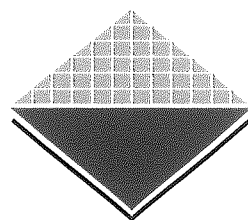
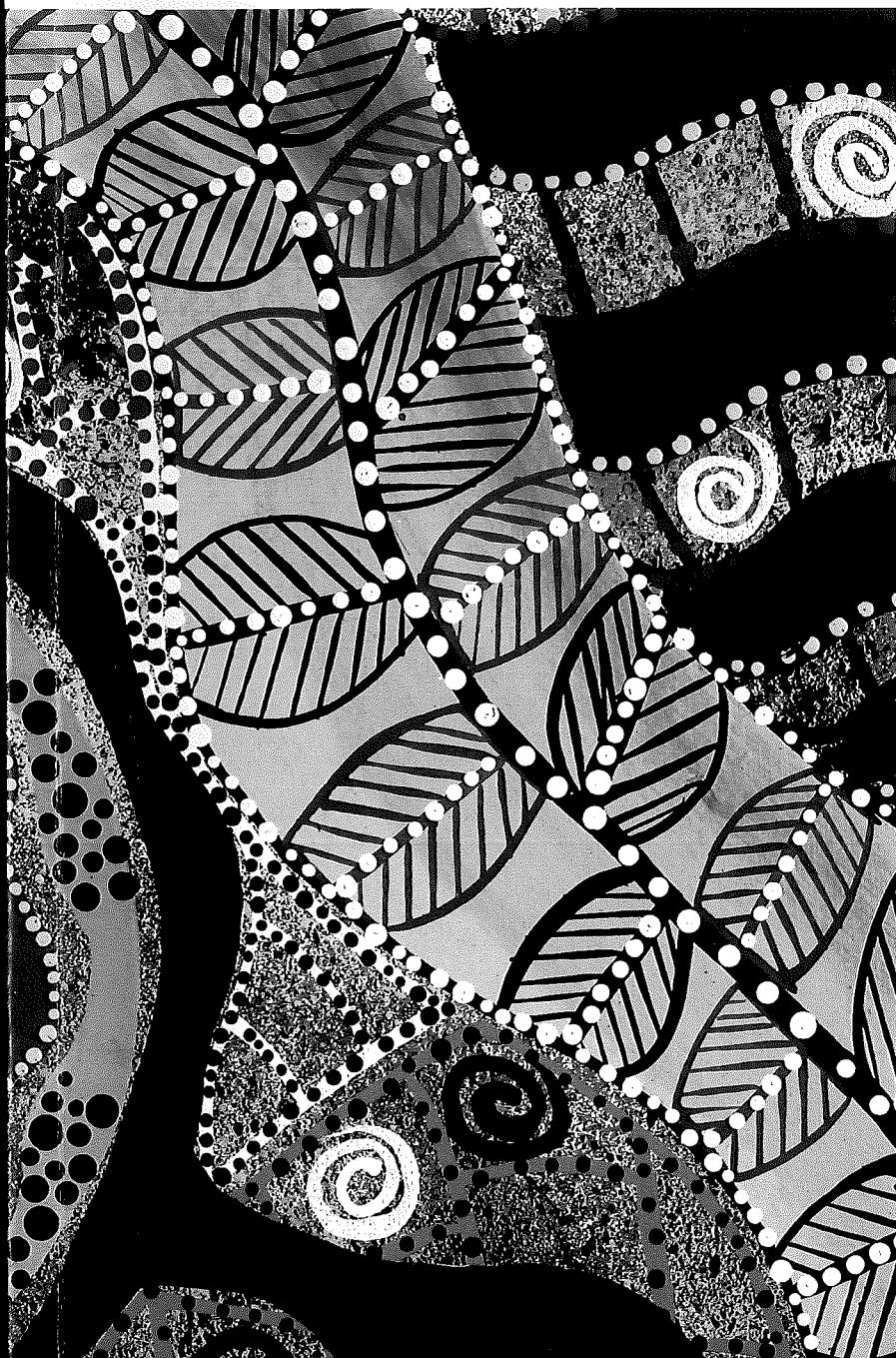


Aboriginal & Torres Strait Islander Health Information Bulletin



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Aboriginal and Torres Strait Islander Health Information Bulletin

Editor: Kuldeep Bhatia

Aims and scope

The purpose of the *Aboriginal and Torres Strait Islander Health Information Bulletin* is to improve access to health-related information about the Indigenous populations of Australia. In addition, it provides background information and timely reviews on current issues. The Bulletin is aimed at both Aboriginal and non-Aboriginal health administrators, doctors, health workers, nursing staff, dentists, social workers, educators, researchers and other professionals in the field.

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Preface

This issue of the *Aboriginal and Torres Strait Islander Health Information Bulletin* brings together information on the health and welfare of the Indigenous populations of Australia from several different aspects. Important new information on aged care services used by Aboriginal and Torres Strait Islander peoples is provided by Anne Jenkins. Graham Henderson and co-researchers demonstrate a relationship between an environmental variable and transmission of hepatitis A. Other issues covered include Sudden Infant Death Syndrome (SIDS), trends in Aboriginal fertility and geographical inequalities in health status.

The editorial by Louisa Alessandri and her colleagues provides a timely reminder about the high rates of SIDS in Aboriginal infants. At present, very little is known about the prevalence of postnatal SIDS risk factors such as prone sleeping, maternal smoking and non-breastfeeding in Aboriginal communities; information on infant care practices in Aboriginal families is also scanty. The Institute for Child Health Research in Western Australia, where the authors of this editorial are based, is taking a lead role in delineating the role of various risk factors contributing to SIDS among Aboriginal infants and is also documenting maternal and infant care practices in Aboriginal communities.

Some of the contributors to this issue of the Bulletin raise concern about the poor quality of Aboriginal and Torres Strait Islander health-related data. Tetteh Dugbaza discusses the limitations experienced in determining trends in Aboriginal fertility, particularly the indeterminate contribution made by non-Aboriginal women to Aboriginal fertility rates. The indirect approach taken by Colin Mathers to determine mortality differentials in North Australia is also necessitated by the tardy efforts made to introduce Aboriginal identifiers in the vital statistics collections. The ingenuity shown by these researchers to glean useful information from poor quality data must be commended.

This issue of the Bulletin also marks the beginning of a new era in Aboriginal and Torres Strait Islander health and welfare statistics. Increased resources made available by the Department of Human Services and Health have not only allowed the Australian Institute of Health and Welfare to increase its efforts for improving Aboriginal and Torres Strait Islander health and welfare information base but also relocate its Aboriginal and Torres Strait Islander Health Unit to Darwin. It is expected that the new arrangements will lead to increased participation by Aboriginal and Torres Strait Islander peoples in the collection, analysis and dissemination of much needed health and welfare statistics on the Indigenous populations.

As in previous issues, selected highlights from the recent Australian Institute of Health and Welfare publications have been included. Summaries of Aboriginal sections of health reports from Western Australia, Victoria, South Australia and the Northern Territory are also included. An update on the National Aboriginal Health Strategy, following its evaluation in 1994, is provided. The excerpts included in these sections are from materials that are either in public domain or were provided by Commonwealth, State or Territory agencies to the Bulletin for wider dissemination among Aboriginal and Torres Strait Islander health workers and researchers in the field.

It has been our endeavour at the Australian Institute of Health and Welfare to make available a whole range of information on Aboriginal and Torres Strait health and welfare through this publication. I trust readers will find the materials included in this issue of the Bulletin informative and useful.

Kuldeep Bhatia

Invited editorial

Sudden infant death syndrome in Aboriginal infants

By Louisa Alessandri, Sandra Eades and Anne Read*

Even though sudden infant death syndrome (SIDS) is the major cause of death in Aboriginal infants, it has only recently been highlighted as an important area for research. In Western Australia, the availability of an excellent database for maternal and child health research (Stanley et al. 1994) has allowed us to conduct epidemiological studies of SIDS. During the 1980s in Western Australia the SIDS rate for Aboriginal infants (6.2 per 1,000 live births) was between three and four times that for non-Aboriginal infants (1.7 per 1,000 live births) (Alessandri et al. 1994). Over this period there was a significant linear increase in the Aboriginal SIDS rate while the non-Aboriginal rate remained relatively constant. In the latter half of 1991, the SIDS prevention campaign, where parents were informed about the recognised risk factors of prone sleeping, maternal smoking, overheating and non-breastfeeding, was commenced in Western Australia and at a similar time nationally. Since that time, the SIDS rate for non-Aboriginal infants has decreased dramatically even though we still do not understand the aetiology of the condition; for Western Australia infants born in 1992-93, the rate has fallen to 0.7 per 1,000 live births. In the same time period, the SIDS rate for Aboriginal infants was 4.6 per 1,000 live births. Thus, since the campaign, the disparity between the SIDS rate in Aboriginal and non-Aboriginal infants has increased markedly with the Aboriginal SIDS rate being between six and seven times that for non-Aboriginal infants (Alessandri et al. unpublished data).

A report from the Northern Territory has similarly found a high SIDS rate in Aboriginal infants; the Aboriginal rate for the years 1991-93 was 7.6 per 1,000 live births, compared with 0.4 per 1,000 live births for non-Aboriginal infants (Ruben & Wheaton 1993). Thus, the Aboriginal SIDS rate was dramatically higher (19 times) than the non-Aboriginal rate and more than six times higher than the national SIDS rate (Ruben & Wheaton 1993). Other Indigenous populations, such as Native American Indians and Alaskans in the United States and Maoris in New Zealand, have also been reported as having high SIDS rates when compared with the corresponding White or non-Indigenous populations (Adams 1985; Tomkins 1986; Kleinman 1990; Mitchell et al. 1991, 1992; Irwin et al. 1992; Oyen et al. 1994).

One possible explanation for the high SIDS rate in the Aboriginal population and the significant increase observed during the 1980s could have been misclassification or diagnostic transfer of these deaths. However, a pathology review of sudden and unexpected death in infancy in Western Australia from 1980 to 1988 inclusive indicated that there was no evidence of diagnostic shift among these Aboriginal deaths (Alessandri et al. in press).

* Louisa Alessandri, Sandra Eades and Anne Read are based at the Institute for Child Health Research, Perth WA.

Our descriptive research, using routinely collected data, showed some interesting epidemiological differences between Aboriginal and non-Aboriginal infants. Aboriginal infants tended to die from SIDS at a younger age than non-Aboriginal infants, with 21% of the Aboriginal deaths occurring neonatally compared with only 7% for non-Aboriginal infants (Alessandri et al. 1994). Similarly, in the Northern Territory 19% of SIDS deaths in Aboriginal infants occurred in the neonatal period (Ruben & Wheaton 1993). This contrasts with the situation in other populations where less than 10% of SIDS deaths occur neonatally (Peterson et al. 1979; Goldberg et al. 1986; Centers for Disease Control 1992).

We also found from our descriptive work that there was no excess of male deaths in the Aboriginal population and the majority of Aboriginal infants died in Autumn rather than in Winter. In addition, while young maternal age and single marital status were shown to be significant risk factors for non-Aboriginal infants, this did not appear to be so for Aboriginal infants (Alessandri et al. 1994). Similar to our findings, there was not the expected preponderance of male infants dying from SIDS reported for the Aboriginal population in the Northern Territory (Ruben & Wheaton 1993). Other Indigenous populations, such as Native Alaskan and American Indians, and Maori infants, have also shown a lack of association between SIDS and male infant sex (Kraus & Borhani 1972; Adams 1985; Borman et al. 1988; Irwin et al. 1992; Oyen et al. 1994). In addition, a study comparing SIDS in the Native Alaskan and White populations, reported similar results to ours concerning young maternal age and single marital status (Adams 1985). Another study investigating SIDS in Native American Indians and Whites also showed that young maternal age was a significant risk factor for the White population but not for Native Indians (Oyen et al. 1994). These studies were all descriptive, using only univariate analyses and not adjusting results for the influence of other variables.

In contrast to our descriptive work, we have recently conducted a case-control study of SIDS in Aboriginal infants where we used multivariate analyses. In this study we found that SIDS in Aboriginal infants was strongly associated with young maternal age and high parity (Alessandri et al. unpublished data). Infants who were small in terms of birthweight for their gestational age were also at high risk of SIDS. Thus, the results imply that young Aboriginal mothers and Aboriginal mothers with more than three children are important groups in terms of SIDS prevention. The underlying reasons for these risks are unknown, but there may be differences in maternal behaviour according to age and parity. It is important that these differences are documented prior to any intervention.

In a second case-control study we investigated the possible reasons for the marked disparity between the Aboriginal and non-Aboriginal SIDS rates. Results showed that this disparity was largely due to the higher prevalence of SIDS risk factors in the Aboriginal population (Alessandri et al. unpublished data). Similar findings have been reported for Native American Indians in the United States (Irwin et al. 1992) and Maoris in New Zealand (Mitchell et al. 1993).

All of our above research has been based upon routinely collected data and consequently information concerning the recognised postnatal risk factors of prone sleeping, maternal smoking and non-breastfeeding was unavailable. As the SIDS prevention campaign centres around these factors, it is important to collect information about their prevalence in Aboriginal communities. At present, very little is known about infant care practices in Aboriginal families and how these might differ between communities. Hence, we do not know if the recognised postnatal risk factors are associated with SIDS in Aboriginal infants. To address this lack of information, we have commenced research in collaboration with Aboriginal communities in Western Australia specifically to document maternal and infant care practices. These practices should provide further clues to these tragic deaths in Aboriginal infants, enabling the

development of an appropriate intervention campaign. They may also further explain some of the differences in SIDS rates between the Aboriginal and non-Aboriginal populations.

The authors wish to acknowledge the support and assistance of Professor Fiona Stanley throughout this research and in the preparation of this editorial.

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NAHS update

National Aboriginal Health Strategy Evaluation 1994

Evaluation of the National Aboriginal Health Strategy was an important element in the Commonwealth Government's decisions, announced in the 1995-96 Budget, to upgrade its efforts to improve the health care available to Indigenous Australians. This commentary, based on a document provided by the Commonwealth Office for Aboriginal and Torres Strait Islander Health Services, provides background information about the development of a National Aboriginal Health Strategy, the steps taken by the Commonwealth Government to implement the strategy, and the conclusions of a major evaluation of the Strategy which was conducted in 1994.

Editor

Introduction

In December 1987, the Commonwealth, State and Territory Ministers for Health and Aboriginal Affairs agreed to establish a Working Party to develop a national strategy on Aboriginal health. The Working Party was chaired by Ms Naomi Mayers from the National Aboriginal Community Controlled Health Organisation (NACCHO), and consisted of key stakeholders in Aboriginal health including community representatives and officials from Commonwealth, State and Territory health departments.

In its report to Ministers in March 1989, the Working Party described the state of Aboriginal health as the worst of any identifiable group in Australia. It set out a conceptual framework and a broad strategy for improving health status. The key concept underlying the report was Aboriginal people's holistic view of health involving not just individual physical wellbeing but the social, emotional, and cultural wellbeing of the whole community.

Aboriginal community control and participation in health services was strongly advocated as a means of promoting community responsibility and understanding, and ensuring that the provision of primary health care was socially and culturally appropriate. The Working Party also commented on the importance of environmental health facilities, e.g. safe and adequate water supply, improved numbers and design of houses, shelter, dust control and other factors which are vital to sustain improvements in Aboriginal health and wellbeing.

The recommendations in the Working Party report were aimed at Commonwealth, State and Territory governments, and community organisations in three broad areas:

Improving health services

- minimum standards and increased and more secure funding for Commonwealth-funded Aboriginal health services, and the transfer of State- and Territory-provided services to community control; and
- improved availability of State- and Territory-administered secondary and specialist health services, including steps to make them more culturally acceptable with community involvement in design and negotiations.

Improving essential services and community infrastructure

- joint assessments of essential services and infrastructure needs in Aboriginal communities, out-stations and settlements, to ensure that Aboriginal people have standards of essential services and living acceptable to them; and
- adequate funding for appropriate and adequate sewerage and water supply systems to remote Aboriginal communities, as identified in the joint assessments of essential services and infrastructure needs.

Improving education, training and employment in Aboriginal health

- training and education of community personnel in aspects of hygiene, sewerage disposal and water supplies, and maintenance and repair work; development of adequate training resources for Aboriginal Health Workers, uniform standards of accreditation, secure employment and opportunities for professional development for these workers;
- training and education of other service providers such as teachers, police and corrective services staff, who were seen to have a major impact on Aboriginal health;
- compulsory study of Aboriginal culture, history and health issues in formal course work for undergraduate and postgraduate medical, nursing and paramedical courses; and
- introduction of culturally appropriate postgraduate and continuing education programs for health professionals.

The Working Party also made detailed recommendations regarding health services in the Torres Strait Islands, women's health, alcohol and other substance abuse, and research, monitoring and evaluation.

In order to implement the overall strategy, the Working Party recommended important structural arrangements, specifically:

- a Council of Aboriginal Health, as a standing Committee to both the Australian Health Ministers' Conference and the Australian Aboriginal Affairs Council, consisting of community representatives and officials;
- tripartite forums similar to the Council of Aboriginal Health in each State and Territory; and
- an Office of Aboriginal Health within the Commonwealth Aboriginal Affairs portfolio.

The Working Party proposed that the Council of Aboriginal Health review progress towards the implementation of the National Aboriginal Health Strategy, paying specific attention to intersectoral collaboration. The Working Party also proposed that the Council oversight the development of a national database of Aboriginal Health statistics.

The Working Party recognised the need for a national Aboriginal community-controlled health organisation, that it be funded, and that it be formally involved in the structural arrangements for implementing the strategy.

Implementation of the National Aboriginal Health Strategy

Commonwealth, State and Territory Ministers for Health and Aboriginal Affairs established an Aboriginal Health Development Group to assess the National Aboriginal Health Strategy report and to advise on implementation. The Development Group, which reported in December 1989, broadly endorsed the Working Party recommendations.

Significantly, the Development Group recommended that a high priority be given to environmental health aimed at bringing Aboriginal and Torres Strait Islander communities to a

standard comparable with the general Australian community. This would include the provision of basic services such as housing, clean water and safe waste disposal, roads, power and communications, and that appropriate resources for an environmental health program to match that commitment.

At the same time, the Commonwealth Minister for Aboriginal Affairs appointed an Aboriginal Advisory Group which provided the Commonwealth Minister with an Aboriginal community perspective on the Development Group's report. Those views were not considered by the Joint Ministerial Forum.

The Health Development Group broadly endorsed the Working Party report recommendations with proposals for expanded membership, and a stronger policy and strategic development role for the Council of Aboriginal Health.

The Joint Ministerial Forum of Commonwealth, State and Territory Ministers for Health and Aboriginal Affairs was held in Brisbane in June 1990. At that meeting, Ministers accepted all 21 of the Development Group's recommendations, including the strengthening of the role of the Council of Aboriginal Health as proposed by the Aboriginal Advisory Group. Those recommendations were much broader and substantially less in number than those in the original Working Party report.

In December 1990, the Commonwealth Government endorsed the objective of 'gaining equity in access to health services and facilities for Aboriginal and Torres Strait Islander peoples by the year 2001', and allocated funds of up to \$232 million over five years, the majority of which would be allocated for improvements to housing and essential services. Specific funding was allocated to:

- establish an Office of Aboriginal Health within the Aboriginal and Torres Strait Islander Commission;
- provide new community-controlled Aboriginal health services and upgrade existing services;
- increase effort by the Australian Institute of Health and Welfare on Aboriginal and Torres Strait Islander health statistics;
- increase effort in projects targeted at Aboriginal and Torres Strait Islander peoples through the National Campaign Against Drug Abuse; and
- negotiate on strategies for the education, training and employment of Aboriginal people in health-related occupations.

The decision to allocate funds for these purposes was made on the basis that Commonwealth funding would be spent in such a way so that outcomes and performance indicators could be measured. At the same time, the Commonwealth Government decided to pursue negotiations with State and Territory governments to secure a broadly matching financial commitment.

The funding approved in December 1990 was allocated as given in Table 1. The majority of this additional funding was allocated to housing and essential services, recognising the importance of addressing the living environment to improve health outcomes, and recognising that many Aboriginals and Torres Strait Islanders are either homeless or living in housing stress.

Following a progress report in December 1991, the Commonwealth Government confirmed the additional funding which had been decided in December 1990, and agreed to an interim set of National Aboriginal and Torres Strait Islander Health Goals and Targets as an initial set of outcomes for the National Aboriginal Health Strategy. These Goals and Targets were also to serve as the basis for further negotiations with State, Territory and local governments,

Table 1: *National Aboriginal Health Strategy funding, 1990-95*

Program	Amount (\$ million)					Total
	1990-91	1991-92	1992-93	1993-94	1994-95	
ATSIC Health Program	6.57	9.09	9.98	10.43	10.48	46.95
ATSIC Community Housing and Infrastructure Program	2.10	18.00	33.00	58.00	60.00	171.10
ATSIC running costs	0.34	1.12	1.33	1.73	1.78	6.30
Commonwealth Health Portfolio	1.43	1.51	1.58	1.66	1.72	7.90
Total	10.44	29.72	45.89	71.82	74.38	232.25

Aboriginal community-controlled health services and through the Council of Aboriginal Health, for final consultation by the Australian Aboriginal Affairs Council/Health Ministers' Conference.

At that stage, negotiations had been held with the States and Territories concerning their financial commitments. However, there was no further progress in securing agreements regarding the State and Territory responsibilities determined and endorsed at the Joint Ministerial Forum.

In the 1994-95 Budget, the Commonwealth Government allocated further funding for Aboriginal housing and essential services, and health services. The additional funding was allocated to programs administered by the Aboriginal and Torres Strait Islander Commission, as shown in Table 2.

Table 2: *Additional Funding, 1994-99*

Program	Amount (\$ million)					Total
	1994-95	1995-96	1996-97	1997-98	1998-99	
ATSIC Health Program	25.1	36.9	38.1	39.2	22.5	161.8
ATSIC Community Housing and Infrastructure Program	15.0	77.1	79.4	81.8	84.2	337.5
Total	40.1	114.0	117.5	121.0	106.7	499.3

National Aboriginal Health Strategy (NAHS) Evaluation Committee

In mid 1994, an Evaluation Committee was established to:

- assess the effectiveness of the Commonwealth Government's response to the National Aboriginal Health Strategy, particularly through improvements in the provision of services for primary health care and services affecting environmental health, in improving health outcomes for Aboriginal and Torres Strait Islander peoples; and
- make recommendations regarding future implementation in order to maximise prospects for improved health outcomes for Aboriginal and Torres Strait Islander peoples.

In doing so, the Committee was asked to address:

- key issues involved in improving Aboriginal and Torres Strait Islander health outcomes;
- priorities for the provision of primary health care services;
- priorities for the provision of services impacting on environmental health;
- administrative arrangements, including the respective roles of Commonwealth, State and local government agencies, and community organisations;
- financial arrangements within the context of total Commonwealth and State funding of primary health care and environmental health;
- the allocation of funding between primary health care services and services affecting environmental health; and
- monitoring and evaluation mechanisms for programs and projects.

The emphasis of the evaluation was to be on assessing the Commonwealth Government's response to the National Aboriginal Health Strategy and making recommendations about future implementation. This was on the basis that State and Territory governments would be asked to review their own activities in response to the Strategy, and to provide appropriate information to the Evaluation Committee.

The Committee provided its report in December 1994. An overview of the Evaluation Committee's findings and recommendations is set out in the Introduction and Executive Summary sections of its report. The Committee's major findings were:

1. The National Aboriginal Health Strategy (NAHS) was never effectively implemented.
2. All governments have grossly under-funded NAHS initiatives in remote and rural areas if the objective of environmental equity by the year 2001 is to be attained.
3. There has been a lack of accountability for implementation of the June 1990 NAHS Joint Ministerial resolutions and inadequate program management information where Commonwealth NAHS funds have been applied.
4. ATSIC has been a convenient scapegoat for inaction and the failure of governments to deliver.
5. The National Council of Aboriginal Health which was established to oversee implementation of NAHS lacked political support from Commonwealth, State and Territory Ministers, and ATSIC.
6. However, there have been some encouraging recent developments in line with NAHS taken by a number of governments.
7. If the Commonwealth Government wants to achieve environmental equity by the year 2001, there will need to be substantial increases in funding for housing and essential services in remote and rural regions in Australia, including the Torres Strait, over the remainder of the decade.
8. If the Commonwealth Government responds by making provision for extra funding, priorities could be quickly established in a spirit of cooperation between the major players.
9. The provision of housing and essential services should be accompanied by strategies for improved maintenance of facilities and appropriate education, including health services and promotion, to equip individuals to achieve a lifestyle and level of economic stability which permits healthy choices.

10. Local community involvement and participation as espoused in NAHS is critical not only to improving quality-of-life, but also to the attainment of an experience of health and length of life to be expected in a technologically advanced nation.
11. Public health providers need to create meaningful coalitions with Aboriginal and Torres Strait Islanders so that communities and individuals can make informed choices regarding health.
12. Health providers need to be focused on outcomes and health gains, and not the process of health care organisation and financing.
13. The Commonwealth Government objective of 'gaining equity in access for Aboriginal and Torres Strait Islander peoples to health services and facilities by the year 2001'—if taken to include 'environmental health facilities' (e.g. housing and essential services)—is unattainable at both current and projected levels of funding.
14. Health statistics show that Aboriginal and Torres Strait Islander peoples are so far behind the rest of the Australian community, that equity considerations demand national large scale affirmative action programs in environmental health.

The Committee also made a series of recommendations, including:

1. That the Commonwealth Government reaffirm its commitment to the principles underlying NAHS including:
 - acceptance of Aboriginal people's holistic view of health;
 - recognition of the importance of local Aboriginal community control and participation; and
 - intersectoral collaboration.
2. That the achievement of equity, by which is meant equal access to equal care appropriate to need in comparison with non-Aboriginal Australia remains a major goal.
3. That there be a partnership in pursuit of this goal between the Commonwealth, State and Territory governments, ATSIC, and NACCHO at the national, state, territory and regional levels.
4. That a human-rights-based approach to funding be adopted with major increases for all aspects of Aboriginal health to achieve comparable standards with that of average non-Aboriginal Australia. As much as \$2 billion would be needed in funding just to meet the backlog in housing and essential services in remote and rural communities in Australia, including Torres Strait.
5. That the Commonwealth Government take a leadership position for all Australians by declaring its resolve to achieve health gains.

The Committee offered several organisational options to create incentives for partnership between the key parties within a strategic public health framework envisaged by the NAHS Working Party. The Committee felt that whatever organisational framework is adopted it should be supported by significant additional funds and improved program performance management. The commitment by governments should ensure cooperation and overcome non-productive debate where governments blame each other for failing to cooperate in the delivery of basic services while Aboriginal and Torres Strait Islander peoples get too little, too late.

