from the Queensland average.
2. Standardised mortality ratio—a ratio of 100 indicates that the age-standardised mortality rate for rural and remote communities is the same as that for all of Queensland. If the 95% confidence interval does not include 100, then the age-standardised mortality rate for rural and remote communities is statistically significantly different from the Queensland average.

### *Cancers with low rates*

Rates for melanoma and cancer of the prostate, colon and rectum were statistically significantly lower than the Queensland average (Tables 3 and 4).

### **Implications for cancer control**

Cancers with high incidence and mortality among Indigenous people who live in rural and remote Indigenous communities are potentially amenable to preventive measures.

### *Cervical cancer*

Cervical cancer is considered to be one of the most preventable of all cancers. With regular biennial screening with Pap smears, up to 90% of the most common form of this cancer can be prevented. Further, the majority of deaths from cervical cancer occur in women who have never been screened, or who have been under-screened<sup>10</sup>.

The National Performance Indicators and Targets for Aboriginal and Torres Strait Islander Health aim for a 50% reduction over ten years in deaths from cervical cancer<sup>11</sup>. Identified barriers to Indigenous women accessing screening services for cervical cancer include<sup>12</sup>:

- a lack of knowledge about the screening process
- a fear of pain which might be experienced when having a Pap smear
- feelings of shame and embarrassment when having a Pap smear
- preference for a female provider (for screening, follow-up and treatment services)
- not having available, an Indigenous woman to take the Pap smear when preferred

- a fear about lack of confidentiality
- the fear of having an abnormality detected

Queensland Health is finalising a cervical cancer prevention and control strategy for Indigenous women to address issues relating to screening and follow-up services. This five-year strategy will focus on community education activities; screening and follow-up service provision; training and workforce development; monitoring and evaluation; and the role of men in women's cancer support<sup>13</sup>.

The instigation of a prevention and control strategy for Indigenous women does not detract from the many examples of successful programs and services in Queensland which have demonstrable outputs in terms of high screening rates. In some localities in the Cape York Peninsula for example, screening rates are exceptionally high, due in most cases to the presence of long-standing and well-accepted female service providers and well-developed linkages with local primary health care services and visiting specialist services.

### *Lung and other smoking related cancers*

Smoking is a significant cause of preventable illness among Indigenous people. Besides causing lung cancer and being a major risk factor for several other cancers, smoking is a risk factor for ischaemic heart disease, stroke, peripheral vascular disease, chronic obstructive pulmonary disease and various complications of pregnancy. Both the National Health Survey (NHS)<sup>15</sup> and the National Aboriginal & Torres Strait Islander Survey (NATSIS)<sup>16</sup> found a high prevalence of smoking among Indigenous adults. Among adults surveyed in the NHS, some 56% of

Indigenous males and 46% of Indigenous females said they currently smoked, compared with 27% of non-Indigenous males and 20% of non-Indigenous females<sup>15</sup>. These results are consistent with those from the NATSIS.

The National Indigenous Health Goals and Targets aimed for a 25% reduction in smoking prevalence in 10 years (2007). The *National Aboriginal Health Strategy* has identified the need for funding culturally appropriate anti-smoking campaigns for the Indigenous communities. Studies conducted by Indigenous organisations also stress the need to recognise factors such as lack of employment and alternative leisure time facilities as well as for communities to be involved in developing solutions. It is also recognised that young Indigenous people are a particularly important group in terms of prevention. Some non-government and community organisations have been funded to produce materials which aim to promote awareness among Indigenous children of the health effects of smoking.

### Breast cancer

During 1997/98, 46% of Indigenous women aged 50-69 years in Queensland participated in breast-screening services. With the establishment of a relocatable service that travels to the far north of the State, the participation rate of Indigenous women in breast screening services in Queensland will increase.

Factors identified in recent research in Queensland as related to low rates of breast cancer screening include a low level of awareness of the risks of breast cancer and a belief that cancer equates with death. Many Indigenous women, particularly those residing in more traditional areas regard breast cancer as a "white woman's disease". A specifically designed re-locatable BreastScreen Queensland service has been established in Far North Queensland. This service will provide access to breast cancer screening for Indigenous women who live in rural and remote communities.

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