Future arrangements recommended include:

- a workable expert National Council for Aboriginal Health involving Commonwealth, State and Territory governments, ATSIC, and NACCHO to provide policy advice at the national level and oversee the implementation and development of NAHS;
- agreement between the Commonwealth, State and Territory governments to achieve a common needs assessment and resource allocation process agreement involving ATSIC and relevant Aboriginal organisations including NACCHO at the State, Territory and regional levels instead of continuing to operate independently of each other; and
- partnership between State and Territory health providers and Aboriginal Health Services to achieve an integrated approach to health services delivery to Aboriginal people at the local and regional levels.

The Committee noted very little effort or progress towards bilateral agreements concerning Aboriginal Health as endorsed by the Council of Australian Governments in its 'National Commitment to Improved Outcomes in the Delivery of Programs and Services for Aboriginal Peoples and Torres Strait Islanders' in December 1992. Accordingly, the Committee recommended that:

- the allocation of any additional Commonwealth Aboriginal health funds to State and Territory governments be made contingent upon bilateral agreements developed with the Commonwealth Government;
- bilateral agreements should:
 - delineate roles and responsibilities of Commonwealth and State/Territory government agencies and cooperative funding arrangements;
 - specify objectives, outcomes, monitoring and evaluation mechanisms;
 - be developed in full consultation with ATSIC, NACCHO and other relevant Aboriginal and Torres Strait Islander organisations; and
- involve local government participation where appropriate, especially concerning the delivery of essential services.

The Committee also supported the development of a national plan through to the year 2001 to ensure a strategic approach to implementation and a framework for measuring the impact of interventions, recognising that improvements in access to health services and facilities will take much longer to translate into improved health status.

It was envisaged that the plan should include a statement of national goals for housing and essential services development and redevelopment which will see the majority of Aboriginal and Torres Strait Islander peoples living in healthy environments by the year 2001.

The Committee considered it critical that program performance management be improved and closely monitored to ensure public accountability and transparency so that all governments, as well as government and non-government agencies, fulfil their responsibilities. Outcomes measures were also sought to be designed to demonstrate that what is done meets identified needs and assesses the impact of the national effort.

Aboriginal and Torres Strait Islander health-related statistics

Selected highlights from Australian Institute of Health and Welfare publications

The Australian Institute of Health and Welfare, and its external units, regularly provide statistical updates on the health status of Australians, including Aboriginal and Torres Strait Islander peoples. To make this information more widely available to workers in the field, selected highlights from the recent publications of the Institute are presented. Where possible, original summaries have been retained with slight modifications. The publications described below are available from Australian Government Publishing Service bookshops in all capital cities, or by writing to the Publications Officer, Australian Institute of Health and Welfare, GPO Box 570, Canberra City, ACT 2601.

Editor

Australian Health Trends 1995

This report provides an update on trends in Australian health in a format that informs the community. A series of indicators, developed by the Australian Institute of Health and Welfare to monitor national health and to identify potential areas of concern, have been used to report on trends in health status, risk factors and health service use. Trends in Aboriginal mortality, cardiovascular disease and population numbers are also reported, although the available data were limited in quality and range.

All-causes mortality

- Death rates for all causes among Aboriginal and Torres Strait Islander peoples remained relatively stable between 1988 and 1993. In the same period, there was a 12% decline in death rates for all causes in the total Australian population.
- Aboriginal death rates greatly exceed the corresponding total Australian rates at all ages. The largest differences occur in the middle age groups (25-54 years), particularly among males. These differences were reflected in lower Aboriginal life expectancies. In the period 1990-92, Aboriginal life expectancy was estimated to be between 16 and 18 years shorter than that for the total Australian population.
- Aboriginal people are not always identified on death certificates, particularly in NSW and Victoria, where identification is estimated at about 60%. Estimates of death rates provided in the report therefore may have been considerably underestimated.

Infant mortality

- The infant mortality rate for Aboriginal people varies substantially between regions. Reasonably accurate information is available for Western Australia and the Northern Territory. In 1992, the Aboriginal infant mortality rates were 22.0 and 31.5 deaths per 1,000

live births for Western Australia and the Northern Territory respectively, about 3–4 times higher than those for all Australians combined.

- Between 1982 and 1992, Aboriginal infant mortality rates have remained relatively stable. Although some fall in neonatal death rates was noted (death in the first four weeks of life), but a rise in post neonatal deaths (death after the first four weeks but before the end of the first year of life) has contributed to this lack of decline in Aboriginal infant mortality rate.

Chronic diseases

- Cardiovascular diseases are the leading cause of death among Aboriginal and Torres Strait Islander peoples. However, these diseases account for a lower proportion of deaths than in the non-Aboriginal population due to the greater relative importance of other causes of death.
- Between 1988 and 1993, Aboriginal death rates for cardiovascular diseases fell slightly among males, but remained fairly constant among females. These trends compare unfavourably with consistent declines noted in death rates for these diseases in the Australian population as a whole.
- Cardiovascular diseases include coronary heart disease, stroke and rheumatic heart disease. The major risk factors for the Aboriginal population are the same as for the general population which include cigarette smoking, raised blood cholesterol and triglyceride levels, raised blood pressure, obesity, physical inactivity, and diabetes.
- The much higher prevalence of diabetes in the Aboriginal population (possibly as high as 15–20% in some communities) compared with the non-Aboriginal population (2–3%) is also of considerable public health importance.

Population size

- Between 1985 and 1993, the Aboriginal and Torres Strait Islander population grew by 17.7%, or an average 2.5% per year. In the same period, the total Australian population increased by 11.8%, or an average 1.4% per year. Some of this population increase is likely to be due to an increased willingness on the part of Aboriginal or Torres Strait Islander individuals to identify themselves as such.
- The Aboriginal population is fairly young when compared with the non-Aboriginal population. In 1993, just under 50% were under 20 years of age, whereas only 2.5% were aged 65 years or over. In the non-Aboriginal population, 29.0% were under 20 years and 11.7% were aged 65 years or over.
- The spatial distribution of the Aboriginal population is quite different from that of the non-Aboriginal population. Only 28% of the Aboriginal population live in capital cities, with easy access to all mainstream health services. One in five Aboriginal people and Torres Strait Islanders reside in remote rural settings, away from centres with basic health facilities.

Cervical Cancer in Australia 1982

There are large differences in the incidence of cervical cancer between Aboriginal and non-Aboriginal women, and its contribution to premature mortality. These differences have been attributed to a general lack of awareness of preventive behaviour, poor screening, late presentation of cervical cancers and their precursors, and the lack of adequate medical services and personnel, particularly in rural areas. The report indicates that:

- Cervical cancer was the most common cancer in Aboriginal women in the Northern Territory (1981–85), accounting for 19% of all new cases. In 1979–83, the death rate from

cervical cancer among Northern Territory Aboriginal women was more than six times the death rate among all Australian women.

- In Western Australia, not only was the death rate for cervical cancer among Aboriginal women nearly seven times the rate for all women resident in the State (1986–90), but the incidence was also over five times the rate for the non-Aboriginal population.
- Lower screening rates among Aboriginal women almost certainly contribute significantly to these high mortality rates, although their lower socioeconomic status, genetic susceptibility and various environmental factors may also play a part.
- The increased risk of cervical cancer in Aboriginal women parallels the pattern seen among Native American women. Cervical cancer represents 18% of all new cancers in Amerindian women, ranking as the most common cancer. Native American women also tend to present late with more advanced disease—and consequently have poorer survival rates—leading to mortality rates twice that of the White population.

Australia's Mothers and Babies 1992

This report contains national data on births in Australia, based on notifications to the groups responsible for the perinatal data collection in each State and Territory in 1992. The report also contains national data on trends in perinatal deaths and information on survival of infants in selected hospitals that have neonatal intensive care units.

Information on Aboriginal mothers and babies is also provided. Relevant highlights are:

- In 1992, 7,329 babies were born to 7,257 Aboriginal women (2.9% of all confinements). Regions with the largest number of Aboriginal mothers were Queensland (2,316), New South Wales (1,428), Western Australia (1,418) and the Northern Territory (1,243).
- Aboriginal mothers accounted for 34.7% of all confinements in the Northern Territory; the proportion of Aboriginal mothers was also high in Western Australia (5.9%) and Queensland (5.1%).
- Aboriginal mothers tend to have babies at younger ages. In 1992, their average age was 23.7 years compared with 28.1 years for all confinements. More than a quarter of all Aboriginal mothers were teenagers (1,879); one out of 50 Aboriginal mothers was 16 years or younger at the time of confinement.
- The proportion of teenage mothers was slightly higher in the Northern Territory than in the other States and the Australian Capital Territory.
- Aboriginal mothers also have had on average more babies than non-Aboriginal mothers. For 44% of Aboriginal mothers, the 1992 confinement was for their third or higher parity. Comparable parity was noted for 27% of non-Aboriginal mothers.
- Aboriginal mothers had a lower twinning rate (0.9% of all confinements) than non-Aboriginal mothers (1.3% of all confinements), due mainly to their younger age distribution.
- The caesarean rate of 17.2% for all Aboriginal mothers was slightly less than the national caesarean rate of 18.3%. However, in the Northern Territory the caesarean rate for Aboriginal mothers was higher than for all births.
- The mean birthweight of Aboriginal infants was 3,150 g, 206 g less than the national average for all births. The proportion of low birthweight babies of Aboriginal mothers was 12.5%, double the proportion noted in all infants (6.3%). Much higher proportions of low birthweight babies were born to mothers in the Northern Territory (17.0%) and South

Australia (16.4%). Very low birthweight was particularly common among South Australian babies of Aboriginal mothers.

- Aboriginal infants were either likely to be discharged relatively early from hospital or were more likely to have stays of two weeks or more. This is consistent with the preference of Aboriginal mothers for early discharge from the hospital but for the much larger proportion of high risk, low birthweight infants.

Non-English-speaking Background and Indigenous Status: Identification in National Health and Welfare Data Collections

This information paper summarises the identification of non-English-speaking background (and ethnicity-related variables) and Indigenous status in national health and welfare data collections. The paper also provides information on current standards in defining, identifying and classifying non-English-speaking background and Indigenous status.

A major conclusion of the paper is that there is an urgent need to improve the identification of Indigenous peoples in all national and State health and welfare data collections by developing and implementing practicable and reliable methods of identification, and including analyses by Indigenous status in statistical reports. The mortality data collections and hospital inpatient data collections are two collections in which improvement in the identification of Aboriginal and Torres Strait Islander peoples is considered to be of particular urgency. There is also a need to improve methods for accurately estimating the size and sociodemographic composition of the Indigenous population.

Tobacco Use and its Health Impact in Australia

This information paper summarises the health effects of tobacco use and describes patterns and trends in tobacco use, and tobacco related disease, in Australia. It also provides estimates of the cost of tobacco-related disease to the Australian community. The material in the paper was assembled from Institute publications and from studies undertaken by other researchers.

The report highlights the following facts:

- In 1994, 54% and 46% of Aboriginal and Torres Strait Islander males and females, respectively, aged 13 years and over were current cigarette smokers.
- The prevalence of smoking among Aboriginal and Torres Strait Islander peoples is much higher than among non-Aboriginals.
- In Western Australia in 1989–91, Aboriginal people had higher rates of death from tobacco-related disease, particularly coronary heart disease, lung cancer and chronic bronchitis, than non-Aboriginal people. Rates of hospitalisation for tobacco-related coronary heart disease and chronic bronchitis were also higher among Aboriginal people.

Risk Factors for Cardiovascular Disease: A Summary of Australian Data

This report brings together existing Australian data on major risk factors for cardiovascular disease, and identifies gaps and deficiencies in current knowledge and measurement of risk factors.

Studies included in the report indicate that Aboriginal people have higher prevalence rates of smoking, high blood pressure, obesity, and harmful alcohol consumption than non-Aboriginal people.

The report also highlights the need for developing mechanisms that allow for the identification and analysis of risk factor levels and behaviour among Aboriginal and Torres Strait Islander peoples. This includes the development of risk factor behaviour questionnaires that are appropriate for Indigenous peoples.

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Summaries of recent health reports from the States and the Northern Territory

A wide range of regional information on Aboriginal and Torres Strait Islander health is reported by the State and Territory health authorities. To make this information widely available to Aboriginal health workers and researchers in the field, relevant excerpts from some of the recent publications are included. These excerpts provide a composite picture of the state of Aboriginal and Torres Strait Islander health; no attempt is made to synthesise this information to generate a national picture.

Editor

Victoria

Health Indicators: Some Baseline Measures of Health Status and Health Services in Victoria

Information on various aspects of the health of the Victorian population on a State and regional/Aboriginal basis is provided using two broad sets of health indicators.

- Aboriginal people in Victoria have much shorter life expectancy than their non-Aboriginal counterparts. No reliable estimate of this gap in life expectancy is however possible due to poor recording of Aboriginality on death certificates.
- More than 13,000 public hospital separations per 100,000 Aboriginal residents in the State were reported in 1991; the rate rose to over 15,000 separations per 100,000 in 1992. This 15% increase in the rate of Aboriginal admissions to public hospitals within an year is not an indicator of worsening Aboriginal health but of improved reporting.
- Efforts are now under way to improve Aboriginal identification in the mortality data collection of the State. Improved enumeration of Aboriginal hospital admissions is also anticipated following the introduction of mandatory identification and reporting of Aboriginality to Victorian Inpatient Minimum Database.
- Estimates of Aboriginal life expectancy and identified Aboriginal hospital separation rate given in the report are not intended to describe the health status of Aboriginal people in Victoria (or their use of health service), but to help monitor the quality and comprehensiveness of Aboriginal identification in health data collections.

Northern Territory

Northern Territory Health Outcomes: Morbidity and Mortality, 1979-1991

This report documents trends and patterns in Aboriginal and non-Aboriginal mortality in the Northern Territory over a 13-year period (1979-91). Information on the state of maternal and child health, notifiable communicable diseases, (for the period 1979-91) and hospital separations (for the period 1979-88, excluding 1981) is also presented.

Mortality

- During 1979–91, there were 4,483 Aboriginal deaths in the Northern Territory (more than 54% of all deaths) with crude death rates of 1,125 deaths per 100,000 Aboriginal males and 817 deaths per 100,000 Aboriginal females. Comparable rates for the non-Aboriginal population were 380 deaths per 100,000 males and 172 deaths per 100,000 females.
- Circulatory and respiratory diseases, and injury and poisoning are major causes of Aboriginal male mortality in the Northern Territory. Neoplasms are the third largest contributor to Aboriginal female mortality.
- The gap between Aboriginal and all-Australian mortality rates has widened lately. Although the age-standardised mortality rate decreased over the 13-year period from 2,000 to 1,800 deaths per 100,000 Aboriginal males, this decline failed to keep pace with overall mortality rate reductions in Australian males. But the Aboriginal female mortality rates in the Northern Territory increased from 1,200 to 1,500 deaths per 100,000 during this period, which has further widened the gap between the Aboriginal and all-Australian female mortality rates.

Hospitalisation

- There were 83,156 Aboriginal hospital separations during 1979–88 (excluding 1981), constituting 33.6% of all hospital separations in the Northern Territory. The crude hospital separation rates for Aboriginal males and females were respectively 21,043 and 27,308 per 100,000 persons respectively. These rates were significantly lower in the non-Aboriginal population of the Territory.
- Causes of excess hospitalisation for Aboriginal males included respiratory, infectious and parasitic diseases, and injuries. Infectious diseases were the leading cause of hospitalisation among Aboriginal females.
- Age-standardised hospital separation rates increased for both Aboriginal males and females during the period 1979–88. The hospital separation rate for Aboriginal males increased from 21,000 to 27,000 per 100,000 during the nine-year period; the increase in the hospital separation rate for Aboriginal females was from 26,000 to 32,000 per 100,000. These increases in hospital separation rates have been attributed to improved Aboriginal access to hospital services.
- The differential between the Aboriginal and non-Aboriginal hospital separation rates is much smaller than the differential between their mortality rates. There is yet much unmet need for hospital-based care; recent increases in Aboriginal hospital separation rates may reflect the operation of a 'catching up' phenomenon.

Health disadvantage

- All Territorians (non-Aboriginal as well as Aboriginal) suffer a health disadvantage in comparison to the rest of the country. This disadvantage, however, is much more acute for Aboriginal people irrespective of their age, sex and cause of disease.

Western Australia

The Impact of Tobacco Smoking and Alcohol Consumption on Aboriginal Mortality and Hospitalisation: 1983–91

The aetiological fraction method was used to estimate the numbers of Aboriginal deaths and hospital admissions attributable to tobacco and alcohol use in Western Australia.

Mortality

- For the period 1983–91, 390 Aboriginal deaths were attributed to tobacco smoking (13.2% of all Aboriginal deaths); an additional 283 Aboriginal deaths (9.6% of all Aboriginal deaths) were considered to be due to alcohol overuse. Both substances accounted for more deaths among Aboriginal males than Aboriginal females.
- Age-standardised rate ratios (Aboriginal: non-Aboriginal) for deaths caused by tobacco smoking were 2.4 and 3.7 times for males and females respectively. The relative rate ratios for deaths attributable to alcohol misuse were 5.2 and 3.7 respectively.
- Ischaemic heart disease was the leading cause of tobacco-smoking-related deaths among Aboriginals. This contrasts with the pattern observed in the non-Aboriginal population; lung cancer is the leading cause of tobacco-smoking-related deaths in that population.

Hospitalisation

- Tobacco smoking was estimated to be responsible for 2,036 Aboriginal male admissions in Western Australia (an age-standardised rate of 2,037 hospital admissions per 100,000 males, 2.6 times the rate noted among non-Aboriginal males). The Aboriginal: non-Aboriginal rate ratio for hospital admission of females attributed to tobacco use was 4.7.
- The Aboriginal: non-Aboriginal rate ratios for hospitalisation due to alcohol use were much higher, 9.3 times and 12.8 times in males and females respectively. The highest ratios for alcohol-related hospital admissions were in the age groups 35–54 years (males) and 15–34 years (females).

The Impact of Tobacco and Alcohol on Aboriginal Mortality and Hospitalisation, WA, 1989–91

This report compares the impact of smoking and drinking on Aboriginal and non-Aboriginal mortality and hospital admissions in Western Australia during 1989–91. The estimates of numbers of deaths and hospital admissions—obtained by using the aetiological fraction method—are based on deaths registration data compiled by the Western Australian Registrar General's Office (and the Australian Bureau of Statistics) and hospitalisation information derived from the Western Australian Hospital Morbidity Data System.

Mortality

- Tobacco smoking was responsible for 145 Aboriginal deaths (13.9% of all Aboriginal deaths) in Western Australia during 1989–91; alcohol accounted for an additional 96 deaths (9.2% of all Aboriginal deaths) during this period.
- The three most frequent specific causes of Aboriginal deaths attributed to tobacco use were ischaemic heart disease, lung cancer and chronic bronchitis. Road injuries were the most common cause of death ascribed to alcohol use among Aboriginal males.

- Although the proportion of Aboriginal deaths resulting from tobacco use was slightly smaller than the proportion noted in the total population of Western Australia (13.9% compared to 15.4%), the age-standardised death rate for tobacco use among Aboriginal males was 2.4 times the rate for non-Aboriginal males (271 deaths compared to 113 deaths per 100,000 persons). The rate ratio was much higher for Aboriginal females (3.7 times the age-standardised rate for non-Aboriginal females).
- For alcohol-related deaths, the age-standardised death rates for Aboriginal males was 5.2 times higher than the rate for non-Aboriginal males; the rate ratio was slightly lower for Aboriginal females.

Hospitalisation

- Tobacco smoking was responsible for 1,359 admissions (1.9% of all Aboriginal hospitalisations) in 1989–91; alcohol consumption was responsible for an additional 3,467 admissions (2.4% of all Aboriginal hospitalisations). The proportion of all Aboriginal bed days attributed to tobacco use was slightly higher.
- Age-standardised, Aboriginal hospitalisations due to tobacco use were 2.6 times higher in males and 4.7 times higher in females when compared to non-Aboriginal males and females respectively.

Our State of Health, 1995: An Overview of the Health of the Western Australian Population

This overview of the health status of Western Australian populations (both Aboriginal and non-Aboriginal) is based on 1993 data, but in some cases 1992 data have been used to provide a comprehensive picture.

Population and social indicators

- Aboriginal people, with an estimated total of 46,492 persons, constituted 2.8% of the total population of Western Australia in 1993. Thirty-nine per cent of the Aboriginal population was 14 years or younger in 1993; the proportion of those aged 60 years or older was less than 5%. Comparable figures for the State's total population were 22% and 14% respectively.
- About 27% of Aboriginals live in the Perth metropolitan area. In contrast, almost 73% of the State's total population resides in the Perth metropolitan area. A strong correlation was also noted in the proportion of Aboriginal population and socioeconomic index of disadvantage by regional health authority.

Fertility and pregnancy outcome

- Aboriginal women in Western Australia have a much higher total fertility rate (3.2 births per woman) in comparison to the rate for the total female population of the State (1.8 births per woman).
- Aboriginal women confined in 1993 were of higher parity than non-Aboriginal women; the proportion of Aboriginal women with three or more previous pregnancies was three times the proportion noted among non-Aboriginal women. Also in 1993 less than three-tenths (28.7%) of Aboriginal women were nulliparous (in comparison to 39.3% of non-Aboriginal women).
- Complications during pregnancy were relatively more common among Aboriginal women. Urinary tract infection was the most common complication, followed by premature rupture

of membranes. Pregnancy-induced hypertension—the most common complication observed among non-Aboriginal women—and anaemia also contributed significantly to medical complications among Aboriginal women.

- The average birthweight for Aboriginal babies (3,133 g) was 235 g lighter than babies born to non-Aboriginal women (3,367 g). A much larger proportion of Aboriginal babies (12.4%) had low birthweight (less than 2,500 g) in comparison to non-Aboriginal babies (5.8%). Extremely low birthweight was also four times more frequent among Aboriginal babies.
- Congenital anomalies among Aboriginal babies (37.5 per 1,000 births) were reported less often than among non-Aboriginal babies (44.2 per 1,000 births). This difference could be partly attributed to differences in notification rates between metropolitan and non-metropolitan areas of the State.

Mortality

- Of the 1,762 Aboriginal deaths in Western Australia during the period 1989–93, 1,013 were male and 749 female. The age-standardised rates for Aboriginal males (1,546 deaths per 100,000) and Aboriginal females (1,106 deaths per 100,000) were respectively 2.9 and 3.4 times higher than the rates obtained for non-Aboriginal males and females.
- Circulatory, respiratory and digestive diseases, neoplasms and injuries were the five major contributors to Aboriginal deaths. Much higher standardised mortality ratios were noted for respiratory and digestive diseases (rate ratios of four and above). Deaths from circulatory diseases and injuries also occurred significantly more often among Aboriginals.
- Age-specific death rates revealed a compacting of Aboriginal mortality in the age bracket 25–44 years. Rate ratios of between 10 and 20 were noted for circulatory diseases in this age bracket. Deaths from injuries were also significantly more common among Aboriginal young adults than in their non-Aboriginal counterparts.
- Significant inter-regional variation in Aboriginal mortality was noted. Aboriginal women living in the areas covered by South Metropolitan and North Metropolitan Health Authorities had significantly lower death rates than those living in the Central Health Authority area. The lowest Aboriginal death rates on the other hand were noted in South Metropolitan and Western Health Authority areas; Aboriginal males living in the area covered by Central Health Authority had the highest death rates.
- Aboriginal deaths (1989–93) accounted for 11.5% of all the person-years of life lost in Western Australia; this compares unfavourably with their representation in the population (2.7%).
- The Aboriginal life expectancies for both sexes (57.2 years for males; 63.2 years for females) were around 18 years lower than those obtained for non-Aboriginals.
- Regional variation in Aboriginal mortality rates is reflected in life expectancies. Much lower life expectancies were obtained for Aboriginals living in the area covered by the Central Health Authority (47.4 years for males; 55.8 years for females). These life expectancies are between 27 and 30 years lower than the values obtained for non-Aboriginals living in the North Metropolitan Health Authority area.
- Post-neonatal death rates (deaths between 28 days and one year) were 5.6 times higher for Aboriginal than non-Aboriginal babies. Fetal, neonatal and perinatal death rates were also between 2.1 to 3.5 times higher in the Aboriginal newborns.

Hospitalisation

- In 1993, the age-standardised hospital admission rate for Aboriginals (593 per 1,000 population) was more than double the rate for non-Aboriginals (223 per 1,000 population); the admission rate for Aboriginal males (544 per 1,000) was much lower than the rate for Aboriginal females (644 per 1,000).
- The leading causes of hospitalisation for Aboriginals were diseases of the respiratory system, injury and poisoning, and diseases of the genitourinary system, each at around four times the rate for non-Aboriginals. The rate of admission involving a procedure, particularly for cardiovascular problems, was also significantly higher for Aboriginals.

Cancer

- The incidence rates for cancer during 1988–92 were lower for Aboriginal males than non-Aboriginal males, but higher for Aboriginal females than non-Aboriginal females.
- Lung was the most common site for Aboriginals diagnosed with cancer, with colorectal cancer the second most frequent site. Cancer of the cervix was the most common cancer diagnosed in Aboriginal females, with an age-standardised rate more than four times the rate noted for non-Aboriginal females.

Infectious diseases

- Notification rates for communicable diseases, both STD and non-STD, were much higher for Aboriginals than for non-Aboriginals. Gonorrhoea and syphilis notification rates were around 100 times higher for Aboriginals. Gastrointestinal infections (giardiasis, salmonella, shigellosis and campylobacter) and hepatitis B were more frequent non-STD infections among Aboriginals.

Mental health

- The rate of new Aboriginal contacts with mental health services during 1988–92 (ASR 835) was nearly two times the rate noted for non-Aboriginals (ASR 480). Most of the Aboriginal new contacts were adults, the rate of new contacts for Aboriginal children being lower than the rate for non-Aboriginal children.
- The rate of new contacts for alcohol and drug abuse among Aboriginals was more than eight times the rate for non-Aboriginals. The rates of new Aboriginal contacts were also higher for injuries and some of the organic psychotic disorders. However, contacts for childhood disorders were much less common among Aboriginals.

South Australia***Pregnancy Outcome in South Australia 1994***

This report summarises the 1994 statistics from the Perinatal Statistics and Abortion Statistics collections of the Pregnancy Outcome Unit of the South Australian Health Commission. Comparative information on pregnancy characteristics and outcomes for both Aboriginal and non-Aboriginal women is provided.

- There were 399 notified births to 393 Aboriginal women in the State during 1994 (about 2% of the total confinements). Aboriginal mothers had a much higher parity—more than 12% of mothers were para 4 or greater—with 20% of Aboriginal mothers primigravida (in comparison to 31% among Caucasian women and 34% among Asian women).

- One out of five Aboriginal mothers were teenagers in comparison to one out of 20 non-Aboriginal mothers. Also the proportion of Aboriginal mothers in the age bracket 35 years and above was much smaller, almost one-third the proportion noted among non-Aboriginal mothers.
- Four out of 10 Aboriginal mothers had limited antenatal care. (Among Caucasian women, this proportion was less than 10%.) More than one-third of Aboriginal mothers also had a medical condition (anaemia, diabetes etc.) in comparison to 20% of non-Aboriginal mothers with a medical condition.
- A large proportion of Aboriginal babies (16%) were born after less than 37 weeks of gestation, two and a half times the proportion observed among non-Aboriginal babies. Aboriginal newborns were also low birthweight much more often than non-Aboriginal newborns (15% compared with 6%).
- The perinatal mortality for Aboriginal newborns was more than three times the rate for non-Aboriginal newborns (35.1 compared to 9.3 per 1,000 births).

Maternal, Perinatal and Infant Mortality in South Australia 1994

This ninth report of the Maternal, Perinatal and Infant Mortality Committee of South Australia expresses concern regarding maternal and perinatal deaths in the Aboriginal population of the State.

Aboriginal women comprised only 2% of all confinements but accounted for three out of six direct maternal deaths (50%) in the State during the last nine years. There were 14 Aboriginal perinatal deaths in 1994; no post-neonatal death of Aboriginal babies was however registered.

The Aboriginal perinatal mortality rate of 35.1 per 1,000 births was three times higher than the rate for non-Aboriginal newborns. It was noted that ten out of fourteen Aboriginal perinatal deaths (71.4%) occurred to babies of mothers who had not received regular antenatal care; this proportion was six times the proportion noted in non-Aboriginal perinatal deaths.

The Aboriginal infant mortality rate in 1994 was 10.3 per 1,000 live births, the lowest rate recorded in the last six years. However, even this low rate was more than twice the rate for babies of non-Aboriginal mothers (4.8 per 1,000 live births).

Dreaming Beyond 2000: Our Future is in Our History. South Australian Aboriginal Health Policy and Strategic Framework

This document is the product of a policy and planning project initiated and auspiced by the Aboriginal Health Council of Australia Inc. It was developed in consultation with all South Aboriginal community controlled primary health care services and, in later stages, with input from the South Australian Health Commission and key informants from the broader health sector.

The document provides a comprehensive background to the development of the strategic framework for improving Aboriginal health, in its historical as well as cultural context, and describes the vision, aims, implementation approaches and priority areas as set out in the South Australian Aboriginal Health Policy statement. Located within this strategic framework are goals, objectives, interim targets and strategies for improving Aboriginal health in South Australia. An evaluation schedule to monitor the outcomes of various interventions is also proposed.

Five inter-related health goal areas, each with its own cross-referenced objectives and targets, are spelled out in the document. These are:

- The health status of the South Australian Aboriginal Community will be raised to at least the level experienced by the general community.
- Aboriginal communities will develop environments which support and improve health and wellbeing.
- The health system will strengthen its ability and capacity to respond to the health needs of Aboriginal communities.
- The Aboriginal sector will strengthen its skills and resources to promote and sustain the health and wellbeing of Aboriginal communities.
- Specific population groups within Aboriginal communities will experience improved health and wellbeing.

The document captures the importance of the creative process of the Dreaming to contribute to the current and future health and wellbeing of Aboriginal citizens of South Australia, with 'Health For All By The Year 2000' a worthwhile aim.

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Transfer of Aboriginal and Torres Strait Islander Health Unit to Darwin

By Joan Cunningham and Tony Barnes*

In early 1995, the Australian Institute of Health and Welfare and the Department of Human Services and Health signed an Agreement whereby the Department (in conjunction with ATSIC) will provide substantial additional funding over the next two years to improve the collection, analysis and dissemination of national statistics relating to the health and welfare of Indigenous peoples in Australia and to provide training and development opportunities for Indigenous peoples in the collection, management and use of health and welfare data.

In June of 1995, the Institute reached an agreement with the Australian Bureau of Statistics (ABS) to contract it to carry out this work by creating an Aboriginal and Torres Strait Islander Health and Welfare Information Unit within its National Centre for Aboriginal and Torres Strait Islander Statistics in Darwin. This new Unit is a joint effort of the Institute and the Australian Bureau of Statistics. The Institute will transfer its own funding for Aboriginal and Torres Strait Islander health information, as well as the additional funding provided by the Department of Human Services and Health, to ABS with a two-year commitment in the first instance, and a review of the program expected to take place at the beginning of 1997.

The expansion and relocation of the Unit reflects the very high priority given to Aboriginal and Torres Strait Islander health information by the National Health Information Forum in 1994. The transfer was made possible by the Act governing the operations of the Institute, which allows the Institute to enlist the assistance of the Australian Bureau of Statistics in the collection of health statistics.

The arguments presented for the move to Darwin centred around the Bureau's National Centre for Aboriginal and Torres Strait Islander Statistics being able to offer a 'critical mass' of expertise and interest in information and statistics on Aboriginal and Torres Strait Islander peoples.

The location of the Centre in Darwin also offers easier access to a wide range of relevant data and a greater opportunity to consult with and involve Aboriginal and Torres Strait Islander peoples in the area of health and welfare statistical collection and reporting. It was also suggested that location in Darwin might allow for easier recruitment of Aboriginal and Torres Strait Islander peoples to substantial and training positions within the Unit.

Staffing of the Unit is expected to be largely complete by the end of January 1996. Broad management of the Unit will be provided by the Director of the National Centre for Aboriginal and Torres Strait Islander Statistics. An epidemiologist has already joined the Unit and will oversee the work program which will be undertaken by five project officers and an Aboriginal Undergraduate Cadet. The Unit will share with the Centre the resources of the Director for Operations, a Client Liaison Officer, and an administrative support position. It is also intended to employ an Indigenous trainee health statistician, if a suitable candidate can be identified. Other ways of providing statistical training and/or experience for Indigenous peoples are being explored. All positions have been identified as ones which require a demonstrated ability to

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communicate effectively with Aboriginal and Torres Strait Islander peoples and have an understanding of their cultures.

The Director of the Institute and the Australian Statistician receive advice on the work program, future directions, and training activities of the Unit from a nine-member advisory committee. This committee includes representatives from the Aboriginal and Torres Strait Islander Commission (ATSIC), the National Aboriginal Community-Controlled Health Organisation (NACCHO), the Commonwealth Department of Human Services and Health, the Torres Strait Regional Authority, the Australian Health Ministers Advisory Council (AHMAC), the ABS, and the Institute. There are also two independent experts in the field of Aboriginal health. The Committee has already met twice and plans to meet at least two times per year.

The work program planned for the next two years includes analysis and reporting of national mortality trends and of health and housing information from the National Aboriginal and Torres Strait Islander Survey. An assessment of procedures used in the collection of data from Indigenous peoples and a review of the quality of identification of Indigenous status in various health and welfare collections will also be undertaken. An investigation of the health information needs of organisations such as State and Territory Health Departments, Aboriginal Medical Services and other health providers is also planned. Beginning in early 1997, a biennial publication on Aboriginal and Torres Strait Islander health information and statistics will be produced, and the Unit will contribute to the Australian Institute of Health and Welfare's biennial reports *Australia's Health* and *Australia's Welfare*.

It is recognised that the Unit can not and should not be the only group producing health and welfare statistics about Aboriginal and Torres Strait Islander peoples. One of the Unit's main roles will be to provide leadership and to encourage other organisations to improve the quality and completeness of health and welfare information about Indigenous peoples in Australia. The Unit is well-placed to act as a facilitator among various organisations and individuals active in this area, and collaboration and cooperation are strongly encouraged.

Those interested in the work of the Unit or the Centre can be put on the mailing list by writing to:

NCATSIS
Australian Bureau of Statistics
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Original articles

Mortality differentials between urban, rural and remote populations in North Australia¹

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Summary

Australian Bureau of Statistics' mortality data for Australia for the years 1990–92 have been used, together with population estimates from the 1991 Census, to compare the mortality experience of urban, rural and remote populations in North Australia with that of the total Australian population. Statistical local areas in remote regions of North Australia where more than 50% of the population identified as Aboriginal or Torres Strait Islander in the 1991 Census have been identified as a regional category called remote Aboriginal areas.

Standardised mortality ratios are higher overall for North Australia than the rest of Australia. Compared with the total Australian population, people living in remote Aboriginal areas have substantially higher death rates overall (three times higher for males and four times higher for females); and dramatically higher death rates for a wide range of specific causes of death such as infectious and parasitic diseases (up to 22 times higher), cancer of the cervix (almost 12 times higher), diabetes (17 times higher for females), respiratory diseases (12 times higher for females), diseases of the genitourinary system (up to 17 times higher) and homicide (15 times higher for males).

Over the past two decades, there has been a significant improvement in some aspects of the health of Aboriginal and Torres Strait Islander peoples, but not in life expectancy, as mortality rates of adults have not improved. To improve Aboriginal mortality rates will require improved coordination and delivery of health and basic infrastructure services, as well as substantial efforts to eliminate the effects of socioeconomic disadvantage, unemployment, poor housing and social alienation.

Introduction

Australia is one of the healthiest countries in the world and the health of Australians continues to improve, according to available health measures (Australian Institute of Health and Welfare 1994). At the same time, Australian health expenditure has been stable at around 8% of gross domestic product for the last 15 years. Nevertheless, there are health problems and population groups, particularly socioeconomically

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disadvantaged groups, where there are wide disparities in health and substantial room for improvements (Mathers 1994 a, b, 1995a). However, standing out from all other disadvantaged population groups are Aboriginal and Torres Strait Islander peoples, who continue to suffer substantially higher mortality rates and much worse health status than any other Australian population group (Benham & Howe 1994).

Australia's Indigenous peoples have life expectancies and patterns of health more comparable to those of fourth world countries than the developed countries of Asia (see Discussion below). Over the past two decades, there has been a significant improvement in many aspects of the health of Aboriginal and Torres Strait Islander peoples. Higher life expectancy, reduced infant mortality and a lower burden of infectious and parasitic diseases are all evidence of this improvement. However, as reflected in rates of hospitalisation, maternal mortality and disability, and in continuing high mortality in adults, the burden of disease in Aboriginals continues to be higher than in non-Aboriginal Australians, and differentials are not narrowing. This burden is likely to continue until effects on Aboriginal health of social and economic factors such as unemployment, poor housing and discrimination can be eliminated.

Previous estimates of Aboriginal and Torres Strait Islander mortality rates have generally been based on numbers of deaths identified as Aboriginal or Torres Strait Islander on the death registration form. There is provision for Aboriginal and Torres Strait Islander identification on death certificates in all States and Territories apart from Queensland. However, the completeness of identification is only considered to be adequate (above 90% of Aboriginal and Torres Strait Islander deaths so identified) in South Australia, Western Australia and the Northern Territory (Benham & Howe 1994). It is thus not yet possible to estimate the mortality of Aboriginal and Torres Strait Islander peoples from death registration data at the national level or for quasi-national regions such as 'remote' Aboriginals or Indigenous peoples living in North Australia.

This paper uses information on the place of usual residence of deceased persons to contrast the mortality experience of Australians living in regions of North Australia with that of all Australians. North Australia is defined, as shown in Figure 1, in terms of Statistical Divisions and Subdivisions defined in the Australia Standard Geographical Classification (Australian Bureau of Statistics 1993). This approach provides a picture of mortality differentials between the total populations living in regions of North Australia with that of the total Australian population. While it does not specifically identify the Aboriginal and Torres Strait Islander populations in each region, the overall mortality rates of the populations in the remote regions are dominated by the high mortality rates of Indigenous people. The mortality patterns presented below provide a stark profile of the health conditions experienced by the Indigenous population in the north of Australia.

Data sources and methods

Definition of regions in North Australia

North Australia is divided into a number of regional categories defined in terms of the Statistical Local Area (SLA) of place of usual residence at time of death. The categories used were developed by Birrell and Rapson (in preparation) and are defined as follows:

Cities The cities classification includes groups of SLAs which form part of, or neighbour, urban centres with populations of 80,000 or more. Darwin is included in this class on

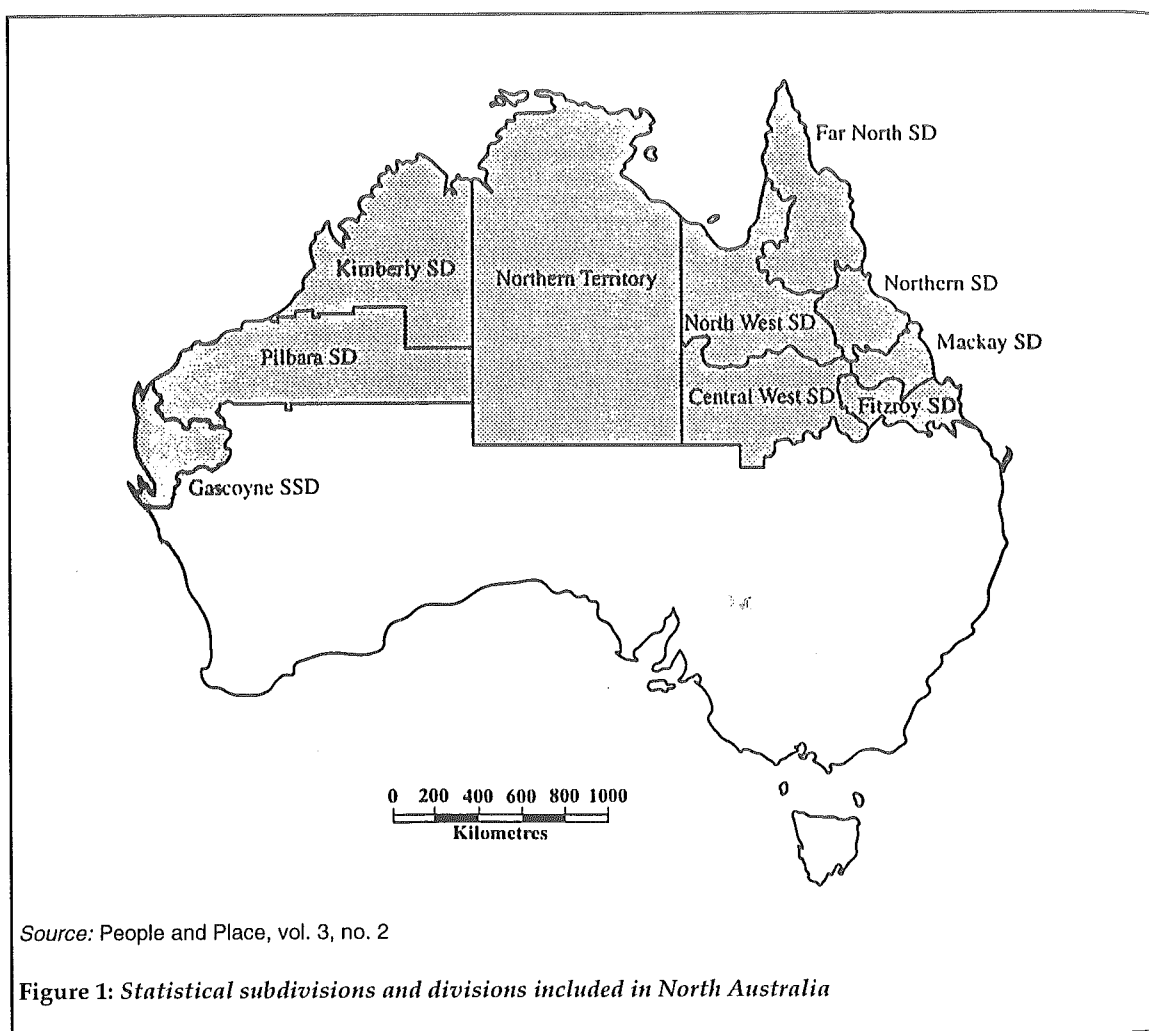
its capital city role in spite of its urban centre only having a population of 67,946. The only other 'city' in North Australia is Townsville (including Thuringowa).

Rural The remaining SLAs are designated rural or remote, the prime determinant of rural being more intensive land use. Other characteristics such as population density are also associated with the delineation between rural and remote. Rural SLAs are further divided into rural centres (SLAs with urban centres of 10,000 or more) and other rural areas.

Remote Remote SLAs with an urban centre of 5,000 people or more have been nominated as remote centres. Other remote SLAs where more than 50% of the population were Aboriginal in the 1991 Census are designated as remote Aboriginal areas. The remaining remote SLAs are named as other remote areas.

Data sources

Registration of deaths in Australia is the responsibility of the State and Territory Registrars of Births, Deaths and Marriages. Information on the cause of death is supplied by the medical practitioner certifying the death or by a coroner. Other information about the deceased is



supplied by a relative or other person acquainted with the deceased, or by an official of the institution where the death occurred. Registration of death is a legal requirement in Australia, and compliance is virtually complete.

The information is provided by the Registrars to ABS for coding of information and compilation into national statistics. The data analysed in this paper were derived from the registration data coded by ABS and provided to the Australian Institute of Health and Welfare by the State and Territory Registrars.

Mortality data analysed below relate to deaths registered in the three calendar years 1990, 1991 and 1992. These deaths were classified into the regions defined above according to the SLA of usual residence (of the deceased person) coded on the death certificate. As the regional classification system is based on 1991 SLA boundaries, deaths occurring in 1990 and 1992 in SLAs not compatible with those existing in 1991 were reclassified into the equivalent 1991 SLAs.

The estimated resident populations living in these regions in 1991 were derived from tabulations of estimated resident population by SLA of usual place of residence based on the 1991 Census of Population and Housing and provided by the Australian Bureau of Statistics.

Methods

Standardised mortality ratios (SMRs) for each region were calculated using a technique known as indirect age standardisation. This provides an estimate of the number of deaths expected in the various regions if the populations in those regions experienced the same age-specific death rates as the total Australian population. The ratio of the number of deaths observed to the number expected is known as the standardised mortality ratio (SMR).

SMRs were calculated for total deaths (from all causes) and for deaths due to specific groups of causes using categories based on the Chapters and disease groups specified in the International Classification of Diseases, Ninth Revision (World Health Organisation 1977), referred to below as ICD-9.

It was possible to determine an SLA of usual residence suitable for determining a regional category for all except 114 deaths (0.4%), all of which were either 'offshore and migratory' or 'no fixed place of residence'. The 'usual residence' population estimates indicated that approximately 5% of the population had not been assigned to any SLA. This varied from State to State with the Northern Territory showing the largest percentage of the population not assigned to an SLA (8%). As there is no rationale for determining how the underestimate is distributed across SLA, gender and age, no correction was applied. The rates presented in this paper are therefore slightly higher than those calculated on a national or State basis where full population enumeration is available.

Place of usual residence in the Census is self reported, while for deaths it is determined from the address recorded on the death registration form (usually by a funeral director, or in the case of injury deaths, sometimes by coronial investigators). It is therefore possible that there has been differential recording of place of usual residence in the two data sets. The size or nature of this differential is not known but is not likely to be large.

Interpretation of data

Despite the fact that these data represent population measures and therefore do not suffer sampling variability, rate differences between some areas must be treated with caution. Where cause-specific rates are based on small numbers of deaths, they may be disturbed significantly by a cluster of deaths, such as that created by a multiple fatality vehicle collision or by the nature of underlying random processes. Care should be taken when drawing conclusions about

differences between regions in North Australia with relatively low populations or for causes resulting in small numbers of deaths.

Results

Population

The total population of North Australia (as shown in Figure 1) was an estimated 939,910 persons or 5.4% of the total Australian population (see Table 1). Nearly 74% of the population of North Australia was resident in Queensland, and just over 12% of the population of North Australia identified as Aboriginal or Torres Strait Islander (see Table 2).

Table 1: Estimated resident population in each region, North Australia, 1991

	Cities		Rural		Remote		
	Darwin	Townsville	Centres	Other	Centres	Other	Aboriginal*
Males	55,090	59,364	112,805	124,062	63,912	49,047	23,413
Females	49,399	56,796	111,697	113,453	56,898	41,908	22,066
Total	104,489	116,160	224,502	237,515	120,810	90,955	45,479

* Remote Aboriginal areas.

Table 2: Estimated resident population, Aboriginal and Torres Strait Islander and total, by State and Territory, North Australia 1991

Population	State/Territory			
	Qld	WA	NT	Total
Aboriginal and Torres Strait Islander	53,400	18,100	43,300	114,800
Total population	694,200	80,200	165,500	939,900

Total mortality rates

Tables 3 and 4 show the standardised mortality ratios (SMRs) for males and females in the regions of North Australia. These ratios, also shown in Figure 2, show how the deaths observed in 1990-92 compare with those which would be expected if the region experienced the average mortality rate at each age of the total Australian population of the relevant sex. Thus for example, the male population resident in the remote Aboriginal areas experienced 3.09 times as many deaths as they would have if they enjoyed the same risk of death at each age as the total male population of Australia.

It is apparent from Tables 3 and 4 that, overall, the populations of 'Darwin' and 'Other Rural' areas experience mortality rates similar to those of the total Australian population. The SMRs for Townsville and rural centres were generally 5-10% higher than the national average, whereas those for remote areas were substantially elevated.

Table 3: Mortality differentials (standardised mortality ratios) by cause of death among males resident in North Australia, 1990-92

Cause of death	Cities		Rural		Remote		Aboriginal*
	Darwin	Townsville	Centres	Other	Centres	Other	
Infectious & parasitic diseases	1.52	0.14	0.93	1.05	3.20	3.79	17.77
Cancers	0.88	1.02	1.12	0.99	1.25	1.09	1.18
Mental disorders	0.76	0.87	1.11	0.76	2.06	1.09	4.38
Diseases of the nervous system & sense organs	0.81	1.45	0.96	0.87	1.85	1.65	1.85
Diabetes mellitus	1.38	0.64	0.95	1.23	2.19	2.17	7.60
Circulatory system diseases	0.79	1.03	1.10	0.99	1.21	1.33	2.60
Respiratory system diseases	1.51	1.16	1.12	1.05	2.46	1.91	7.93
Digestive system diseases	1.77	1.10	1.26	1.11	1.23	1.76	2.99
Genitourinary system diseases	1.89	1.20	1.37	1.19	2.96	1.80	9.10
Congenital anomalies	1.32	1.27	1.01	0.80	0.86	1.60	1.13
Perinatal conditions	0.82	1.01	1.33	0.83	1.19	2.46	3.68
Injury and poisoning	1.11	1.11	1.16	1.48	1.61	2.83	3.78
All causes	1.00	1.04	1.11	1.03	1.43	1.57	3.09

* Remote Aboriginal areas.

Table 4: Mortality differentials (standardised mortality ratios) by cause of death among females resident in North Australia, 1990-92

Cause of death	Cities		Rural		Remote		Aboriginal*
	Darwin	Townsville	Centres	Other	Centres	Other	
Infectious & parasitic diseases	1.37	1.27	1.28	1.13	3.17	2.55	21.69
Cancers	0.79	0.96	0.98	0.80	1.06	1.25	1.96
Mental disorders	0.69	1.94	0.80	0.85	1.80	2.07	3.92
Diseases of the nervous system & sense organs	0.44	1.67	0.83	0.90	0.60	1.50	2.92
Diabetes mellitus	2.31	1.11	1.56	1.09	2.65	3.54	16.80
Circulatory system diseases	0.83	1.06	1.14	1.01	1.18	1.41	2.49
Respiratory system diseases	1.67	0.86	0.85	0.74	2.06	2.48	12.51
Digestive system diseases	1.66	1.23	0.97	1.06	1.38	2.33	2.73
Genitourinary system diseases	1.56	1.49	1.27	0.94	2.35	2.48	16.81
Congenital anomalies	1.04	1.31	1.11	1.43	1.74	1.33	2.20
Perinatal conditions	1.50	1.54	1.21	1.13	1.35	1.34	4.96
Injury and poisoning	1.19	1.19	1.22	1.27	1.64	2.91	3.78
All causes	1.01	1.09	1.07	0.95	1.33	1.67	4.03

* Remote Aboriginal areas.

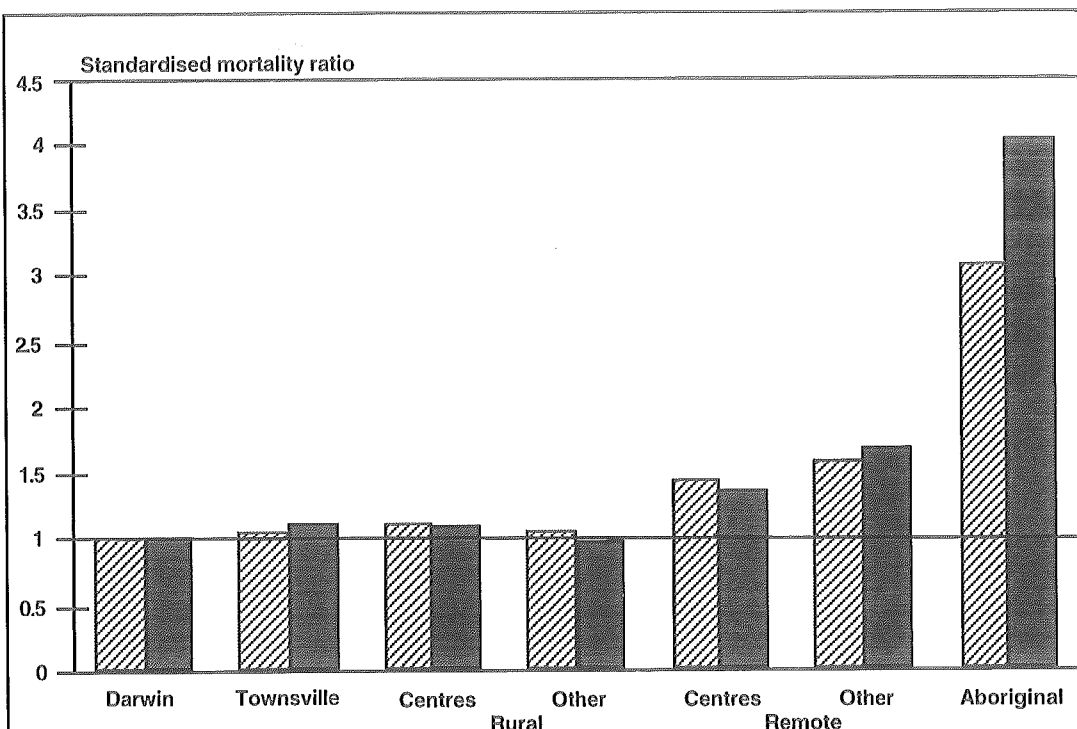


Figure 2: Standardised mortality ratios for all causes of death, by sex and region, North Australia, 1990-92

Mortality rates by cause of death

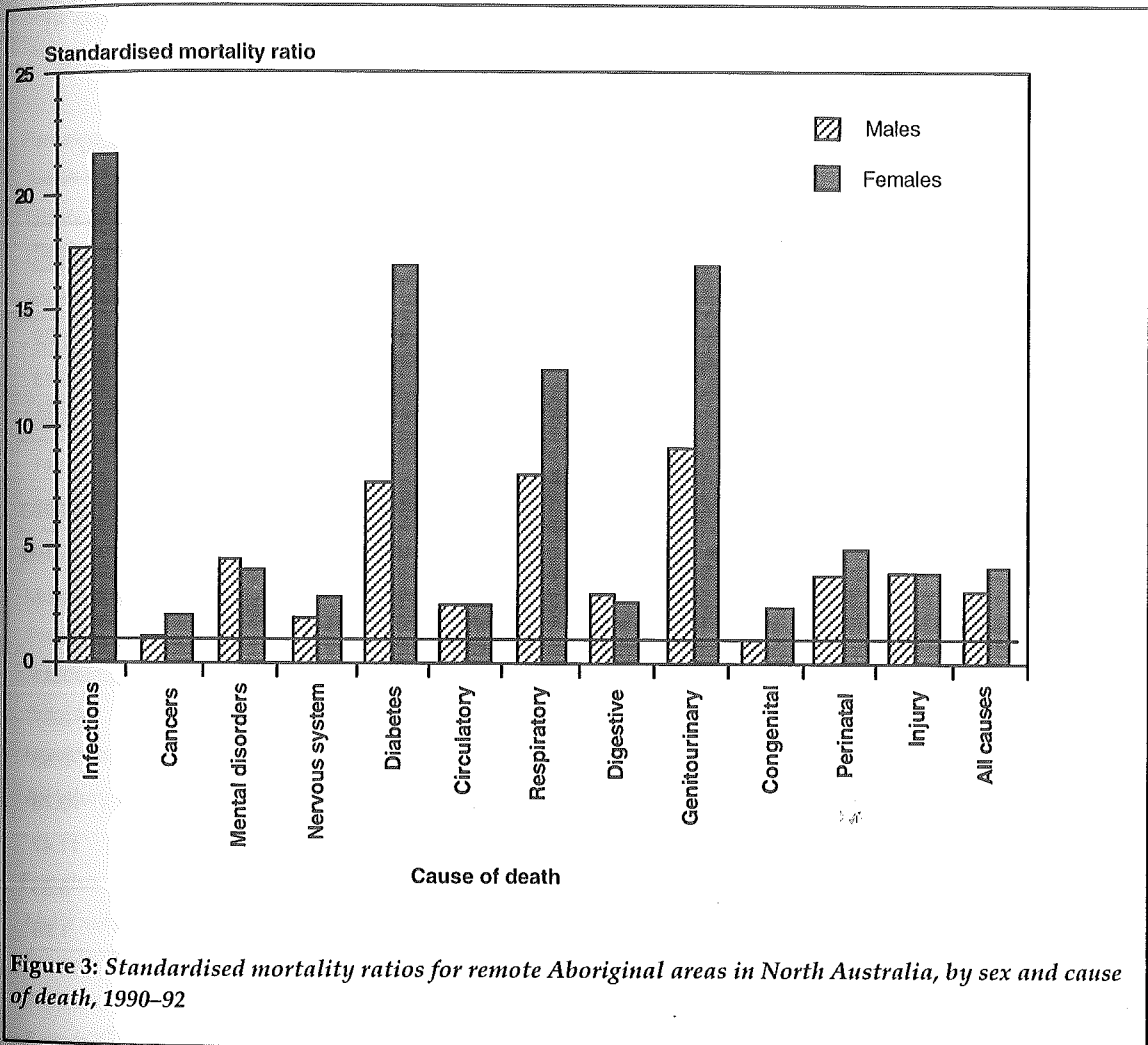
Tables 3 and 4 also provide SMRs for major cause of death groups in 1990-92. It is clear that the mortality ratios are substantially higher than the national average in most regions of North Australia for causes of death such as infectious and parasitic diseases, diabetes, respiratory disorders, genitourinary system diseases, perinatal conditions, and injury and poisoning. Mortality rates for these causes are extraordinarily high, as shown in Figure 3, with standardised mortality ratios ranging up to 9.1 and 16.8 for genitourinary diseases, and 17.8 and 21.7 for infectious and parasitic diseases, for males and females respectively.

Table 5 gives SMRs for some of the more common types of cancer. Male SMRs do not vary substantially from unity, except for skin cancer in rural centres (SMR 1.6) and other remote areas (SMR 1.5). Female SMRs for cancer are higher for these regions and also for Townsville. However, cancer of the cervix stands out as causing substantially higher death rates in nearly all regions of North Australia, and particularly for women in the remote Aboriginal areas, with an SMR of 11.5.

Table 6 gives SMRs for the major types of cardiovascular disease. Death rates for coronary heart disease and stroke, the two leading causes of death in Australia, are substantially higher in remote regions of North Australia, with SMRs ranging up to around two in the remote Aboriginal areas. However, acute rheumatic heart disease, a disease which is fairly rare in non-Aboriginal Australians, has SMRs ranging up to 12.1 and 13.9 for males and females in the remote Aboriginal areas.

Table 7 gives SMRs for leading causes of fatal injury. Apart from Townsville, SMRs for motor vehicle accidents and production (work-related) injuries are substantially greater than unity in all regions of North Australia. Accidental drowning rates are also substantially higher for males and females in nearly all regions of North Australia, with SMRs ranging from around 1.5 for males in Darwin and 3.5 for females in Darwin up to 4.4 and 3.3 for males and females respectively in the remote Aboriginal areas.

Suicide rates were not generally a great deal higher for males except in other remote areas (SMR 2.0) and were generally lower than the national average for females, except in rural centres (SMR 1.3). In contrast, homicide rates were substantially higher than the national



average for males and females in most regions of North Australia, with SMRs ranging up to 15.4 for males in the remote Aboriginal areas.

Discussion and conclusions

In general, the population of North Australia has a substantially worse mortality experience than that of all Australians. This almost certainly reflects the very much poorer health of the Indigenous population of North Australia. Analyses of data for those States and Territories where there is reasonable identification of the Indigenous population on death registration certificates has shown that:

- Aboriginal death rates are between two and four times those of the total Australian population, with the exact ratio being dependent on the specific Aboriginal population.
- Aboriginal expectation of life at birth is between 16 and 18 years shorter for males than for non-Aboriginal Australians; the gap is slightly wider for Aboriginal females (see Table 8).
- Aboriginal infant mortality rates are between two and three times those for the whole of Australia.

Table 5: *Differentials in cancer mortality (standardised mortality ratios), North Australia, 1990-92*

Sex/Cause of death	Cities		Rural		Remote		
	Darwin	Townsville	Centres	Other	Centres	Other	Aboriginal*
Males							
Digestive organs	0.72	0.96	1.04	0.85	1.30	1.00	1.29
Lung	1.01	1.06	1.17	1.08	1.29	1.12	1.18
Skin	1.04	1.20	1.62	1.27	0.85	1.49	1.08
Prostate	1.14	0.94	1.25	1.04	1.37	0.87	0.41
Lymph, leukemia etc.	0.53	0.96	0.85	0.91	0.53	0.97	0.68
All cancers	0.88	1.02	1.12	0.99	1.25	1.09	1.18
Females							
Digestive organs	0.76	0.95	1.09	0.89	1.00	0.93	1.11
Lung	1.98	0.87	0.55	0.75	1.25	1.38	3.77
Skin	0.33	1.53	1.16	0.25	1.06	2.56	0.83
Breast	0.62	0.76	0.99	0.70	0.63	0.93	0.76
Cervix	1.24	1.15	1.77	0.84	2.64	3.33	11.47
Lymph, leukemia etc.	0.36	0.96	0.72	0.97	0.80	1.25	0.53
All cancers	0.79	0.96	0.98	0.80	1.06	1.25	1.96

* Remote Aboriginal areas.

The results reported above are unique in providing a picture of mortality patterns for the population of North Australia in its entirety. Almost half the Aboriginal population of North Australia lives in Queensland, where there is not yet identification of Aboriginal and Torres Strait Islander peoples on death certificates. The standardised mortality ratios presented above for remote Aboriginal areas, while relating to the entire population of those areas, provide a

Table 6: Differentials in cardiovascular disease mortality (standardised mortality ratios), North Australia, 1990-92

Sex/Cause of death	Cities		Rural		Remote		
	Darwin	Townsville	Centres	Other	Centres	Other	Aboriginal*
Males							
Acute rheumatic fever	3.83	0.53	0.47	0.65	2.24	3.43	12.07
Ischaemic heart disease	0.74	1.03	1.15	1.00	1.09	1.34	2.24
Cerebrovascular disease	0.38	1.13	1.09	0.94	1.45	1.30	1.81
All cardiovascular diseases	0.79	1.03	1.10	0.99	1.21	1.33	2.60
Females							
Acute rheumatic fever	1.56	0.86	0.89	1.02	2.76	2.09	13.91
Ischaemic heart disease	0.48	1.20	1.30	1.10	1.22	1.19	2.13
Cerebrovascular disease	0.61	0.97	0.96	0.97	0.92	1.47	1.79
All cardiovascular diseases	0.83	1.06	1.14	1.01	1.18	1.41	2.49

* Remote Aboriginal areas.

Table 7: Differentials in injury mortality (standardised mortality ratios), North Australia, 1990-92

Sex/Cause of death	Cities		Rural		Remote		
	Darwin	Townsville	Centres	Other	Centres	Other	Aboriginal*
Males							
Motor vehicle accidents	1.05	0.73	1.11	1.43	1.56	3.09	4.59
Production injuries#	1.10	1.02	1.77	3.40	1.63	4.53	2.99
Accidental drowning	1.48	1.84	1.59	1.66	1.88	2.44	4.40
Suicide	1.08	1.33	1.23	1.31	0.91	2.03	1.13
Homicide	2.17	1.83	1.24	1.38	3.21	6.16	15.41
All injury and poisoning	1.11	1.11	1.16	1.48	1.61	2.83	3.78
Females							
Motor vehicle accidents	1.42	1.02	1.29	1.48	1.42	3.64	2.97
Production injuries#	—	5.83	2.92	5.69	—	—	—
Accidental drowning	3.52	0.77	2.71	1.47	2.12	8.26	3.29
Suicide	0.41	0.69	1.32	0.70	0.50	0.99	1.07
Homicide	1.61	2.22	0.96	0.77	4.31	6.49	7.76
All injury and poisoning	1.19	1.19	1.22	1.27	1.64	2.91	3.78

* Remote Aboriginal areas; # a number of causes of death (being struck by a falling object; accidents involving machinery; falls from ladders, scaffolds; being caught or crushed; and deaths involving an electric current) are known to be mostly work related. This combination of causes has been used as an indicator of production-related deaths.

Table 8: *Life Expectancy at birth, Aboriginals in Western Australia, South Australia and the Northern Territory, and total Australian population, by sex, 1990-92*

Sex	Aboriginals			Total Australia
	Western Australia	South Australia	Northern Territory	
Males	56.3	57.8	56.8	74.5
Females	64.2	63.7	60.6	80.4

Source: Bhatia & Anderson (1995).

graphic picture of the appalling health conditions suffered by the Indigenous population in North Australia.

These results clearly point to the major illness conditions and factors resulting in the excess mortality of the Indigenous population of North Australia. The Aboriginal and Torres Strait Islander peoples suffer from 'third world' health problems of infectious and parasitic diseases, rheumatic heart disease and genitourinary problems, as well as the degenerative diseases of 'civilisation' such as coronary heart disease and diabetes. Respiratory conditions and circulatory conditions are often associated with smoking. Smoking rates are significantly higher in the Aboriginal population than in the Australian population as a whole (Queensland Health 1994). This also results in substantially higher lung cancer mortality rates among Indigenous people. Alcohol consumption is one of the factors associated with higher levels of injury, particularly those resulting from motor vehicle accidents and interpersonal violence.

While there has been considerable improvement in infant mortality rates for Indigenous peoples in Australia, there has been no improvement in the mortality rates of adults (Queensland Health 1994; Bhatia & Anderson 1995). Because mortality rates for non-Aboriginal Australians have been steadily declining over the last 20 years, the gap between death rates for Aboriginal and Torres Strait Islander adults and other adults has widened in that time. Indeed, overall death rates for 'middle-aged' Aboriginal men aged 35-44 years in Western Australia, South Australia and the Northern Territory were 6.3 times higher than that for all Australian men aged 35-44 years in 1990-92 (Bhatia & Anderson 1995).

Unpublished analyses carried out by the Australian Institute of Health and Welfare (Anderson & Bhatia 1995; Mathers 1995b) have shown that the excess mortality rates of the rural and remote populations of the Northern Territory in comparison with those of people living in Darwin are explained by the higher mortality rates of the Aboriginal population. There are no differences of any consequence in the mortality rates of the non-Aboriginal population living in urban, rural and remote regions of the Northern Territory.

Ring and Runciman (1994) have noted that the lack of progress in reducing the mortality rates of Indigenous Australians is unique. The World Bank (1993) has documented dramatic declines in mortality rates in nearly all regions of the world, including underdeveloped countries, since the 1950s. Unlike the Indigenous population of Australia, those of New Zealand and North America have experienced significant declines in mortality in recent decades and have substantially higher life expectancies than Indigenous Australians (Queensland Health 1994).

The fact that other Indigenous populations with similar dispossession and depopulation experiences have been able to improve their health profiles suggests that health outcomes for Aboriginal populations can be improved significantly (Ring & Runciman 1994). Particularly preventable are excess mortality and morbidity resulting from cardiovascular diseases, injuries

and diabetes. There is also much room for improvement in the rates of infectious and parasitic diseases. Perinatal and maternal mortality as well as disability should also be reduced greatly.

Some of the reasons why the Aboriginal and Torres Strait Islander populations have not experienced the kinds of gains seen in New Zealand and North America relate to differences in our history and relationships between Indigenous and non-Indigenous peoples, particularly in regard to land rights and civil rights. Also, during recent decades there has been considerable difficulties in defining the roles and responsibilities of ATSIC, and Commonwealth, State and local governments in health and other social issues. This has resulted in a lack of coordination and effort in addressing basic infrastructure issues to do with housing, water supply, education, training and employment. It is hoped that the transfer from ATSIC to the Department of Human Services and Health for the funding and delivery of primary health services for Indigenous peoples will result in a coordinated, focused and increased effort to improve the health of Australia's Indigenous people.

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Some aspects of Aboriginal family structure and fertility

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Summary

The total fertility rate of Aboriginal women was about 3.1 in 1991, compared to about 1.9 for women in the total Australian population, and had declined from about 6.0 in 1956–61. About 50% of this decline occurred between 1966 and 1976. The 1991 Census of Population and Housing revealed an increasing tendency towards marriage between Aboriginal and non-Aboriginal persons. About 24% of all Aboriginal children in couple families were born to non-Aboriginal women. This proportion varied between the States and Territories, and ranged from about 6% in the Northern Territory to about 42% in Tasmania. Non-Aboriginal women therefore made a substantial contribution to Aboriginal fertility and to the growth of the Aboriginal population.

One of the major influences on the fertility of an Aboriginal woman was whether she was married to an Aboriginal or a non-Aboriginal male. Various aggregations of Aboriginal families revealed interesting differentials in Aboriginal fertility according to family type. Couple families where both partners were Aboriginal exhibited the highest fertility rates of 3.5 and 3.4 in 1981–86 and 1986–91 respectively. The lowest fertility rates on the other hand, 2.4 in 1981–86 and 2.8 in 1986–91, obtained in couple families where the Aboriginal mother was married to a non-Aboriginal male.

Introduction

Aboriginal fertility, as measured by the total fertility rate (TFR),¹ has declined by almost 50% in the last three decades, from a level of about six children per woman at the beginning of the 1960s to current levels of just over three children per woman (Gray 1983; Dugbaza 1994a). During this period, the total fertility rate for Australian women as a whole declined from 3.4 children in 1956–61 to 1.9 children in 1986–91. While the latter decline occurred at a steady pace throughout this period, the bulk of the total fertility rate decline for Aboriginal women took place between 1966 and 1976 (Figure 1). Aboriginal total fertility rate has stabilised since the early 1980s at around three children per woman.

The main sources of data for estimating Aboriginal fertility are (i) the quinquennial Censuses of Population and Housing, (ii) birth registration, and (iii) perinatal or midwives data collections. Not all the States and Territories, however, have complete registration or midwives data on Aboriginal births. Reliable data on Aboriginal births in Queensland, South Australia, Western Australia and the Northern Territory are available from perinatal or midwives collections. In South Australia and the Northern Territory, registration of Aboriginal births is also near-

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¹ The total fertility rate (TFR) is the average number of children which a woman will bear by the end of her reproductive lifespan given the prevailing age-specific fertility rates (ASFR). The age-specific fertility rates on which the total fertility rates are based are the number of children that a specified group of women at each age between exact ages 15 and 50 years have born during a specified period of time, usually a year, divided by the number of women at each corresponding age.

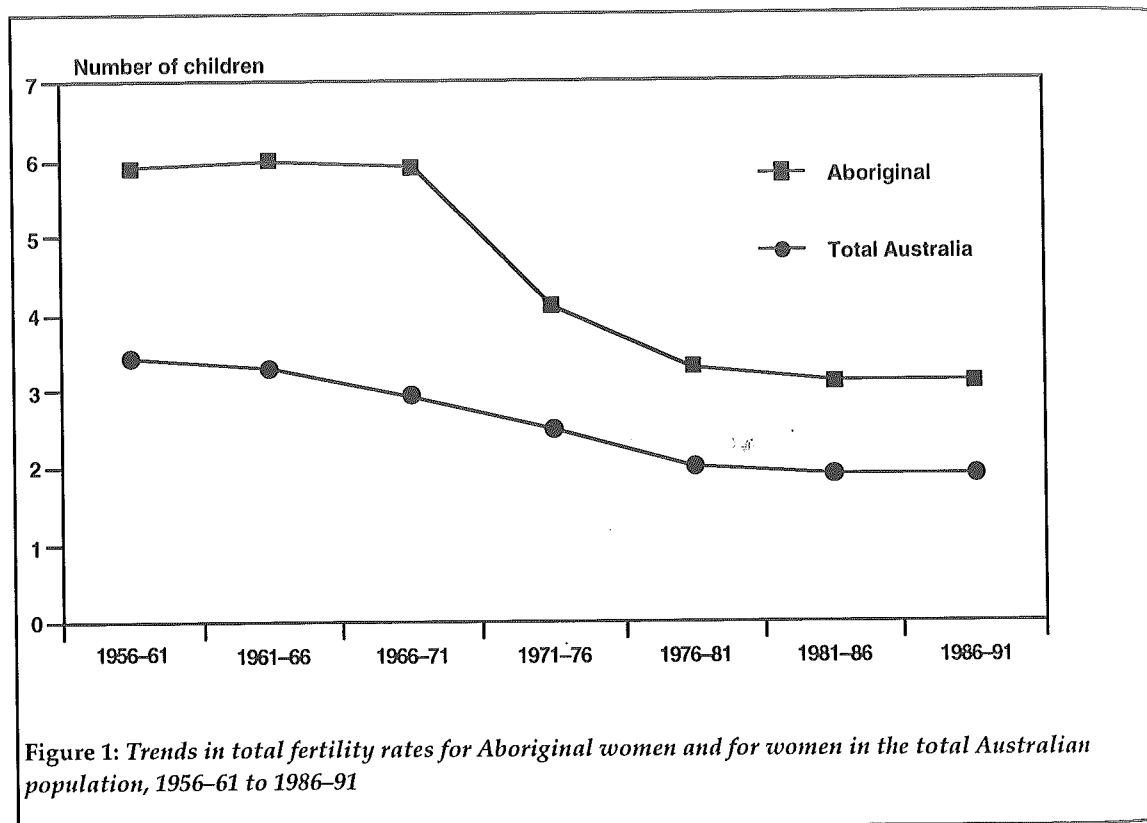
complete. For the remaining States and Territories, the quinquennial Censuses remain the most important source of data on Aboriginal fertility.

Information on fertility is usually obtained from the census question on children ever born, which is asked of all women aged 15 years and over. This particular question was not included in the 1991 Census questionnaire; estimates of Aboriginal fertility were instead obtained by using the 'own children' method, which matches women with their own children on a household basis (Cho et al. 1986; also see Jain (1989) and Dugbaza (1994a) for its application to Aboriginal data).

Aboriginal family structure

The process of matching Aboriginal women with their own children led to the identification of eight different types of Aboriginal families (Table 1). (An Aboriginal family is defined as the one in which at least one person, a child or an adult, identifies himself or herself as an Aboriginal or a Torres Strait Islander.) These included both couple and one-parent families; in addition, all non-family groups were clustered together as 'other'.

Children living in Aboriginal families were identified using two different classifications. The first classification categorises all dependent children as either 'natural/adopted' or 'other' family children. The former includes either the natural or adopted children of both spouses in a couple family, or, of the custodial parent in a one-parent family. All other children are classified as 'other'.



Under the second classification, all natural/adopted or stepchildren living in couple or single-parent families and who have an Aboriginal mother and live with her in the same household are classified as 'own children'. 'Non-own children' on the other hand are children of Aboriginal mothers who live in a household different from that of their mother, or children whose mother is deceased. Some children are categorised as 'out of scope' and are excluded from further analysis. These are all natural or adopted children of non-Aboriginal mothers; children identified as 'non-Aboriginal' and children living with non-Aboriginal mothers and whose 'Aboriginality' status was not stated, were classified as 'out of scope'.

A total of 62,481 Aboriginal families were counted in the 1986 Census, increasing by about 20% to 74,911 in the 1991 Census. Similar proportional increases were noted in the couple and single-parent families. A large proportion of Aboriginal couple families is made up of partners, one of whom is of non-Aboriginal origin. Both partners were Aboriginal in only 45% of couple families in 1986; the proportion had declined to 38% by 1991.

Between 1986 and 1991, there was a 17% increase in the number of Aboriginal women aged 15 years and over, from 70,714 in 1986 to over 85,000 in 1991. In comparison, the number of dependent and other family children (aged 0-14 years) increased by more than 20%. The higher rate of increase in the number of Aboriginal children than in the number of Aboriginal women is not due to an increase in Aboriginal total fertility rate, but results mostly from the increasing number of Aboriginal out-marriages (O'Reilly 1994; Dugbaza 1994a, 1994b) and from the increasing contribution of non-Aboriginal mothers to Aboriginal fertility.

In 1986, over 80% of all dependent and total family children living in Aboriginal households were born to Aboriginal mothers. This proportion declined to 74% by 1991 in accordance with increased proportion of racially mixed couple families. Also in couple families of 1986, both parents were Aboriginal for two-thirds of Aboriginal children; by 1991, this proportion had declined to 61%. Similarly, the number of children born to Aboriginal mothers (both own and non-own), and living in couple families, increased by only 11% between 1986 and 1991 in comparison to a greater than 20% increase in the total number of children living in Aboriginal families. The number of children classified as 'out of scope' also increased by 58%, from 20,226 (19.7% of all children living in Aboriginal households) to 31,995 (25.9% of all children living in Aboriginal households). While some of this increase may be due to increasing propensity on the part of children to identify as Aboriginal, it is evident that the number of Aboriginal children born to racially mixed parents is increasing.

Trends in the parentage of Aboriginal children

To determine trends in the contribution of non-Aboriginal women to the population of Aboriginal children, the proportions of Aboriginal children born to non-Aboriginal women and living in couple families were examined. Table 2 presents the distribution by age of the proportions of these children. Aboriginal children living in single-parent families were not included in this analysis because the Aboriginality of the non-custodial parent was not known. Equating age of the child to 'years ago', the time series revealed that the proportion of children born to non-Aboriginal mothers has been steadily rising (Table 2). About 24% of all Aboriginal children now living in couple families had a non-Aboriginal mother. The proportion of such children increased from about 20% in 1977 (Aboriginal children born 14 years before the last Census) to about 27% in 1991 (Aboriginal children born less than one year before the last Census).

Table 1: Aboriginal family types and number of children

				Number of dependent children (aged 0–14 years)			Own, non-own and out of scope children (aged 0–14 years)		
				Total	Natural/ adopted	Other	Own ^(a)	Non- own ^(b)	Out of scope ^(c)
Family type		No. of families	No. of women (15+ yrs)						
1986 (#)									
Couple	Both Aboriginals ^(d)	17,868	24,863	32,663	23,791	8,872	24,363	8,229	71
	Both non-Aboriginals	3,415	392	4,723	2,883	1,840	n.a.	1,206	3,517
	Fa only Aboriginal	7,717	821	10,922	9,559	1,363	n.a.	572	10,350
	Mo only Aboriginal	10,810	12,583	15,412	12,665	2,747	12,887	2,119	406
One-parent	Fa Aboriginal	2,784	1,159	2,442	1,430	1,012	n.a.	2,404	38
	Fa non-Aboriginal	1,103	251	1,084	813	271	n.a.	1,013	71
	Mo Aboriginal	14,955	21,041	24,952	16,938	8,014	17,053	7,733	166
	Mo non-Aboriginal	3,829	506	5,901	4,794	1,107	n.a.	633	5,268
Other		n.a.	9,098	4,643	n.a.	4,643	n.a.	4,304	339
Total		62,481	70,714	102,742	72,873	29,869	54,303	28,213	20,226
1991 (##)									
Couple	Both Aboriginals ^(d)	18,237	25,269	34,217	23,653	10,564	25,424	8,634	159
	Both non-Aboriginals	5,238	834	7,692	5,019	2,673	n.a.	2,181	5,511
	Fa only Aboriginal	10,841	1,224	14,501	12,283	2,218	n.a.	2,005	12,496
	Mo only Aboriginal	13,689	15,593	17,614	14,390	3,224	16,274	1,013	327
One-parent	Fa Aboriginal	3,345	1,433	3,328	1,887	1,441	n.a.	3,280	48
	Fa non-Aboriginal	1,616	397	1,553	1,243	310	n.a.	1,474	79
	Mo Aboriginal	15,920	22,274	26,533	19,980	6,533	19,986	6,243	304
	Mo non-Aboriginal	6,025	891	9,732	8,680	1,052	n.a.	689	9,043
Other		n.a.	17,414	8,260	n.a.	8,260	n.a.	4,232	4,028
Total		74,911	85,329	123,430	87,135	36,295	61,684	29,751	31,995

Sources: # Jain (1989); ## Dugbaza (1994a). Notes: (a) 'Own-children' are all natural/adopted children of Aboriginal women, living in the same household with their mother; (b) 'non-own children' are all natural/adopted or step children of Aboriginal women not living in the same household with their mother; (c) all natural or adopted children of non-Aboriginal mothers, all children identified as 'non-Aboriginal' and children living with non-Aboriginal mothers and whose 'Aboriginality' status was not stated; (d) 'father' and 'mother' refer to the family reference person or spouse of the family reference person.

Table 2: *Proportion of Aboriginal children, born to non-Aboriginal women, living in couple families, 1991 Census*

Age (in years)	State/Territory								Australia
	NSW	Vic.	Qld	SA	WA	Tas	NT	ACT	
0	0.36	0.34	0.26	0.23	0.19	0.39	0.11	0.39	0.27
1	0.33	0.32	0.26	0.19	0.19	0.44	0.08	0.45	0.26
2	0.34	0.32	0.24	0.17	0.17	0.44	0.08	0.50	0.25
3	0.31	0.38	0.23	0.26	0.15	0.40	0.07	0.41	0.24
4	0.31	0.30	0.25	0.17	0.16	0.45	0.06	0.41	0.22
5	0.33	0.33	0.23	0.23	0.15	0.42	0.04	0.50	0.23
6	0.34	0.35	0.22	0.16	0.14	0.47	0.05	0.45	0.24
7	0.30	0.29	0.22	0.18	0.13	0.38	0.04	0.50	0.21
8	0.31	0.27	0.24	0.17	0.13	0.39	0.05	0.19	0.22
9	0.31	0.30	0.19	0.18	0.15	0.41	0.06	0.46	0.21
10	0.29	0.33	0.20	0.15	0.12	0.44	0.05	0.33	0.21
11	0.28	0.31	0.18	0.15	0.12	0.45	0.06	0.32	0.20
12	0.28	0.32	0.19	0.22	0.11	0.38	0.06	0.21	0.21
13	0.27	0.27	0.21	0.17	0.13	0.42	0.05	0.33	0.21
14	0.28	0.29	0.18	0.19	0.10	0.41	0.07	0.38	0.20
Total	0.31	0.32	0.22	0.19	0.14	0.42	0.06	0.39	0.24

Source: Dugbaza (1994b).

However, a wide regional variation was noted in the contribution of non-Aboriginal women to the total number of Aboriginal children. Tasmania had the highest proportion of children born to non-Aboriginal mothers (42%), as enumerated in the 1991 Census, and the Northern Territory had the lowest proportion (6%). In all the States and Territories, except in Tasmania and the Australian Capital Territory, the proportion of Aboriginal children in couple families born to non-Aboriginal women has increased over the past 15 years. These trends derived from the Census data are consistent with those obtained from birth registration data for Victoria, South Australia and the Northern Territory, regions for which Aboriginal birth registration data are reliable and complete (Table 3).

These emerging trends have implications for demographic estimates. Standard demographic measures, such as the crude birth rate and child:woman ratios, which rely on a numerator of births and a denominator of population or of women, would lead to distorted measures. This is because the numerator of all Aboriginal births or children also includes children born to non-Aboriginal women, whereas non-Aboriginal mothers of Aboriginal children are excluded from the denominator. However, in most cases, this information is either not available or is irrelevant to computing the measure. Furthermore, in some cases, the measures are not easily amenable to manipulation for using this information even when relevant figures are available. O'Reilly (1994) has pointed out that measures such as dependency ratios, which are based on a numerator of Aboriginal children and a denominator of Aboriginal adults, will also lead to

distorted results due to the exclusion of non-Aboriginal parents (biological) of Aboriginal children.

Table 3: Distribution of registered Aboriginal births by Aboriginality of parents, year of registration, and mother's State of usual residence

Aboriginal status of parents	State of usual residence of mother of child (%)		
	Vic	SA	NT
1988			
Both parents	27.5	39.2	51.3
Mother only	49.4	43.2	45.6
Father only	23.1	17.6	3.1
Total births	338	507	1128
1989			
Both parents	21.7	36.6	49.2
Mother only	50.5	46.0	45.7
Father only	27.8	17.4	5.1
Total births	410	478	1299
1990			
Both parents	20.2	35.5	47.0
Mother only	51.0	46.6	47.2
Father only	28.8	17.9	5.8
Total births	490	552	1253
1991			
Both parents	22.8	36.0	42.2
Mother only	51.5	43.0	51.8
Father only	25.7	21.0	6.1
Total births	509	577	1273

Source: Unpublished birth registration data, ABS.

Living arrangements for Aboriginal children

A high level of informal fostering exists in the Aboriginal community (Alan Gray, personal communication). A large proportion of Aboriginal children live with persons other than their own mother. In 1991, this proportion ranged between 6% and 33% depending on family type (Table 4). About 33% of children in all Aboriginal family types were living in the same household with a woman who was not their mother (Jain 1989). Children may be living with women other than their own mother for a number of reasons, including the death of their mother, divorce or separation of their parents, or inability on the part of the parents to provide care for economic, social or health reasons. Young parents migrating to urban areas in search of employment may also temporarily leave children in the care of grandparents or other relations.

The proportion of children living with women other than their own mother is about 26% in families where at least one parent is Aboriginal, and 21.3% in families where the mother is Aboriginal. In couple families where both partners are Aboriginal this proportion is about 26%, but is only 6% in couple families where the mother alone is Aboriginal. Thus, the proportion of children living with a woman other than their own mother is much lower in mixed-couple families than in all-Aboriginal couple families. The proportion is also lower in families where the mother is Aboriginal than in families where this is not the case.

Table 4: *Distribution of children not living with their own mother by age and family type, 1991 Census*

Age (in years)	Per cent of children not living with their own mothers by family type				
	Type 1	Type 2	Type 3	Type 4	Type 5
0	37.7	30.0	25.4	32.3	6.9
1	36.2	28.8	25.0	30.9	6.0
2	35.0	27.4	22.6	28.2	6.6
3	34.4	27.5	23.2	29.3	5.8
4	32.8	26.5	21.5	28.0	5.1
5	30.9	24.6	20.3	25.0	5.1
6	31.6	25.3	20.6	24.5	6.6
7	31.3	25.4	20.0	24.7	4.9
8	30.6	24.1	19.5	24.0	4.6
9	30.6	24.5	19.8	23.4	5.7
0-9 (total)	33.2	26.3	21.3	26.2	5.9

Notes: Family types: 1 = all family types, including single-parent families; 2 = all families in which at least one parent is Aboriginal; 3 = all families in which the mother is Aboriginal; 4 = couple families in which both parents are Aboriginal; and 5 = couple families in which only the mother is Aboriginal.

It is not immediately clear why there is a high proportion of foster children in families where there is at least one Aboriginal male adult. It would appear that the presence of an Aboriginal male spouse or partner in an Aboriginal family enhances the community's perception of the financial, moral and emotional viability, stability and security of the family. Foster children are therefore more likely to be attracted to such families than to families where there is no male spouse or partner. Similarly, being largely an Aboriginal family arrangement, children are less likely to be fostered in couple families where there is a non-Aboriginal male spouse than in couple families where both spouses are Aboriginal or where there is a male Aboriginal spouse.

Aboriginal family structure and fertility

Aboriginal fertility varies by family type. In the two intercensal periods (1981-86 and 1986-91), the total fertility rate was highest in couple families where both partners were Aboriginal (3.5 and 3.4, respectively) and lowest in couple families where only the mother was Aboriginal (2.4 and 2.8, respectively). Other family types with various combinations of Aboriginal and non-Aboriginal partners experienced fertility rates between these two extremes.

Apart from couple families where only the mother was Aboriginal, fertility was fairly stable between 1981-86 and 1986-91. The former experienced a very small increase in fertility. On the whole, however, a general trend of stable fertility rates was observed as shown in Figure 1.

Conclusions

The most important features of Aboriginal family structure and fertility are high rates of population growth and out-marriage. Increasing out-marriages and incidence of Aboriginal children born to non-Aboriginal women mean that standard demographic parameters such as the crude birth rate and child:woman ratios are now less reliable for measuring Aboriginal fertility. Exclusion of non-Aboriginal mothers from the denominator but inclusion of their children with Aboriginal fathers in the numerator consistently overestimates various rates and ratios. The age-specific fertility and total fertility rates which are based on only births to Aboriginal women similarly fail to reflect the true rate of Aboriginal population growth.

Fostering also appears to be an important aspect of Aboriginal family living arrangements. About one-third of all Aboriginal children live in informal fostering arrangements in households different from those of their own mothers. Because the fostering is informal, it may have important implications for social security payments and the delivery of children's services which are directed to parents and formal guardians.

Table 5: *Aboriginal age-specific and total fertility rates according to family type, 1981-86 and 1986-91*

Age group	Age-specific fertility rate (per 1,000 women) by family type				
	Type 1	Type 2	Type 3	Type 4	Type 5
1981-86					
15-19	99	114	111	127	81
20-24	188	203	196	217	171
25-29	145	154	148	166	130
30-34	77	82	79	96	61
35-39	40	44	42	54	22
40-44	18	21	20	28	8
45-49	9	10	10	14	3
TFR per woman	2.9	3.1	3.0	3.5	2.4
1986-91					
15-19	76	96	99	100	84
20-24	176	200	196	211	182
25-29	154	165	160	176	156
30-34	91	95	92	106	86
35-39	38	40	39	47	31
40-44	19	20	20	25	11
45-49	11	14	12	19	4
TFR per woman	2.8	3.1	3.1	3.4	2.8

Notes: Family types: 1 = all family types, including single-parent families; 2 = all families in which at least one parent is Aboriginal; 3 = all families in which the mother is Aboriginal; 4 = couple families in which both parents are Aboriginal; and 5 = couple families in which only the mother is Aboriginal.

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Hepatitis A and water supply in the Torres Strait Area

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Summary

The aim of this study was to examine the relationship between the incidence of hepatitis A and water supply (i.e. rainfall) in the Torres Strait Area (TSA). Over the period 1984–94, the annual rate of incidence of hepatitis A was 125 per 100,000, seventeen times higher than the Queensland rate for the period 1984–93. The mean age of hepatitis A cases in the TSA over the period 1991–94 was 16.8 years (median 14 years), about 10 years younger than for all Queensland. Age-specific hepatitis A incidence rates in the TSA were much higher than in Queensland for all age groups, especially in the younger age groups. Incident cases of hepatitis A in the TSA over the period 1984–94 revealed a seasonal pattern. The mean cumulative monthly hepatitis A cases for the dry season were significantly ($P = 0.002$) higher than that for the wet season. There was a negative correlation ($r = -0.74$; $P = 0.006$) between the cumulative monthly rainfall for Thursday Island (TI) and the cumulative monthly incident cases of hepatitis A in the TSA over this period. We conclude that hepatitis A is endemic in the TSA and that an urgent public health priority must be to improve the water supply to all households during the dry season.

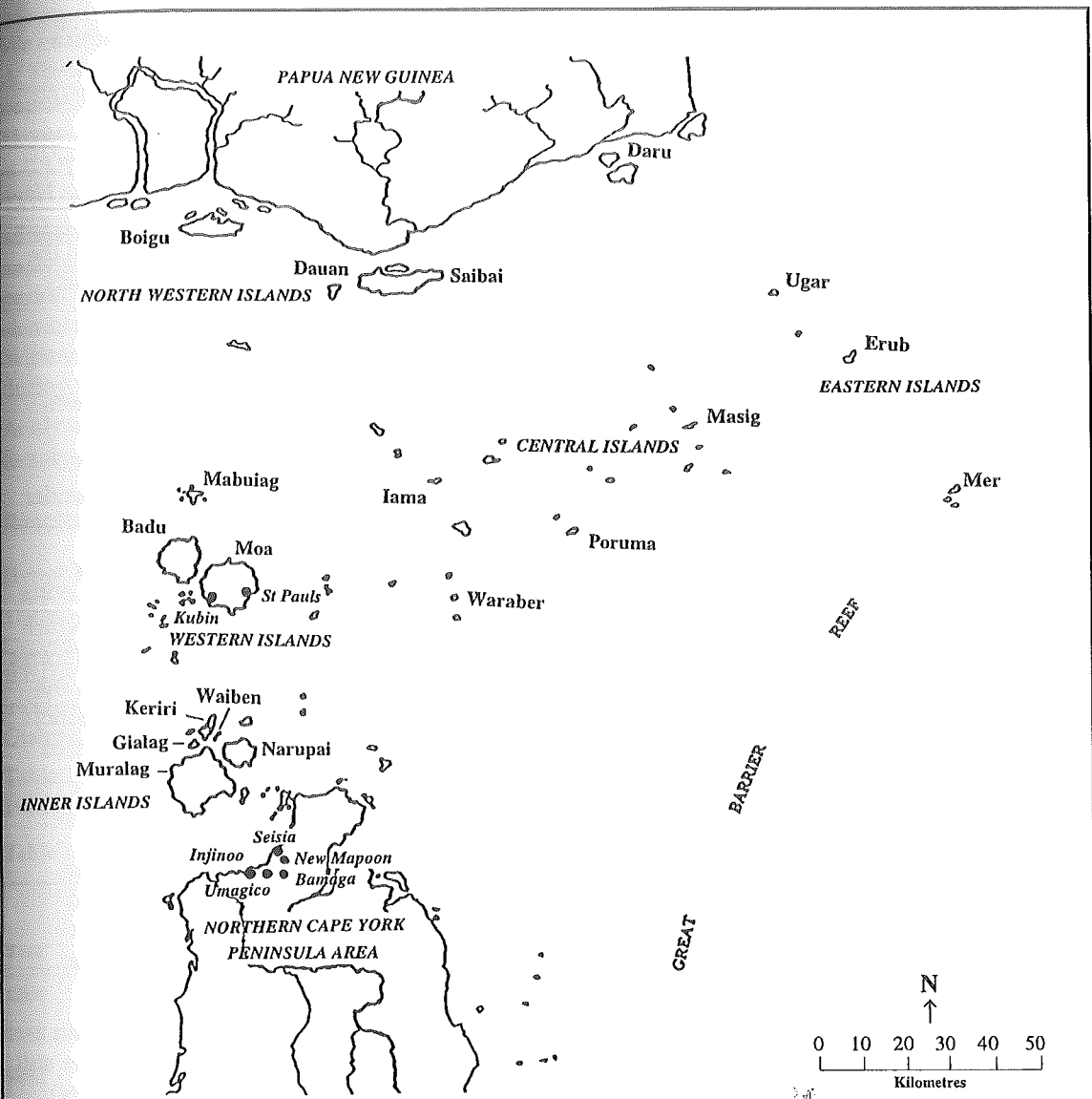
Introduction

The TSA (shown in Figure 1) is a complex environment and includes the Torres Strait (a shallow water passage 150 km wide between Cape York Peninsula and the south-west coast of Papua New Guinea that covers about 30,000 km² and contains more than 150 islands, islets, coral reefs and cays), and the Northern Cape York Peninsula Area (NCYPA). The climate of the TSA is tropical with a wet summer and a dry winter. The wet season extends from December to April with north-west monsoon winds, and the dry season extends from May to November with south-east trade winds (Walker 1972; Falkland 1990; Johannes & MacFarlane 1991). The mean annual rainfall varies from 1,984 mm on Badu in the west to 1,268 mm on Mer in the east to 1,495 mm on Boigu in the north to 1,753 mm on Bamaga in the south. The pattern of monthly rainfall on TI (shown in Figure 4) is typical of all locations in the TSA (ABM 1995).

Water supply in the TSA

The primary source of potable water for people living on islands is local rainfall catchment. For those living in the NCYPA, the catchment area is large, and their water supply comes from the Jardine River. The water supply situation for people living on the outer islands is unsatisfactory by contemporary Australian standards (Edmiston & Taylor 1990; ACS 1991; Ferrier & Steindl

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Note: * The Torres Strait Area (TSA) includes the population centres of the outer islands, inner islands, and Northern Cape York Peninsula Area (NCYPA). The outer islands comprise 14 population centres on 13 islands. These are: Ugar (Stephens), Erub (Darnley) and Mer (Murray) [Eastern Islands]; Masig (Yorke), Purma (Coconut), Waraber (Sue) and Yam [Central Islands]; Boigu, Dauan and Saibai [North Western Islands]; Mabuiag, Badu, Moa-Kubin and St Pauls [Western Islands]. The inner islands include Waiben (Thursday Island), Narupai (Horn Island), Keriri (Hammond Island), Gialag (Friday Island) and Muralag (Prince of Wales Island). NCYPA includes the population centres of Bamaga, Seisia, Injino, New Mapoon and Umagico.

Figure 1: The Torres Strait Area*

1992). Most islands have water supply problems during the dry season, and largely due to a lack of fresh water, only 18 islands are permanently inhabited.

Population of the TSA

The TSA had a total population of 8,226 in 1991. Of these, 657 identified as Aboriginal people, 5,680 identified as Torres Strait Islanders, and the remainder were predominantly of Papua New Guinean, European or Asian background (ABS 1993, 1994a). There were 2,644 people on Thursday Island (TI), 808 on the other inner islands, 2,986 on the outer islands and 1,758 in the NCYPA (ABS 1994b). The TSA population is younger than the Queensland population (ABS 1994b).

Health in the TSA

The health status of Torres Strait Islanders living in the TSA is much poorer than that of non-Indigenous Queenslanders (P&TSRHA 1993; Queensland Health 1994). Inadequate environmental living conditions, including water supply and sanitation infrastructure, contribute to this poor health status. Torres Strait Islanders living on the outer islands consider their major health problem is the provision of water (O'Brien & Speare 1993).

There is considerable free movement of people between Papua New Guinea and the outer islands. This is allowed under the 1978 Treaty between Australia and Papua New Guinea (DFA 1985). Arthur (1990) estimated 4,370 Papua New Guinean visits occurred in 1989, 85% of which were to Boigu, Dauan, and Saibai. This movement can exacerbate the low health status of Torres Strait Islanders because it imposes an extra burden on infrastructure resources. Moreover, the problem is compounded because PNG has 'a severe burden of infectious (especially parasitic) morbidity and mortality' (Attenborough & Alpers 1992) and is hence a reservoir of infectious diseases.

Hepatitis A

The transmission of hepatitis A virus (HAV) occurs most readily where there is poor water supply, inadequate sanitation, poor hygiene and overcrowding. Hepatitis A is often a mild disease, with most infections subclinical or unrecognised. The true incidence of hepatitis A infection could be much higher than that currently known as many cases are asymptomatic (Gust & Feinstone 1988).

There has been a major decline in the incidence of hepatitis A throughout much of Australia during the second half of this century (Hall 1993). However, many Aboriginal communities still have a high incidence of hepatitis A (Hardy 1982; Bowden et al. 1994; Scott & Sheridan 1994).

The primary aim of this study was to examine the relationship between incident cases of hepatitis A and the availability of water supply (as measured by rainfall) in the TSA over the period 1984-94. Clinic data from an outer island health centre was also examined to determine the relationship between hygiene-related morbidity and water supply.

Methods

The Island Co-ordinating Council, the Torres Strait and Northern Peninsula Area Health Council, the Peninsula and Torres Strait Regional Health Authority, the Australian Institute of Aboriginal and Torres Strait Islander Studies, and the Australian Geological Survey Organisation approved this study that followed National Health and Medical Research Council ethical guidelines (NHMRC 1991).

We examined TI Hospital records for the period 1984–94 to determine incident cases of hepatitis A. These were anti-HAV IgM positive, in the absence of recent vaccination (NHMRC 1994). The population denominator used to determine the mean annual incidence of hepatitis A over this 11-year period was 7,544, the mean of the total population of the TSA enumerated in the 1986 and the 1991 Censuses (ABS 1994b).

To detect any seasonal pattern in TI Hospital utilisation, we examined monthly records of admissions, separations and outpatients for the period July 1992 to February 1995. We also analysed data for simple dressing treatments from an outer island health centre for the five-year period 1988–92. These treatments were mainly for infected sores and tropical ulcers that stemmed primarily from scabies mites and other insect bites, and thus provide a measure of hygiene-related morbidity (P&TSRHA 1995). We inspected all water supply systems in the TSA during 1993.

Analysis of variance, correlation and regression techniques were used for all statistical analyses. Results are expressed as mean \pm SEM.

Results

Hepatitis A in the TSA

There were 104 incident cases of hepatitis A during the 11-year period from 1 January 1984 to 31 December 1994, as shown in Table 1. This represents a mean annual incidence of 125 per 100,000, 17 times higher than the Queensland rate of 7.3 per 100,000 for the period 1984–93. This incidence rate places the TSA among those areas with the highest incidence of hepatitis A in Queensland, as shown in Figure 2.

Table 1 also shows that 60% of all incident cases of hepatitis A in the TSA during the period 1984–94 were males, similar to Queensland for the period 1984–93 (Scott & Sheridan 1994). We

Table 1: Confirmed cases of hepatitis A in the Torres Strait Area, 1984–94

Year	Month												Males	Females	Total
	J	F	M	A	M	J	J	A	S	O	N	D			
1984	–	2	1	1	–	4	–	–	–	–	–	–	7	1	8
1985	–	–	–	–	–	–	2	2	5	3	–	–	9	3	12
1986	–	–	1	–	–	–	–	1	–	–	–	2	2	2	4
1987	1	–	1	1	–	–	–	–	–	–	–	–	1	2	3
1988	–	1	–	–	–	–	1	–	–	2	1	–	0	5	5
1989	–	–	–	–	–	–	–	–	–	–	–	–	0	0	0
1990	–	–	–	1	–	–	–	1	–	1	–	–	1	2	3
1991	–	–	–	–	–	–	–	–	–	4	5	3	8	4	12
1992	1	–	–	–	–	1	4	–	3	3	4	1	11	6	17
1993	3	2	–	2	8	4	4	3	1	–	3	–	14	16	30
1994	1	1	–	2*	1	2	1	–	1	1	–	–	9	0	10
Total	6	6	3	7	9	11	12	7	10	14	13	6	62	41	104*

Source: P&TSRHA (1995). Note: * The sex of one confirmed case of hepatitis A was not known.

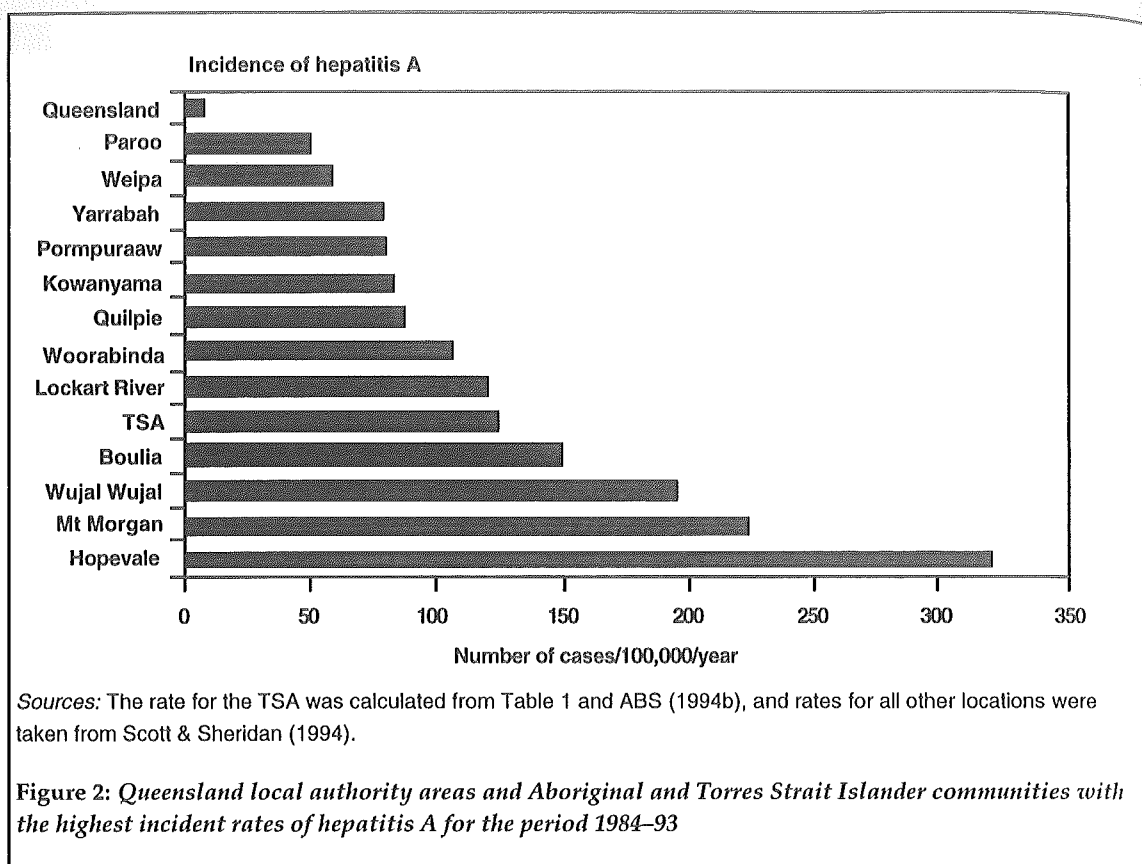


Table 2: Anti-HAV IgM and IgG antibodies in suspected hepatitis A cases in the Torres Strait Area, 1991–94

Age (in years)	Anti-HAV IgM		Anti-HAV IgG*	
	No. tested	% positive	No. tested	% positive
0–4	12	100.0	9	100.0
5–9	14	78.6	8	100.0
10–14	17	70.6	10	100.0
15–19	10	70.0	3	66.7
20–24	12	66.7	3	66.7
25–29	10	40.0	4	100.0
30–34	9	44.4	5	80.0
35–39	8	37.5	5	100.0
40–44	6	33.3	2	100.0
45+	12	16.7	4	75.0
Unknown	7	57.1	1	100.0
All ages	117	58.9	54	92.6

Source: P&TSRHA (1995). Note: *Of the 117 serum samples tested for IgM antibodies, only 54 were tested for IgG antibodies.

could not determine the incidence of hepatitis A in individual communities of the TSA because in almost a half of the cases the community of residence had not been recorded. Moreover, the high mobility of people within the TSA and the incubation time for hepatitis A infection (15–50 days) complicates the assessment of where the infection occurred.

There were two peaks in incident cases of hepatitis A in the TSA, one centred on 1985 and the other on 1993–93 (Scott & Sheridan 1994).

In the TSA over the four-year period 1991–94, sera from 117 suspected cases of hepatitis A were tested for HAV IgM antibodies. Table 2 shows the proportion of anti-HAV IgG and anti-HAV IgM positive cases which was 93% and 59% respectively. Of 124 individuals (age range 8–60 years, median age 33 years) pre-screened for hepatitis A vaccination in 1994, 72.6% were anti-HAV IgG positive (P&TSRHA 1995).

Table 3 shows the age group and sex distribution of the 69 incident cases of hepatitis A in the TSA during the four-year period 1991–94. More than half (54%) of the cases were <15 years of age, 29% 15–29 years of age, and 17% 30+ years of age. The mean age of incidence was 16.8 years and the median age at 14 years, about 10 years younger than for all Queenslanders notified with hepatitis A during the period 1984–93. The corresponding age group percentages for hepatitis A notifications in Queensland during the period 1991–93 were 25%, 37%, and 38% respectively (Scott & Sheridan 1994). Thus, a much higher proportion of incident cases in the TSA were children than was the case for overall notifications in Queensland.

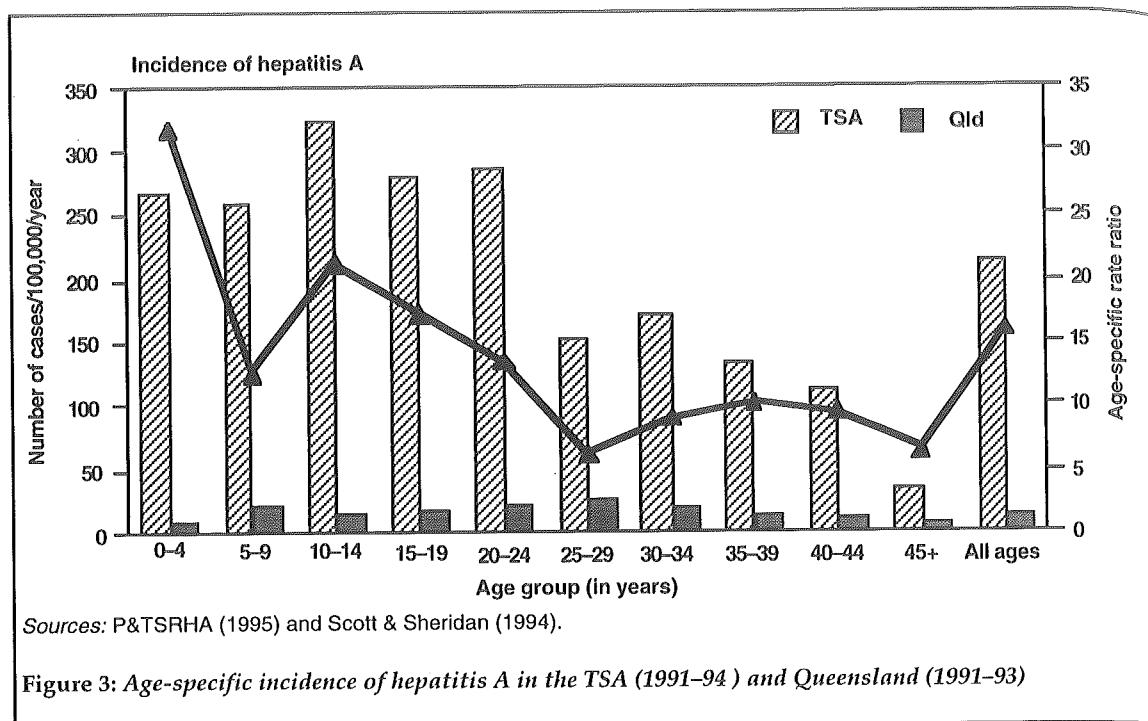
Figure 3 shows the mean age-specific hepatitis A incident rates in the TSA for the period 1991–94. Queensland data for the period 1991–93 is included for comparison. The comparison clearly shows that the age-specific incident rates are much higher in the TSA than in Queensland for all age groups, but are particularly so for the younger age groups.

There was no sex difference in either the yearly or monthly pattern of incident cases of hepatitis A in the TSA during the period 1984–94. Moreover, there was no sex difference in the age pattern of incident cases of hepatitis A in the TSA during the period 1991–94.

Table 3: *Confirmed cases of hepatitis A in the Torres Strait Area, 1991–94, by age group and sex*

Age (years)	Males	Females	Total
0–4	7	4	12*
5–9	4	7	11
10–14	7	5	12
15–19	4	3	7
20–24	6	2	8
25–29	1	3	4
30–34	4	0	4
35–39	2	1	3
40–44	2	0	2
45+	2	0	2
Unknown	3	1	4
All ages	42	26	69*

Source: P&TSRHA (1995). Note: * The sex of one confirmed case of hepatitis A was not known.

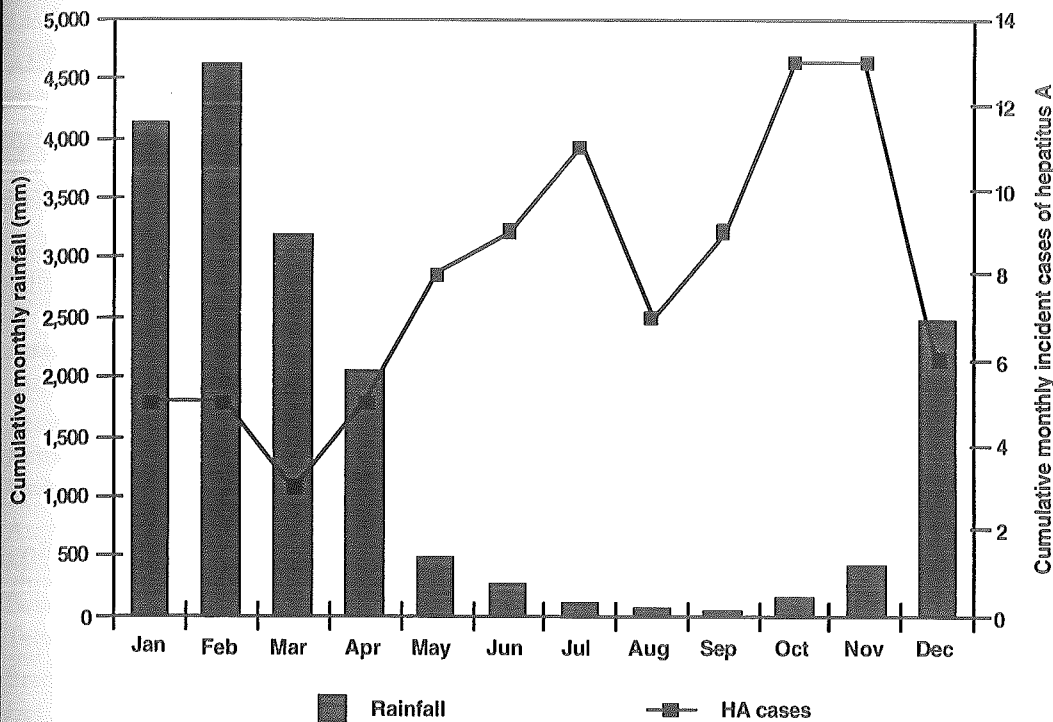


Hepatitis A and water supply in the TSA

The monthly pattern of incident cases of hepatitis A in the TSA during the period 1984-94 (shown in Table 1 and Figure 4) indicates a seasonal variation in incidence. The mean cumulative monthly incident cases of hepatitis A for the dry season (May-November: 10.9 ± 0.9) was significantly ($P = 0.002$) higher than that for the wet season (December-April: 5.6 ± 0.7). This seasonal variation in incident cases of hepatitis A was not reflected in TI Hospital patient activity. There was no difference in hospital admissions, separations or outpatients activity between the wet and dry seasons over the period July 1992 - February 1995 (P&TSRHA 1995).

There was a negative correlation ($r = -0.74$; $P = 0.006$) between the cumulative monthly rainfall for TI (typical of the TSA) and the cumulative monthly incident cases of hepatitis A in the TSA over this 11-year period. This shows a moderate to strong association between incident cases of hepatitis A and rainfall, with a high incidence of hepatitis A associated with low rainfall.

Clinic data from an outer island with serious water supply problems during the dry season showed that, for the five-year period 1988-92, the mean number of simple dressing treatments per patient per month for the dry season (59.2 ± 3.1) was significantly ($P = 0.004$) higher than for the wet season (43.8 ± 4.1). There was a negative correlation ($r = -0.73$; $P = 0.008$) between the mean monthly rainfall of this island and the mean number of simple dressing treatments per patient per month over this five-year period. Most water supply systems on the outer islands were in poor condition when we inspected them during 1993.



Sources: Hepatitis A data, P&TSRHA (1995); Rainfall data, ABM (1995).

Figure 4: The cumulative monthly rainfall for TI and cumulative monthly incident cases of hepatitis A in the TSA for the period 1984-94

Discussion and conclusions

Hepatitis A is a faecal-oral disease that can be classified as a water-borne and water-washed disease (Bradley 1977). Transmission occurs both directly by poor personal hygiene, often due to a lack of water, and indirectly by faecal contamination of drinking water, food, and areas used for bathing and swimming. Thus hepatitis A shares all the possible routes of faecal-oral spread with common agents of diarrhoea (Kolsky 1993).

Hepatitis A is endemic in the TSA, and because there is no chronic carrier state, HAV must maintain itself by serial acute infections. A large proportion of the clinical cases are children aged <15 years. Because children also suffer most from diarrhoea, current understanding of the complex interrelationships between water, sanitation and diarrhoeal disease (Kolsky 1993) is directly applicable to the approach required to reduce the incidence of hepatitis A in the TSA. For many of the outer islands, water supplies during the dry season are totally inadequate and good personal hygiene is difficult to maintain, particularly with such a young population. Thus, increasing the quantity and quality of water available to households on the outer islands should reduce transmission of hepatitis A (and diarrhoeal disease), provided more water is used for washing.

There is some international evidence that the incidence of hepatitis A has a seasonal pattern (Mosley & Kendrick 1969). Our study shows incident cases of hepatitis A in the TSA were higher during the dry season than during the wet season, and there was a negative correlation between monthly rainfall and monthly incident cases of the disease. Thus, whilst we are sensitive to the caution expressed by Taylor and Knowelden (1957) about interpreting seasonal changes in the incidence of infectious disease, we conclude that an urgent public health priority in the TSA must be to improve the quantity of water available to households on those islands currently with a seasonally unreliable water supply.

There have been many past failures in the water supply infrastructure of the TSA. We therefore consider, as do others (e.g. Ferrier & Steindl 1992), that any water supply strategy must consider upgrading domestic rainwater tanks, significantly increasing their capacity (Nguyen 1993; Nicholson 1993) and providing dual supply systems on small islands with inadequate ground water resources. Furthermore, we emphasise the importance of a commitment to ongoing funding for all capital projects for maintenance and repair of supplies and treatment facilities.

The situation for the NCYPA, which contributed at least 29% (30 cases) of all incident cases of hepatitis A in the TSA during the 11-year period studied, is less clear. The five communities in the NCYPA have all-year-round access to sufficient reticulated water from the Jardine River, and there was no significant difference in incident cases of hepatitis A between the wet and dry seasons in the NCYPA. This suggests factors other than availability of water are associated with the high incidence of hepatitis A in this area.

Based on our understanding of diarrhoeal disease and interventions in water and sanitation, we believe improvements in water supply must not occur in isolation. Upgrading of sanitation infrastructure and a concerted focus on hygiene behaviour for all communities in the TSA must take place concurrently. For example, we know that human hands may play an important role in the direct and indirect spread of HAV (Mbithi et al. 1992), and that hand-washing has a positive impact on diarrhoeal disease control (e.g. Khan 1982; Aung & Thein 1989; Cairncross 1992).

The most important preventative measures to control hepatitis A are the provision of adequate quantities of clean water for drinking and washing, proper disposal of sewage, adequate housing, and good standards of personal hygiene (Gust & Feinstone 1988). Our findings indicate the urgency of addressing these well-known preventative measures in the TSA.

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Aged care service use by Aboriginal and Torres Strait Islander peoples

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Summary

Aboriginals and Torres Strait Islanders make use of aged care services differently to non-Indigenous Australians. Two of the most striking differences reported here include the use of aged care services at younger ages by Aboriginals and the notably lower proportions of Aboriginals making use of residential services compared to home and community care services. The profile of Aboriginal aged care service users shows other important differences compared to non-Aboriginals. In particular, Aboriginals receiving home care services show a lower availability of carers than non-Aboriginals. Further characteristics which are compared are sex, presence of a co-resident prior to admission to a care facility or at the time of receiving home care, and marital status. The importance of these differences in terms of service provision and the need for more adequate data to facilitate planning is discussed.

Introduction

An important objective of the Aged Care Reform Strategy has been to facilitate access to aged care services by people of Aboriginal and Torres Strait Islander descent. Adequate provision of such services to Aboriginals and Torres Strait Islanders (hitherto referred to as Aboriginals) is best achieved with knowledge of the characteristics, needs and desires of members of these groups. In acknowledgment of the lower life expectancy and higher incidence of illness and debilitation currently evident among Aboriginals, the age used for planning the provision of aged care facilities for these people is 50 years: 20 years younger than for non-Indigenous Australians (Commonwealth Department of Health, Housing and Community Services 1991). Examination of service use patterns confirms that Aboriginals make use of aged care services at considerably younger ages than their non-Indigenous counterparts. In addition to their particular physical and medical requirements, Aboriginals show important differences in social and cultural characteristics which predispose them to patterns of service use atypical to that of the non-Indigenous population. For instance, the report of the Aged Care Reform Strategy Mid-Term Review made note of the difficulty of developing culturally appropriate residential care services and described the preference among Aboriginals for home and community care projects which provided better coverage for all age groups and allowed older people to remain with their families (Commonwealth Department of Health, Housing and Community Services 1991). The data presented in this paper provide a profile of some of the characteristics of Aboriginal aged care service users across four areas of service provision in the financial year 1993-94: home and community care, community options projects, hostels, and nursing homes. While the purpose of this paper is primarily descriptive, it also flags areas in which data is lacking or inconsistently collected and provides an opportunity to gain some insight into how the balance of aged care services for Indigenous Australians differs from that for non-Indigenous Australians.

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The data

The data analysed for this study were obtained from four of the national data collections undertaken within the aged care service network.

Home and Community Care (HACC) organisations provide a range of services to frail older people and younger people with a disability and their carers who are living in the community. The HACC Service User Characteristics Survey records the characteristics of a sample of HACC service users over a specified four-week period in all states (Department of Human Services and Health 1992). The survey of 41,653 service users from which these results were obtained was conducted in the financial year 1993–94. No information on Aboriginal status was available for a total of 4,331 (10%) service users.

Community Options Projects (COP) share the HACC objective to provide assistance to those in need within the community, in order to prevent premature or inappropriate admission to long-term institutional care. In addition, the projects provide packages of services to clients based on their assessed care needs. The COP Client Characteristics Survey is a census of COP clients taken over a two-week period across all States and Territories. Of the 6,726 clients sampled nationally in 1993, information concerning Aboriginal and Torres Strait Islander status was not provided for only 40 (0.01%) clients.

Hostels not only provide serviced accommodation to individuals but also provide residential care to individuals who require some form of personal assistance with such tasks as dressing, mobility, transfers, and supervision of medication. Records established at the time of admission to the hostel collect data on all residents, although it is not mandatory to record residents who are of Aboriginal or Torres Strait Islander descent. Consequently, of the 52,535 hostel residents present at the 30 June 1994, information concerning Aboriginality was not available for 30,269 (58%) residents.

Nursing homes offer residence to individuals who require more intensive levels of care, and have the capacity to offer ongoing care to some residents who may otherwise require hospitalisation. Records established at the time of admission to the nursing home collect data on all residents, although, as is the case for hostels, it is not mandatory to identify residents who are of Aboriginal or Torres Strait Islander descent. Consequently, of the 73,552 nursing home residents present at the 30 June 1994, information concerning Aboriginality was not available for 17,668 (24%) residents.

Home and Community Care (HACC)

Aboriginals comprised 3% of HACC service users during 1993–94. Aboriginal service users differed from non-Aboriginals with respect to the ratio of males to females, but most particularly by their age and living arrangements.

Just over one-third were males (37%). The proportion of males was slightly higher among Aboriginal users of HACC services compared to non-Aboriginal users (31% of non-Aboriginal users were males).

Examination of the age distribution of Aboriginal users of HACC services revealed a markedly different pattern compared to that obtained for all HACC service users. The modal age group for Aboriginal HACC service users was less than 50 years; for non-Aboriginals the modal age category was 80–84 years. Among older Aboriginals (those 50 years and over), the most common age group was 65–69 years, 15 years younger than the non-Aboriginal mode. This service use pattern is consistent with mortality and morbidity trends for Aboriginals and non-Aboriginals (Abraham et al. 1995). Figure 1 illustrates that Aboriginals make greater use of

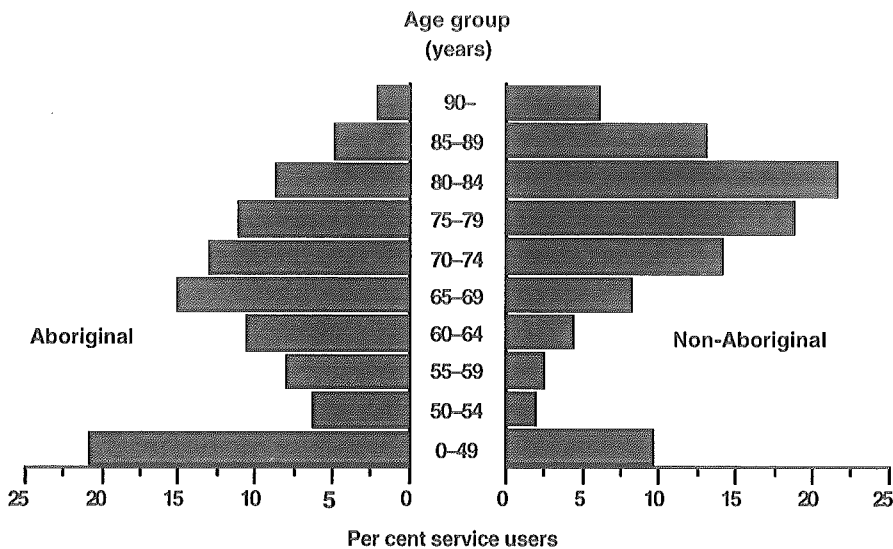


Figure 1: Age-specific distribution of Aboriginal and non-Aboriginal HACC service users, 1993-94

HACC services at younger ages compared to non-Aboriginals. Aboriginal HACC service users were more likely to live with someone else than non-Aboriginal users. Just under three-quarters (73%) of Aboriginal HACC service users lived with someone else compared to just under one-half (49%) of non-Aboriginal HACC service users. In comparison, the proportion of Aboriginal HACC service users with a carer available was equivalent to the proportion noted among non-Aboriginal users (60% and 58%, respectively).

Community Options Projects

Of the total group of community options clients for the two-week period in 1993, 7% were Aboriginals or Torres Strait Islanders. Thirty-eight per cent of Aboriginal community options clients were males, 4% higher than the proportion of non-Aboriginal males.

A sizeable proportion of non-Aboriginal community options clients were below the age of 50 (15%), but for Aboriginal service users as many as one in four (24%) were below the age of 50. For older Community Options Projects clients (those over 50 years), the peak of community options clients occurs at a considerably younger age for Aboriginals than for non-Aboriginals. For older Aboriginals, the largest proportion of clients was between the ages of 70 and 74 years (14%); for older non-Aboriginals, the highest proportion of clients was noted between the ages of 80 and 84 years (20%). Seventy per cent of non-Aboriginal community options clients were aged 70 years and above. In contrast, 67% of Aboriginal community options clients were below the age of 70. Figure 2 illustrates the greater use of community options projects by younger Aboriginals, with a small increase in the proportion of Aboriginal service users with increasing age. There were only 4% more Aboriginals in the 70-74 years age group compared to the 50-54 years age group. In contrast, a tenfold increase was noted in the numbers of non-Aboriginals using community options projects, from the ages of 50-54 years (2%) to 80-84 years (20%).

Just under three-quarters of Aboriginal community options clients lived with someone else (73%). This proportion was substantially larger than that for non-Aboriginal community option clients of whom 57% lived with someone else. Clearly however, not all co-residents were able or willing to be carers: only 43% of Aboriginal clients had a resident carer, 20% had a visiting carer, leaving 37% without a carer. In comparison, 48% of non-Aboriginal clients had a resident carer, 22% had a visiting carer, leaving only 28% without a carer.

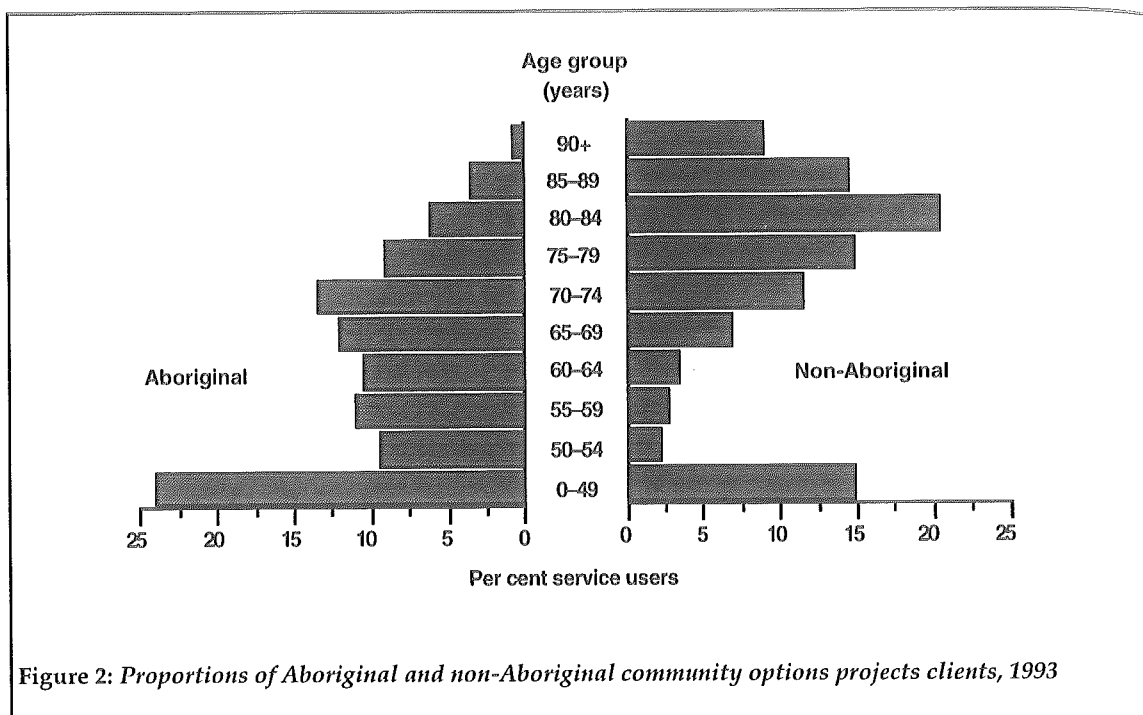


Figure 2: Proportions of Aboriginal and non-Aboriginal community options projects clients, 1993

Hostels

Among hostel residents, 2% were of Aboriginal or Torres Strait Islander descent. Almost half of Aboriginal hostel residents were males (48%), which proportionately was almost twice as many males as among non-Aboriginal hostel residents (26%).

An age breakdown of Aboriginal and non-Aboriginal residents in hostels reveals that the modal age group for Aboriginal hostel residents was the same as for non-Aboriginal hostel residents: 80-84 years (10% of Aboriginals and 15% of non-Aboriginals fell into this age category). Figure 3 shows, however, that between the ages of 50 and 75 there was almost double the proportion of Aboriginals compared to non-Aboriginals (29% of Aboriginals fell in this age category as compared to 15% of non-Aboriginals).

Aboriginal residents were more likely to have lived with someone else prior to entry into a hostel than non-Aboriginals (68% compared to 43%; see Table 1). Information on the availability of a carer prior to entry into the hostel is not collected; however, information is available on the relationship of the cohabitant to the hostel resident (Table 1). Where the hostel resident had been living with another person or persons, for Aboriginals this was most likely to have been a person other than family (22%), followed by their child and their child's family (14%), and then by a family member other than immediate siblings, children or spouse (12%); for non-

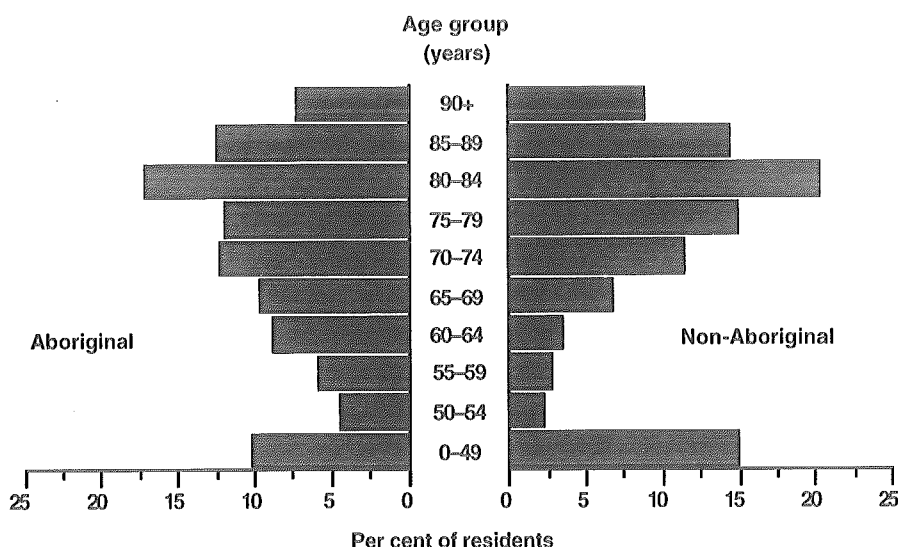


Figure 3: Age-specific distribution of Aboriginal and non-Aboriginal hostel residents, 1993-94

Table 1: Usual cohabitant for Aboriginal and Torres Strait Islander hostel residents, 1993-94

Cohabitant	Aboriginal		Non-Aboriginal	
	Number	%	Number	%
Lives alone	112	32.2	12,398	57.2
Spouse only	23	6.6	2,667	12.3
Spouse and other	18	5.2	157	0.7
Sibling	20	5.8	476	2.2
Child	7	2.0	618	2.9
Child and child's family	49	14.1	2,143	9.9
Other family	43	12.4	474	2.2
Other	76	21.8	2,739	12.6
Total	348	100.0	21,672	100.0

Note: All figures calculated excluding cases (30,515) with missing data.

Aboriginals this was most likely to have been a person other than family (13%), followed by their spouse only (12%).

Table 2 shows that the majority of Aboriginal hostel residents were widowed (52%), but this proportion was lower than that noted among non-Aboriginal residents, two-thirds of whom (67%) were widowed. Aboriginal hostel residents were more likely than non-Aboriginal residents to have never been married (22% compared to 12%) and were more likely to be separated (9% compared to 2%), or living in a de facto relationship (3% compared to 0.1%).

Table 2: Marital status of Aboriginal and Torres Strait Islander hostel residents, 1993-94

Marital status	Aboriginal		Non-Aboriginal	
	Number	%	Number	%
Widowed	180	51.6	14,496	66.6
Never married	75	21.5	2,686	12.3
Separated	30	8.6	417	1.9
Divorced	9	2.6	720	3.3
De facto	10	2.9	31	0.1
Married	45	12.9	3,408	15.7
Total	349	100.0	21,758	100.0

Note: All figures calculated excluding cases (30,515) with missing data.

Nursing homes

One per cent of nursing home residents were Aboriginal. One-third (33%) of Aboriginal nursing home residents were males; again this proportion was somewhat higher than that noted for non-Aboriginals (29%).

The numbers of Aboriginal residents in various age categories are shown in Figure 4. The modal age group was the same for both groups: 80-84 years (19% of Aboriginals and 24% of non-Aboriginals fell into this category). There is however, evidence of heavier use of nursing homes by younger Aboriginals compared to non-Aboriginals. Just over one-third (36%) of non-

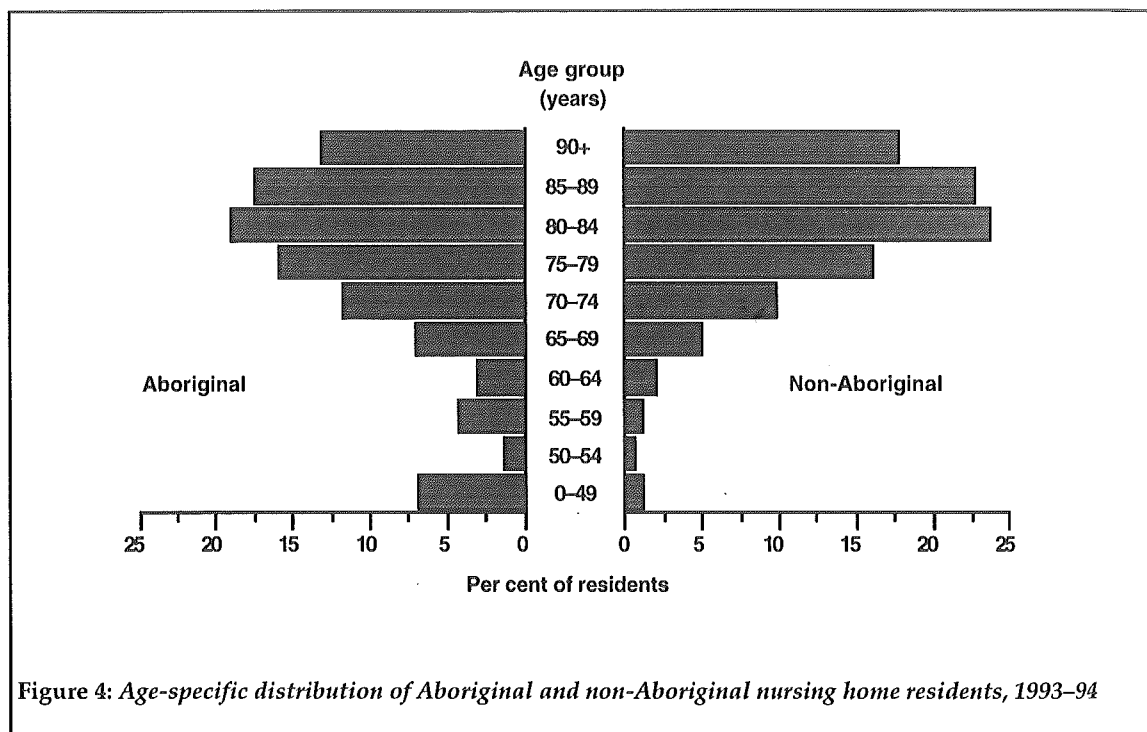


Figure 4: Age-specific distribution of Aboriginal and non-Aboriginal nursing home residents, 1993-94

Aboriginal hostel residents were aged under 80 years, whereas half (50%) of Aboriginal hostel residents were aged under 80 years. Likewise, the proportion of Aboriginals below the age of 50 (7%) was approximately seven times that of the proportion of non-Aboriginals (1%).

Table 3 lists the cohabitants of Aboriginal and non-Aboriginal residents prior to admission. Approximately two-thirds (68%) of non-Aboriginal residents lived with someone else prior to entry into the nursing home, but among Aboriginal residents this proportion was slightly higher (72%). Where an Aboriginal resident had been living with another person or persons, this was most likely to have been a person other than family (30%). This proportion was similar to that for non-Aboriginal nursing home residents, for whom 28% had been living with a person other than family.

Table 3: Usual cohabitant for Aboriginal and Torres Strait Islander nursing home residents, 1993-94

Cohabitant	Aboriginal		Non-Aboriginal	
	Number	%	Number	%
Lives alone	165	28.0	14,641	32.4
Spouse only	67	11.4	9,149	20.2
Spouse and other	26	4.4	1,159	2.6
Sibling	15	2.5	886	2.0
Child	15	2.5	1,976	4.4
Child and child's family	57	9.7	3,623	8.0
Parents	15	2.5	433	1.0
Other family	51	8.7	662	1.5
Other	178	30.2	12,707	28.1
Total	589	100.0	45,236	100.0

Note: All figures calculated excluding cases (27,727) with missing data.

The second most common cohabitant for both Aboriginal and non-Aboriginal nursing home residents was a spouse. Eleven per cent of Aboriginals lived alone with their spouse prior to admission, almost half the proportion for non-Aboriginal residents (20%). The resident's child and their child's family was the third most common co-resident for both Aboriginal and non-Aboriginal nursing home residents (10% and 8% respectively). A similar proportion of Aboriginals were co-residing with a family other than that of their parents or children (9%), but non-Aboriginals were far less likely to have lived in this extended family arrangement (2%). Similar proportions of non-Aboriginal and Aboriginal residents had lived with a spouse and another person or persons prior to admission (3% for non-Aboriginals and 4% for Aboriginals), alone with their child (4% for non-Aboriginals and 3% for Aboriginals), with a sibling (2% for both groups) and with parents (1% for non-Aboriginals and 3% for Aboriginals).

Similar proportions of Aboriginal and non-Aboriginal nursing home residents were widowed. As Table 4 shows, just over half of both groups of residents were widowed (54% of Aboriginals and 52% of non-Aboriginals). Fourteen per cent of Aboriginals had never been married at the time of admission, a proportion only slightly higher than that for non-Aboriginals (14% of Aboriginals compared to 11% of non-Aboriginals). Aboriginal nursing home residents were also somewhat more likely than non-Aboriginals to have been separated (4% and 1% respectively), divorced (4% and 3% respectively) or de facto (2% and 0.3% respectively) at the time of

admission to the home. One in five (20%) Aboriginals were married at the time of admission to the nursing home, 10% less than the proportion of non-Aboriginal residents who had been married. Two to three per cent of both Aboriginal and non-Aboriginal nursing home residents had marital arrangements other than those specified above at the time of admission.

Table 4: Marital status of Aboriginal and Torres Strait Islander nursing home residents, 1993-94

Marital status	Aboriginal		Non-Aboriginal	
	Number	%	Number	%
Widowed	344	54.1	28,581	52.1
Never married	90	14.2	6,142	11.2
Separated	23	3.6	653	1.2
Divorced	25	3.9	1,397	2.5
De facto	11	1.7	159	0.3
Married	127	20.0	16,643	30.4
Other	16	2.5	1,254	2.3
Total	636	100.0	54,829	100.0

Note: All figures calculated excluding cases (18,087) with missing data.

Conclusions

Aboriginals comprise 3% of Home and Community Care clients, 7% of community options clients, 2% of hostel residents, 1% of nursing home residents, and an estimated 1.6% of the population of Australia (Australian Bureau of Statistics 1995). The data presented in this paper is taken from four data sources with different types of client data collections; one is a sample of clients over a four-week period, another a census of clients over two weeks, and the two remaining are populations of clients on a single day in 1994. As such, direct comparison of numbers of persons across the four data sources is meaningless, but some insight can be gained from comparisons of proportions across the different data collections. Aboriginal people make greater use of non-residential aged care services than residential services. An important reason for this apparent under-representation of Aboriginals in residential aged care services is detailed in the report of the Tjilpi Pampa Tjutaku Project, titled *They Might Have to Drag Me Like a Bullock* (Woenne-Green 1995). This report documents the strong desire of Aboriginal people to remain on the land in their old age, even as they approach death.

Given that life expectancy and health outcomes are so much poorer for the Aboriginal population, it follows that Aboriginal Australians would make use of aged care services at an earlier age. This is indeed the case for Home and Community Care and community option projects, whose Aboriginal clientele is predominantly under the age of 70 years, but whose non-Aboriginal clientele is predominantly over the age of 70 years. This trend is also evident in residential aged care services, although to a lesser degree. Sizable proportions of Aboriginals in nursing homes and hostels are among the very old, aged 80 years and over, well beyond the average life expectancy for Aboriginals.

In the non-Indigenous Australian population, approximately one-third of individuals in each of the four service types were male. For Aboriginals the proportion of males was consistently

higher than that for non-Aboriginals, although this difference was small for users of HACC, community options clients and nursing homes. For hostel residents the proportion of Aboriginal males was almost twice that of non-Aboriginal males. It is important to note, however, that this large difference may be an artefact of the high number of missing cases in the hostel data, producing unreliable client population estimates. The observation that larger proportions of Aboriginal males make use of services than non-Aboriginal males has been observed in relation to other health care facilities. For instance, hospital admission rates in 1991–92 were 71% higher for Aboriginal males than for non-Aboriginal males, but admission rates were 57% higher for Aboriginal females compared to non-Aboriginal females (Australian Institute of Health and Welfare 1994).

Aboriginal users of aged care services were more likely than non-Aboriginals to currently share or have previously shared their dwelling with others. Across the four service types an average of 72% of Aboriginals shared their accommodation. It was only among nursing home residents that the proportion of non-Aboriginals who had not lived alone approached the proportion of Aboriginals who had not lived alone.

The presence of co-residents cannot be assumed to imply the presence of a carer. Among home care services, there were fewer Aboriginals with a carer than there were Aboriginals with co-residents, suggesting that although Aboriginals were less likely to live alone, they were also more likely to live with someone either unable or unwilling to undertake a carer's role. Aboriginals were just as likely (or more likely in the case of Community Options Projects clients), to be without a carer as non-Aboriginals.

Information on marital status, available only for hostel and nursing home residents, shows that, like non-Aboriginal residents, Aboriginals in hostels and nursing homes were most likely to have been widowed. It also appears that Aboriginal residents were more likely to have marital arrangements which were not formalised under law, but which may have left them without a partner to care for them—that is, they were more likely to have never been married or to have separated. Aboriginals were also more likely to have lived in a de facto relationship prior to entry into residential care.

Comparisons of aged care service use by Aboriginals across residential and non-residential care are made difficult by incompatibilities in data collection, both in terms of sampling procedures and the types of questions assessed. Perhaps most regrettable is the high proportion of missing data regarding Aboriginal and Torres Strait Islander status. This problem is most evident for hostel residents. This avoidable source of data loss seriously compromises the validity of any analysis concerning Aboriginal use of aged care services carried out with our national collections, thereby constraining its usefulness.

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Book/thesis reviews

Aged care

Review by Julia Burke*

'They Might Have to Drag Me Like a Bullock': The Tjilpi Pampa Tjutaku Project. The Rights, Needs and Care Options of the Senior Men and Women of the Ngaanyatjarra, Pitjantjatjara and Yankunytjatjara Communities in the Cross-Border Region of Central Australia, by Susan Woenne-Green. Ngaanyatjarra Pitjantjatjara Yankunytjatjara (NPY) Women's Council Aboriginal Corporation, 1995, 148pp.

This is a really important report. It is the first time that we make a strong story about how to make sure that old people live and die on their country. Old people are really important to us. They are the ones who hold the Law, they are the owners and the bosses of the sacred places and they are our teachers. Aboriginal people all over Australia have the same ideas of looking after their old people. They can't be sent away to die in another country. Our culture can only stay strong if our old people are with us on our lands, passing on the Law. This is what keeps us strong. Old people are our future.

Mantatjara Wilson, Project Officer, NPY Women's Council

The Ngaanyatjarra Pitjantjatjara Yankunytjatjara (NPY) Women's Council Aboriginal Corporation have published a major research report into the needs of aged Aboriginal people (*Anangu*) on remote communities in the cross-border region of Central Australia. *They Might Have to Drag Me Like a Bullock* was generated because of concerns that senior men and women were too often being sent away to hospitals and nursing homes and too often dying away from family and country.

Written for NPY Women's Council by anthropologist Susan Woenne-Green, with research assistance by Sandra Lewis, Tjikalyi Colin, Jorna Newberry, Valerie Foster and Mantatjara Wilson, the report shows that communities do not have services dedicated to the needs of the frail aged, something that is taken for granted in urban areas. Lack of consistent support and services makes it extremely difficult for families and carers to assist their aged members to remain on their home communities. It highlights the growing awareness of the complexity and 'special' care requirements of the aged in remote Aboriginal communities and the need to develop an integrated and coordinated range of services that can anticipate changing needs of the aged and their carers.

The NPY Women's Council resolved to research exactly what were the circumstances of senior *Anangu*, 'at risk', living in their member communities and homelands: what were their needs, what were the needs of their carers, what services were available in their communities; how senior *Anangu* (and others) perceive the needs of their carers and of carers of the aged in general; and how could appropriate support services be defined, developed and maintained

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within their communities so as to support the rights of elderly *Anangu* to be cared for and die where and how they choose (page 6).

The report is divided coherently into six chapters with detailed appendices. It is more than a dry academic study on the needs of the aged; it educates the reader into the complexities of contemporary life on remote communities as well as narrating enlightening stories about traditional times. An important function was to heighten the profile of the rights of the aged as a matter of principle that could be addressed as an issue for policy development in its own right as opposed to only being a 'problem' faced with difficulty by others. The first chapter provides background information about the NPY Women's Council and explains the specific nature of an *Anangu* research project that uses Aboriginal Terms of Reference (page 6).

Chapter 2 is a comprehensive discussion on how the project was managed and realistically looks at its scopes and limitations. It emphasises that the project was *Anangu*-controlled and *Anangu*-driven. It discusses definitions of 'aged' or 'at risk', which include 'those who were not able (or soon would not be able) to function independently of some form of assistance, either medical or from other sources of support' (page 13). An interesting cross-cultural distinction is made that the category 'aged' as defined by chronological boundaries is not particularly relevant to *Anangu*. A person may be aged, depending upon a number of circumstances quite apart from date of birth.

Fieldwork involved speaking with approximately 400 *Anangu* from 15 communities in situations that ranged from small discussions and 'focus group meetings' to larger community meetings and more formally constructed interviews. Interviews involved approximately 65 senior men and women.

Interposed within the project was a study of an aged care facility at Docker River Community in the Northern Territory that had operated for eight months in 1993 and then been forced to close, due to escalating contention between the Community and various funding agencies. The primary objectives of the Docker River consultancy were to retrospectively evaluate the operation of the Aged Care Service through an assessment of the needs of the resident senior men and women, assist the Community to identify the strengths and weaknesses of its (previous) operation, and develop a plan by which the Community could become a more effective and appropriate service provider. Chapter 3 discusses the outcomes of this study. The author concludes that this consultancy provided tangible reference for discussions in the wider context of the final report.

Chapter 4 looks at some of the 'jurisdictional complexities' which impede *Anangu* achieving self-determination. Difficulties and frustration arise in negotiations with government bureaucrats who refuse to be flexible in dealing with communities that overlap over two States and the Northern Territory. This is a common problem for Aboriginal organisations that operate in the cross-border area of Central Australia. This chapter also provides a comprehensive discussion of key Aboriginal organisations, such as land councils and health councils, which operate in the cross-border region. This is an invaluable summary for those who want to understand how Aboriginal organisations work in the Centre. An overview of population statistics is presented; more extensive population figures per community are contained in the appendixes.

The crux of the research project is revealed in Chapter 5, 'Discussions and Findings'. The authors find that 'not one of the communities within the Project area had current services dedicated to the needs of the frail aged (or younger disabled), although most of them had attempted or were currently operating some form of "meals on wheels" service and informally structured day-to-day attendance on the aged' (page 51). Another significant finding was that those communities that had well-supported and well-equipped women's centres were able to

provide a greater range of consistent services for the senior *Anangu*, although none of them were equipped or staffed to provide either consistent support for a person who required any level of nursing care or predictable support for family member carers who required respite care (page 51).

Discussions cover caring for the aged in the olden days; the need to die on one's traditional country; who will advocate for the aged; appropriate housing; day-to-day needs such as firewood, meals and washing; the role of community clinics; and who is responsible for the caring role. The overwhelming response comes through that senior *Anangu* do not want to leave their homes on the lands to be cared for in a foreign environment such as a town-based nursing home. In the words of one elderly lady from Wanarn, Western Australia:

I don't want to worry for [that nursing home]; I want to stay here in the country where my mother and father found [conceived] me. I won't go to that home—to strangers' country. When I was a young woman I've been all over the stations mustering sheep and bullock and working hard all the time just like a man. I want to stay here with my daughter and grandchildren close by until I finish up. You won't get me to that home; it's not the right way. They might have to drag me like a bullock. (foreword)

One carer outlines the responsibility of family members which, as the report shows, is extremely difficult without access to services:

We have to look after all the old people. Without them we'd be nothing, would know nothing and would wander all over the country not knowing where to go or what to eat or anything about the Tjukurpa.¹ They taught us to know who we are! They bore us and taught us where we came from. They looked after us and taught us all the way while we were growing up and we, in turn, must now look after them properly. These people are the Law for us, they are the country. We can't just forget all that and chuck them away to some strange place. We can't just throw away the Law... So you see, we have a lot of really important laws and rules in our way of life. So we keep those laws and rules and regulations inside our heads. The laws that have come down through the old people. (page 58)

The authors surmise that 'whether (and how) the proposals are developed into policies and programs depends very much upon the will of community members at large, the community councils and umbrella bodies to advocate for the issue of caring for the aged as an issue in its own right' (page 80). In summary the report finds that one of the more vital aspects is what appears to be a concerted effort to respond to the demands that such programs be based on *Anangu* perceptions of their own needs and their own capacities to address them. Until recently these issues have not been addressed at a Commonwealth, State or Territory level, resulting in there being little precedent on which *Anangu* communities can draw upon (page 63).

The final chapter outlines 17 recommendations that are based on the principles as asserted in Chapters 1 and 2 that the planning, development and delivery of all aged care related services must be conducted in consultation with *Anangu* and controlled by *Anangu*. Details will require further consultations with *Anangu* but the recommendations represent the principles, proposals, definition of problems and solutions that have directly emerged 'from the ground up'.

The report contains detailed appendixes of statistical data and questionnaires, and a bibliography. Breathing life into the report are quotes from the senior men and women, and their carers. The

¹ Tjukurpa is commonly glossed in English as the 'Dreaming' and the 'Law'. The Tjukurpa encompasses the traditional Aboriginal religion and philosophical systems of belief, thought and rules for behaviour that are celebrated, sustained and perpetuated by ties of kinship and ceremony. Those ties, in turn, take their meaning from people's relationship to the land and, via the land, their relationships to one another.

report is a model for other remote Aboriginal communities looking at the needs of their aged members. Universities, libraries and gerontologists will find it a useful reference tool. The report is an inspiration to those who care about our aged.

Copies of *They Might Have to Drag Me Like a Bullock*, are available for \$20.00 plus \$5.00 postage for overnight courier. Contact NPY Women's Council, PO Box 2189, Alice Springs NT 0871. Tel: (089) 50 5452; Fax: (089) 52 3742.

Aboriginal deaths

Summary by Tarun Weeramanthri*

Out of Sadness, Hope — a Cause of Death Validation Study and Public Health Audit of Adult Aboriginal Deaths in the Northern Territory, by Tarun Weeramanthari. Menzies School of Health Research, Darwin.

This PhD thesis (University of Sydney 1995) is a descriptive and critical study of the production and use of mortality statistics relating to adult Aboriginal people of the Northern Territory. It is premised on the belief that a death can be an opportunity for professional and community reflection on the best ways to prevent a similar death in the future. It uses an intensive case study approach to describe and interpret the deaths of 220 adult Aboriginal people who lived and died in the Northern Territory in 1992.

The thesis makes two major contributions to the literature on this subject. Firstly, it identifies certification of death by the physician, rather than diagnostic accuracy, as the key process requiring improvement, if the validity of mortality statistics is to be maximised. Secondly, the thesis identifies ways in which mortality information can be classified, reviewed, and presented so as to maximise its impact on decision-making processes that affect the health status of Aboriginal people.

Chapter 1, 'Literature Review and Conceptual Framework', demonstrates:

- a) the need for a study to validate medical cause of death statistics for adult Aboriginal people in the Northern Territory;
- b) the need to complement such a study by identifying social and systems issues underlying the medical causes of death; and
- c) the need to present information in innovative formats to Aboriginal people, so as to add value to the use of mortality information.

Chapter 1 has three sections. In the first section, the production of mortality statistics is described in three stages—diagnosis, certification and coding. Two points are emphasised: the central importance of the underlying cause of death, as distinct from the direct cause of death; and the role of the physician at both diagnostic and certification stages. It is concluded from this section that previous cause of death validation methods have failed to adequately distinguish diagnostic error, which is in many ways inevitable, from certification error, which is not.

In the second section, it is argued that the collection of data on Aboriginal mortality cannot be seen as an unproblematic, value-neutral, technical exercise. Data collection and the subsequent acts of causal selection and classification (which are essential to the processes of diagnosis and certification) should all be viewed and justified within a historical and social context.

In the third section, the studies directed at, or relevant to, the magnitude and nature of the adult Aboriginal mortality problem in the Northern Territory are described, focusing on the methods (ethnographic, epidemiological, social, clinical, and ecologic) by which it has been analysed, and the gaps in the analysis.

The majority of epidemiological studies on Aboriginal mortality described, whilst effectively demonstrating the magnitude of the burden of premature mortality borne by Aboriginal people,

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treat mortality information as unproblematic, and a direct reflection of the real life events they purport to describe. There are four main problems with this body of work.

Firstly, all the epidemiological studies of premature Aboriginal mortality assume the accuracy of cause of death information. Secondly, the mechanisms whereby Aboriginality is associated with premature mortality have rarely been explored. Thirdly, medical cause of death studies, whilst acknowledging the importance of underlying social, economic and other factors in the genesis of medical disease and early death, and whilst alluding to cross-cultural differences in attributing causation around death, have adhered to the traditional medical model in analysing and reporting their results. Fourthly, as stated in the communique of the Kioloa Workshop on Aboriginal mortality, the research community had not met its minimum responsibility in ensuring that the Australian Aboriginal community was adequately informed, even from a purely medical viewpoint, about the nature and magnitude of their adult mortality levels. Chapter 2, 'Methods', begins with a review of the ethical guidelines relevant to Aboriginal health research in Australia.

Two broad research questions are then posed: the first concerning the production of mortality statistics in the Northern Territory; the second concerning the review and use of mortality statistics.

1. How can the system of producing mortality statistics be changed so as to maximise the future validity of the process in the Northern Territory?
2. How can mortality information be reviewed and used so as to contribute to Aboriginal and non-Aboriginal attempts in health and other sectors to lessen the burden of premature Aboriginal mortality in the Northern Territory?

The contribution of two pilot studies (one performed in Western Australia, and one in the Northern Territory) and physician interviews to the design of the prospective study is outlined. The prospective study is seen to be comprised of two parts: firstly, a medical cause of death validation study; secondly, a form of cooperative audit, named 'public health audit' that identifies medical, community and organisational issues around death.

For the purposes of the cause of death validation study, a new typology of misclassification error is described, with types of diagnostic error defined separately from types of certification error and coding error. The major new need identified was for a method to identify significant certification errors.

In Chapter 3, 'Pilot Study 1: Development and validation of a new method to assess death certification error', a method is described to classify certification errors. This method differentiates between major errors with potential ramifications for underlying cause of death coding and minor errors with no such significance. A total of 430 death certificates registered in Western Australia in a single month, March 1990, were reviewed using this method. Major errors were found in 16% of certificates (95% confidence limits 12-20%). The method was validated on a separate sample of 120 certificates.

Chapter 4, 'Development of educational material regarding death certification and assessment of its impact on hospital medical staff'. Following on from the first pilot study, the effect of an educational intervention on the knowledge and behaviour of 388 hospital staff is described. A simple, discriminant questionnaire was used in conjunction with educational material to focus attention on potential knowledge gaps. The educational effort was linked to outcome assessment of certification performance in the institution.

Chapter 5, 'Pilot Study 2: Towards a direct definition of an alcohol-related death' describes the pilot cause of death validation study in a single Top End Aboriginal community, and emphasises the conceptual and methodological difficulties that were faced in obtaining reliable

information on alcohol-related mortality. A working definition is proposed, requiring an alcohol-positive history together with a consistent mode of death, and applied retrospectively to a series of 29 adult deaths. Alcohol-positive histories were found for 17 in 29 deaths by informant history, for 9 in 29 by post mortem findings, and for 12 in 29 by medical record review. These indicators were combined with a mode of death categorisation to arrive at an estimate of 5 in 29 definite, 5 in 29 probable, and 1 in 29 possible alcohol-related deaths. This estimate of 11 alcohol-related deaths is in contrast to the two deaths attributed to alcohol on the death certificates. Aside from underestimation of the role of alcohol, little evidence of significant misclassification of underlying cause of death was found.

In Chapter 6, 'Pilot Study 2, cont. Development and use of the "Land, Body, Spirit and Smoking" classification for discussing adult mortality at a community level', work in the second pilot study leading to a novel classificatory framework is described. Land, Body, and Spirit categories were developed from an existing World Bank classification of 'Communicable Diseases, Non-communicable diseases, and Injuries' and an extra category of (Tobacco) Smoking was defined. This novel classification attempts to bridge traditional Aboriginal and Western systems of assigning causation, and allows emphasis to be given to the social and community factors underlying the medical causes of death. Of 134 adult deaths in the pilot community from 1980-89, 20 (15%) were classified in the Land group, 55 (41%) in the Body group, 12 (9%) in the Spirit group and 47 (35%) in the Smoking group. The classification, together with a simple statistic called the proportional mortality ratio, was used to feed back information to the pilot community in the form of pie charts; this method proved culturally acceptable and enhanced the process of communicating complex health information in both community feedback sessions and at a community workshop.

Chapter 7, 'Physician Interviews', describes 19 semi-structured interviews with physicians working in the Northern Territory designed to elicit their attitudes and experiences relating to communication issues around Aboriginal deaths, and practical issues concerning death certification and mortality review. Two key themes emerged. The first was the variety of interpretations placed by physicians on the concept of 'respect', and the difficulty they had in showing that respect in light of competing Western legal and professional obligations. The second theme was that physicians felt that, in general, Aboriginal people's notions of 'blame' and 'responsibility' did not match their own. This led some physicians to become despondent, whilst others negotiated this tension creatively.

In Chapter 8, 'Prospective Study', the characteristics of 345 Aboriginal deaths (190 male, 155 female) of all ages in 1992 are described with respect to their place of birth and death, urban or rural residence, coronial and/or post mortem status and degree of prior contact with the Western medical system.

There were 298 adult deaths (people aged 15 years or over at the time of death), and 47 child deaths, in all regions of the Northern Territory. The overall Aboriginal PMR<50 (percentage of decedents aged less than 50 years at death) was 48% (166 in 345), compared to a figure of 12% for all Australians. The male Aboriginal PMR<50 was 55% and the female PMR<50 was 47%.

For the 78 adult deaths in Alice Springs Region, permission was obtained to examine death certificates and underlying cause of death codes only.

Of the other 220 deaths, a clinic and/or hospital record was available in 202 cases (92%) and an informant history was obtained from Aboriginal health worker, and/or nursing sister, and/or physician in 173 cases (79%). Overall, medical records and/or informant histories were available in 216 cases (98%).

In 201 cases (91%) the diagnosis of cause of death was judged to be either confident, probable or supported; in 12 cases (5%) the diagnosis was judged to be possible; in three cases (1%) it was

judged to be a guess; and in four cases (2%) there was insufficient information on which to make an assessment.

Seventeen cases out of 220 (8%) had errors in ICD-9 chapter classification, and a further 14 (6%) had errors at the four-digit level. Certification error accounted for 11 in 17 (64%) of the chapter errors, and diagnostic and coding error for 3 in 17 (18%) each; certification error, therefore, was the dominant form of misclassification error found in this study.

Leaving aside the question of alcohol attribution, it can be concluded that the overall quality of the medical cause of death statistics pertaining to Aboriginal residents of the Northern Territory in 1992 was of sufficient standard in 1992 to inform community action options and public policy decisions, but that the quality could be improved.

The proportion of deaths related to alcohol was estimated using the method described in Chapter 5. The percentage of definite, probable and possible alcohol-related deaths in adult males was 41 in 129 or 32%; in adult females it was 10 in 91 or 11%.

After correcting for diagnostic, certification and coding errors, and after attributing the directly identified alcohol-related deaths to the Spirit category, the Land group accounted for 13% of deaths; the Body group accounted for 40%; the Spirit group for 28% and the Smoking group for 18%.

The medical, community and organisational issues surrounding the deaths are described, by region of residence. The three issues most often raised were the poor feedback of information to families after death, the stress and trauma for health staff around death, and the issue of how to respond to alcohol-related deaths.

In Chapter 9, 'Discussion and Recommendations', the implications of the study for improving the production and use of mortality information are discussed.

Five broad recommendations are made and the means of implementation outlined. The recommendations concern the need for a quality assurance program promoting excellence in death certification, the need to improve the system of feedback of coronial information to families of Aboriginal decedents, the need to develop best practice guidelines for health professionals dealing with death in Aboriginal communities, the need to make medical mortality review compulsory in all major Northern Territory hospitals, and the need for a broadly constituted Aboriginal Mortality Committee to report annually on the level and causes of Aboriginal mortality.

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Ear disease in Aboriginal children

Summary by John E Stuart*

A Randomised Controlled Trial of Nasal Beclomethasone Spray in Ear Disease in Aboriginal Children, by John E Stuart. Faculty of Medicine and Health Sciences, University of Newcastle.

This Master of Medical Science thesis (University of Newcastle 1993) is a study of the effect of nasal beclomethasone on chronic ear disease. Chronic ear disease is very common in Aboriginal children; chronic suppurative otitis media is the most obvious problem, but otitis media with effusion (OME), or glue ear, leading to middle ear dysfunction and hearing loss is also increasingly being recognised as a significant problem. The peak prevalence of this condition has been found to occur in the preschool and early school age group (4-7 years), a time when acute hearing is essential for normal language development and optimal school progress.

There has been limited research on the aetiology or prevention of OME in Aboriginal children in Australia. This study was designed to investigate the possibility that allergy plays a role in the development of OME in Aboriginal children, and to determine whether intra-nasal beclomethasone is a useful medication to treat children with suspected OME, there being some evidence in the literature that this might be the case. The study was carried out on an Aboriginal community on the North Coast of New South Wales where the author is well known.

In 1989, 37 children (aged between three and seven years) attending a preschool and kindergarten class in the community were screened with otoscopy, audiometry, tympanometry, and skin tests for allergy. Other variables measured include height, weight and peak expiratory flow. Of these, 26 children were included in a double blind randomised controlled trial of nasal beclomethasone. The children were included in the study only if they had abnormal tympanometry in one or both ears.

The children were randomised to receive either beclomethasone nasal spray or placebo twice a day while at school for a period of five weeks. At the conclusion of the course of treatment, the children were re-examined and otoscopy, audiometry and tympanometry repeated. These tests were again undertaken after five weeks and repeated after a further four weeks.

The treatment group showed a greater improvement in the tympanometry results than the placebo group. There was also a marginal improvement in hearing levels in the treatment group, but this difference was not significant. The improvements increased with time, with the biggest difference detected at the end of the study, nine weeks after the course of treatment had been completed, suggesting a delayed response to beclomethasone.

A second study was carried out in 1990 on 24 Aboriginal children. The design was similar to the first study, but the treatment period was extended to eight weeks. On this occasion, no improvement in tympanometry could be detected over the course of the study, but there was a greater improvement in hearing levels in the treatment group compared to the controls. This difference was most marked at the end of the study, again suggesting a delayed positive effect of nasal beclomethasone on OME in Aboriginal children.

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Why do Aboriginal newborns weigh less? Gestational age at delivery: estimation, distribution and determinants

Aust N Z J Obstet Gynaecol 34: 158-163, 1994

We reviewed birth records pertaining to 1,301 Western Australian singleton Aboriginal pregnancies dated before 24 weeks by ultrasound fetometry using Caucasian standards. We compared i) ultrasound- and LMP-derived estimates of age at delivery for 323 pregnancies with available last menstrual period (LMP) dates and ii) distributions of ultrasound-estimated age at delivery for full-blood with part-blood Aboriginal neonates and with statutorily collected estimates for Caucasian neonates. We investigated determinants of age at delivery for Aboriginal neonates. Ultrasound-derived estimates of gestational age for Aboriginal pregnancies were statistically but not clinically significantly shorter than estimates derived from LMP dates claimed to be certain: mean difference = 0.4 weeks (95% CI:0.09-0.71). Aboriginal gestations were shorter than Caucasians by 2 weeks (median) or 1 week (mode). Some shortening of gestation was accounted for by ante partum haemorrhage, congenital anomaly, history of syphilis, diabetes, hypertensive disease and inductions before 40 weeks without recorded medical complication, but not by full-blood (relative to part-blood) Aboriginality. We conclude that, Caucasian fetometry standards gave gestational estimates acceptably close to those derived from certain menstrual dates for dating scan before 24 weeks. Aboriginal gestations tended to be shorter than Caucasian gestations, but since factors recorded in the medical record accounted for little of this difference, socioeconomic factors may be partly responsible.

Boffa J, George C, Tsey K

Sex, alcohol and violence: a community collaborative action against striptease shows

Aust J Public Health 18: 359-366, 1994

Between September 1988 and February 1989, Anyinginyi Congress, an Aboriginal community-controlled health organisation, facilitated a collaborative community action against striptease shows in public bars in Tennant Creek. This action resulted in changes to the guidelines of the Northern Territory Liquor Act to regulate striptease shows in public bars and began other processes of addressing alcohol-related problems in the community. The composition and strategies of both the pro- and anti-striptease lobbies are analysed within the context of changing power relationships between Aboriginal and non-Aboriginal people, as epitomised in the growth and consolidation of Aboriginal community-controlled organisations in Tennant Creek. The role of the media in shaping the course and direction of the debates as well as the response of the Northern Territory government as the final arbiter in the striptease conflict are scrutinised. The use of sex to sell alcohol is a legitimate public health concern and community action for healthier public policy is an important strategy in creating supporting environments for health.

Booy R

Outbreak of group C meningococcal disease in Australian Aboriginal children [letter]

Lancet 346: 572-573, 1995

Boswell JB, Nienhuys TG

Onset of otitis media in the first eight weeks of life in Aboriginal and non-Aboriginal Australian infants

Ann Otol Rhinol Laryngol 104: 542-549, 1995

Otitis media (OM) is highly prevalent among Aboriginal Australians, in whom eardrum perforations with discharge have been reported in the first three months of life. Only one published study, however, has described middle ear status at birth or prior to eardrum perforation in young Aboriginal infants. This prospective study used otoscopy, tympanometry, and hearing tests to compare middle ear status and hearing sensitivity in Aboriginal and non-Aboriginal neonates. Immobile eardrums were observed immediately after birth, but mobility generally appeared within the first week. At examinations at 6-8 weeks of age, OM with effusion or acute OM was observed in 95% of 22 Aboriginal infants, but OM with effusion was seen in only 30% of 10 non-Aboriginal infants. There was a clinic record of unilateral perforation in one Aboriginal infant only. Hearing impairment was demonstrated by auditory brain stem response in five ears, all with evidence of middle ear abnormalities. Improved knowledge and diagnosis of the signs and symptoms of OM will contribute to improvements in the provision of early medical intervention to populations at high risk for early OM.

Bower C, Payne J, Condon R, Hendrie D, Harris A, Henderson R

Sequelae of *Haemophilus influenzae* type b meningitis in Aboriginal and non-Aboriginal children under five years of age

J Paediatr Child Health 30: 393-397, 1994

Between 1984 and 1990, 257 cases of *Haemophilus influenzae* type b (Hib) meningitis occurred in children under five years of age in Western Australia. We obtained information on possible sequelae in 131 cases (all non-Aboriginal) by medical record review and parental interview, and in a further 116 cases (60 non-Aboriginal, 56 Aboriginal) by medical record review only; no follow-up information was available for 10 children (nine non-Aboriginal, one Aboriginal). The incidence of Hib meningitis in children under five years of age was 26.3 per 100,000 for non-Aboriginal and 152.2 per 100,000 for Aboriginal children. The case fatality rate was 3.5% for non-Aboriginal children and 14.0% for Aboriginal children. Sequelae were recorded for 17.1% of non-Aboriginal and 22.4% of Aboriginal children who survived Hib meningitis.

Surviving Aboriginal children experienced severe sequelae following Hib meningitis almost three times more frequently than surviving non-Aboriginal children (10.5% vs 3.6%), although mild and moderate sequelae were not more common in Aboriginal children. The information on incidence and severity of sequelae in this study was obtained by chart review and parental interview, and hence may be subject to error or bias, particularly for mild and moderate disabilities. Outcomes like death and severe sequelae, such as cerebral palsy and profound intellectual and physical disability, are less subject to bias. Of Aboriginal children who contracted Hib meningitis in Western Australia over the study period, 22.8% either died or had severe sequelae, while only 7.0% of non-Aboriginal children experienced these severe outcomes.

Bower C, Ramsay JM

Congenital heart disease: a 10 year cohort

J Paediatr Child Health 30: 414-418, 1994

In order to describe the epidemiology of congenital heart disease in Western Australia, a retrospective, population-based cohort study was conducted using data collected from multiple sources of ascertainment by the Western Australian Birth Defects Registry. The prevalence of congenital heart disease was 7.65 per 1,000 total births. Nine per cent of all cases had a chromosomal disorder, another 17% had extracardiac defects in addition to congenital heart disease, and 75% had isolated congenital heart disease. Congenital heart disease was more common in Aboriginal compared with non-Aboriginal infants, and in multiple births compared with singletons. Compared with infants weighing 3,000 to 3,499 g, infants of lower birthweight were more likely to have congenital heart disease, and infants in the heaviest category ($\geq 3,500$ g) were less likely to have congenital heart disease. Three per cent of all stillbirths were known to have a cardiac defect, as were 15.2% of neonatal deaths and 10.8% of post-neonatal deaths.

Brooks J

Australia's Flying Doctors re-evaluate medical services needed in the outback

Can Med Assoc J 152: 745-748, 1995

Australia's fabled Royal Flying Doctor Service recently undertook a soul-searching evaluation of its structure, operations and goals. Although there are no plans to stop providing emergency medical services to the residents of the outback, the service may refocus efforts on health promotion and prevention, since 75% of its work involves non emergency care. Cost efficiency, the key phrase for health care around the globe, will be another goal.

Brooks J

Australia hopes new strategy will improve health services for Aboriginal population

Can Med Assoc J 152: 1509-1511, 1995

Australia has embarked on a National Aboriginal Health Strategy that aims to give Aboriginals equal access to health services by 2001. Although the harmful effects of colonization are now recognised, it is not possible to eradicate overnight the health problems resulting from 200 years of mistreatment and neglect, officials say. In implementing the strategy, the Australian government is spending \$1.3 billion over five years to improve the basic infrastructure of housing, water, waste disposal, roads and communications in Aboriginal communities; enhance health services; and encourage more Aboriginals to seek careers in health care.

Bryder L

A New World? Two hundred years of public health in Australia and New Zealand

Clio Med 26: 313-334, 1994

Burns CB, Currie BJ, Clough AB, Wuridjal R

Evaluation of strategies used by a remote Aboriginal community to eliminate petrol sniffing

Med J Aust 163: 82-86, 1995

OBJECTIVE: To evaluate the success of strategies—including replacing petrol with aviation gasoline (avgas) in the fuel supply, and employment and skills-training programs targeting young people—in reducing petrol sniffing at Maningrida, an isolated Aboriginal community in northern Australia.

METHODS: A follow-up study of 13 Aboriginals who were non-sniffers, 15 who were ex-sniffers and 27 who were petrol sniffers in 1992 was conducted by questionnaire in 1994, 20 months after intervention strategies were commenced; 11 non-sniffers, 11 ex-sniffers and 18 petrol sniffers, respectively, participated.

MAIN OUTCOME MEASURES: Petrol-sniffing status, changes in employment status, blood lead levels of the participants, and community crime statistics. **RESULTS:** After intervention strategies in Maningrida, petrol sniffing ceased, with related crime falling markedly. Employment increased significantly among petrol sniffers, from 7% to 63% ($\chi^2 = 11.53$; $df = 1$; $P < 0.001$). Only two petrol sniffers were reported to have continued petrol sniffing elsewhere. Apart from one of these individuals, who had recently returned to Maningrida, blood lead levels fell significantly in those with a history of petrol sniffing, indicating they had not continued to sniff avgas, which contains lead additives (0.8 g/L). **CONCLUSIONS:** While avgas introduction was a key element in eliminating petrol sniffing, its apparent lack of success as a single intervention elsewhere indicates the importance of widespread community resolve against petrol sniffing and the development of coordinated employment strategies in successfully eliminating the practice and reducing associated social disruption.

Carapetis J, Gardiner D, Currie B, Mathews JD

Multiple strains of *Streptococcus pyogenes* in skin sores of Aboriginal Australians

J Clin Microbiol 33: 1471-1472, 1995

A molecular technique (random amplification of polymorphic DNA) was used to characterise group A streptococcal (GAS) strains among 194 isolates from 55 swabs from 12 Australian Aboriginal children and adults with multiple pyoderma lesions. Ninety-three per cent of the lesions contained only one strain of GAS, but 8 out of 12 individuals were infected with more than one strain. We conclude that accurate epidemiologic surveys require that more than one swab specimen be obtained from each person, whereas typing of more than one colony per swab is less informative. Characterization of GAS strains by random amplification of polymorphic DNA analysis should help to provide important insights into the epidemiology of GAS, particularly in tropical populations where many isolates are M nontypeable, and into the mechanisms of genetic variation of GAS in such populations.

Cooke DE

Death in the desert

Aust Fam Physician 24: 1475-1477, 1995

David Cooke enjoyed eight weeks of general practice in the Northern Territory, but he expresses some misgivings about the health of some Territorians. His experiences in the Outback contrast vividly with his time in Saudi Arabia, which he wrote about in the January issue of Australian Family Physician.

Crowe CC

Cultural issues

Aust Fam Physician 24: 1461; 1464-1466, 1995

Central Australian Aborigines have a wide variety of medical illnesses which differ in incidence and severity from elsewhere in Australia. Coinciding with this are a range of cultural considerations that

directly affect the management of these conditions. This article is an attempt to relate some of these cultural considerations to explain the outcome of these illnesses in the Aboriginal population.

Crowe CC

Common illnesses

Aust Fam Physician 24: 1469-1472; 1474, 1995

Although the infant mortality rates of Central Australian Aborigines have greatly improved since the early 1970s, the morbidity and early adult mortality statistics are still very poor. Solutions are complex and unclear. The author outlines some of the common problems that need to be resolved.

Crowley P, Hankey GJ

Stroke among Australian Aborigines in Perth, WA, 1988-1992 [letter]

Aust N Z J Med 25: 55, 1995

Cunningham J

The impact of tobacco smoking and alcohol consumption on Aboriginal mortality in Western Australia, 1989-1991 [letter]

Med J Aust 163: 105, 1995

Currie BJ, Connors CM, Krause VL

Scabies programs in Aboriginal communities [letter]

Med J Aust 161: 636-637, 1994

D'Alessio V

Ethnic minorities: running a band aid service

Nurs Stand 9: 22-23, 1995

Dalidjan M, Sampson W, Townsend G

Prediction of dental arch development: an assessment of Pont's Index in three human populations

Am J Orthod Dentofacial Orthop 107: 465-475, 1995

Pont's Index was established by Pont in 1909 to predict maxillary dental arch width from the sum of the mesiodistal diameters of the four maxillary incisors. The usefulness of Pont's Index is controversial and, as there has been a recent resurgence of interest in its clinical use for establishing dental arch development objectives particularly by nonspecialists, reassessment of the Index in different human populations was considered worthwhile. This study aimed to evaluate Pont's Index in untreated, crowded samples of Australian Aborigines ($n = 80$), Indonesians ($N = 60$), and White subjects ($N = 60$). Measurements were obtained directly from plaster casts; they included mesiodistal crown diameters of the four maxillary incisors, as well as intercanine, interpremolar and intermolar maxillary arch widths as specified by Pont. A series of double determinations confirmed the reliability of the method. Considerable individual variability was noted in each population with regard to the difference between observed values and Pont's estimates, ranging from -5.9 mm to +6.2 mm (interpremolar width) and -6.1 mm to +12.7 mm (intermolar width). No person displayed the ideal arch dimensions predicted by the Index, but values were within ± 1.0 mm for 17.5% of the Indonesian sample, 20.6% of the Aboriginal sample, and 30.8% of the White sample. Dental arch width was generally underestimated by the Index in Indonesians, who tended to display relatively small tooth size and large arch width. A more even distribution of estimates was noted in Australian Aborigines and White subjects, with the Aborigines showing large tooth size and broad dental arches, and the White subjects displaying smaller tooth size and narrow arches. Correlation coefficients computed

between observed and expected values were low in all three populations studied (range $r = 0.01$ to $r = 0.56$). Although the concept of a simple index with predictive ability is very appealing to some clinicians, the results of this study have highlighted the marked variation in values of Pont's Index for persons with apparently good occlusions, representing three different human populations. Tooth size variation was poorly correlated with arch width variation, with persons often being over or under Pont's estimation due to variation in tooth dimension, particularly in the size of the maxillary lateral incisor. It is concluded that Pont's Index is unlikely to be a useful clinical predictor of dental arch width and the index should not be used as a guide to dental arch development in contemporary populations.

Dugdale AE, Pratt J

Stereotypes of Aboriginal health [letter]

Med J Aust 162: 553, 1995

Fabb L

Sorrow and strength—AIDS Quilt News

Aust Nurs J 1: 29, 1994

Farbey MD, Reynoldson JA, Thompson RC

In vitro drug susceptibility of 29 isolates of *Giardia duodenalis* from humans as assessed by an adhesion assay

Int J Parasitol 25: 593–599, 1995

Twelve isolates of *Giardia duodenalis* from Caucasian hosts in the Perth metropolitan area, along with 16 isolates from Aborigines in the north of Western Australia and the reference isolate P1C10 were examined for their in vitro drug sensitivity. Dose-response curves were constructed for each isolate for metronidazole, the most common clinically used anti-giardial agent, as well as for the benzimidazole compound albendazole. Less than a nine-fold variation was found in the susceptibility of the isolates to albendazole, while for metronidazole there was well over a 16,000-fold variation between the same group of isolates. In addition, it was found that isolates of *Giardia* obtained from Aboriginal hosts were significantly less sensitive to albendazole than those obtained from Caucasians. The results of this study have important implications for the continued use of metronidazole and the potential use of albendazole for the treatment of giardiasis.

Fraser J

Information technology improving health care delivery in Arnhemland

Aust Fam Physician 24: 1096–1097; 1100–1101, 1995

This paper will outline the modification of an existing medical records system called Health Planner to meet the needs of three health services servicing communities and out-stations in Arnhemland. Improved continuity of care and program planning has resulted from computerisation.

Ghisalberti EL

The ethnopharmacology and phytochemistry of *Eremophila* species (Myoporaceae)

J Ethnopharmacol 44: 1–9, 1994

Gracey M, Gee V

Hospitalization of infants for infections in Western Australia, 1980-91

J Paediatr Child Health 30: 502-505, 1994

Rates of hospitalization of Aboriginal infants in Western Australia from 1980 through 1991 for infections were much higher than for other infants and were consistently higher in rural areas than in metropolitan areas. There were substantial declines in rates of hospital admissions and bed occupancy of rural Aboriginal infants for respiratory and gastrointestinal infections during the study period; changes in rates for other infections were less marked and less consistent. Despite recent improvements, Aboriginal infants are hospitalized much more frequently and for longer than other infants because of these diseases. Hospitalization rates reflect many factors including disease incidence and severity but also are affected by isolation, climatic and physical conditions, and access to medical and nursing care. Preventive health programmes need to be maintained and intensified in order to improve health standards of young Aborigines and to lessen their need for hospital care.

Gracey M, Veroni M

Comparative hospitalisation and mortality rates of Aboriginal and non-Aboriginal Western Australians in their sixth and seventh decades

Aust N Z J Med 25: 27-33, 1995

BACKGROUND: Aboriginals have higher hospitalisation and mortality rates and die, on average, about 15 years earlier than non-Aboriginals in Western Australia (WA). **AIMS:** To investigate Aboriginal morbidity and mortality rates in WA in comparison with the rest of the population, with particular reference to the ages of 50-65 years. **METHODS:** Mortality rates from 1983-89 inclusive for Aboriginals and non-Aboriginals in WA were compared. Major causes of Aboriginal mortality in males and females were matched to the ages at which similar rates from the same causes occurred in non-Aboriginals. Rate ratios (Aboriginal: non-Aboriginal) for causes of death at ages 60-64 years were determined. Hospitalisation rates for Aboriginal and non-Aboriginal people aged 50-64 years in WA in 1988 were used to estimate hospitalisation rate ratios. **RESULTS:** Hospitalisation rates in WA were much higher among 50-64 year old Aboriginals than non-Aboriginals for most diseases, particularly for infectious and parasitic diseases, and injury and poisoning. Admissions for circulatory diseases were double to four times as frequent among Aboriginals. The main causes of deaths in Aboriginal males were circulatory diseases, injury and poisoning, respiratory diseases, neoplasms, and digestive diseases; in Aboriginal females the main causes of deaths were circulatory diseases, neoplasms, diabetes, respiratory diseases, and injury and poisoning. Except for neoplasms, deaths from these causes occurred among 50-54 year old Aboriginals at rates that were experienced by non-Aboriginal people 10-30 years later in life. These results underline special needs of the Aboriginal population that have not been adequately met by appropriate services.

Gray D, Drandich M, Moore L, Wilkes T, Riley R, Davies S

Aboriginal wellbeing and liquor licensing legislation in Western Australia

Aust J Public Health 19: 177-185, 1995

This paper is based on the results of a project undertaken as the basis for a submission to the committee established to review the *Western Australian Liquor Licensing Act 1988*. It reports on key issues relating to liquor licensing, as identified by members of regional Aboriginal organisations. Among these issues are the promotion of alcohol consumption and misuse, discriminatory practices by licensees and the police and the need for greater community involvement in liquor licensing decisions. To address these issues, members of the participating organisations proposed: inclusion of a harm-minimisation objective in the Act, education and training programs for the public, licensees and the police, and industry funding for harm-minimisation programs.

Grennan DM, Bossingham D

Systemic lupus erythematosus (SLE): different prevalences in different populations of Australian Aboriginals [letter]

Aust N Z J Med 25: 182-183, 1995

Herrmann RP

Iron deficiency. Current trends and fads

Aust Fam Physician 23: 1457-1461, 1994

Anaemia due to iron deficiency remains the commonest form of anaemia worldwide, predominantly due to blood loss, either associated with infestations such as hook worm or menstrual blood loss, or malnutrition. In Australia, iron deficiency anaemia is the commonest form of anaemia and is seen in pregnant and breastfeeding females where the iron balance is often in a negative state. Fads and fallacies abound, particularly in this group. Despite extensive knowledge of iron metabolism, diagnosis of iron deficiency often remains a difficult problem. The use of diagnostic tests available is discussed in this article.

Hogg RS

Variability in behavioural risk factors for heart disease in an Australian Aboriginal community

J Biosoc Sci 26: 539-551, 1994

The variability of three behavioural risk factors for heart disease—heavy alcohol and tobacco consumption and physical inactivity—was assessed in an Australian Aboriginal community, where heart disease death rates were high. Prevalence levels were assessed by comparison with those experienced by all adult Australians, and by evaluating whether Aboriginal rates were influenced by underlying sociodemographic conditions. Relative risk ratios, odds ratios and logistic regression analysis were used. A total of 159 males and 114 females participated. Compared to all Australians, Aborigines are significantly more likely to drink five or more drinks on a drinking day, to be current smokers, and not to participate in vigorous exercise. In the Aboriginal community, univariate analysis indicates that: the odds of being a heavy drinker are significantly higher for those in unsatisfactory health; the odds of being a current smoker are significantly higher for those in unsatisfactory health or unemployed; the odds of not participating in vigorous exercise are significantly higher for those in unsatisfactory health, unemployed or without secondary education. Multivariate analysis shows unemployed or without secondary education. Multivariate analysis shows that risk of being a heavy drinker is independently associated with sex, age, and health status; and risk of being a current smoker is associated with health and employment status. The risk of not participating in vigorous exercise is significantly related to all sociodemographic variables examined. Reasons for these associations are discussed.

Holmes W

Outbreak of group C meningococcal disease in Australian Aboriginal children [letter]

Lancet 346: 573-574, 1995

How JH, Bowditch JD

Syphilis in pregnancy: experience from a rural Aboriginal community

Aust N Z J Obstet Gynaecol 34: 383-389, 1994

Syphilis in pregnancy is seldom encountered in urban Australia. This retrospective study reports on the high prevalence of syphilis and its associated complications in a group of pregnant Aboriginal women attending the Dareton Community Health Centre for antenatal care between September 1989 and September 1991. During this time, the centre provided antenatal care for 71 Aboriginal pregnancies and

maternal syphilis was found in 20 (28%). The mean age of the women was 21.3 years (range of 14–33 years). The perinatal mortality rate was 48 per 1,000 births. All stillbirths were associated with maternal syphilis. The relative risk of stillbirth in the presence of syphilis was four (95% CI 2.56–6.25, $p = 0.022$). Prematurity was associated with maternal syphilis. The odds ratio for premature delivery was 21.5 (95% CI 2.26–2.05, $p = 0.003$). There was no statistical difference between the mean birthweight and mean placental weight of term infants born to women with syphilis and women without syphilis ($p = 0.35$ and $p = 0.31$ respectively). When the placental: birthweight ratios were considered, an apparent larger placenta was seen in association with syphilis but this was secondary to the lower birthweights in association with prematurity. Late and poor attendance for antenatal care was a feature of all women attending this centre and not a feature associated with syphilis. The treatment and follow-up of syphilis were hindered by poor compliance.

Klekamp J, Riedel A, Harper C, Kretschmann HJ

Morphometric study on the postnatal growth of the visual cortex of Australian Aborigines and Caucasians
J Hirnforsch 35: 541–548, 1994

Kofler A, Braun A, Jenkins T, Serjeantson SW, Cleve H

Characterization of mutants of the vitamin-D-binding protein/group specific component: GC aborigine (1A1) from Australian Aborigines and South African blacks, and 2A9 from south Germany

Vox Sang 68: 50–54, 1995

The structure and organization of the human vitamin-D-binding protein gene (DBP, group-specific component, GC) have recently been determined. Each exon may now be amplified by the PCR method using oligonucleotide primers deduced from the intron sequences near their 5' ends and 3' ends. In this study we examined the anodal GC variants 1A1 and 2A9. Genomic DNA of the variant 1A1 was obtained from Australian Aborigines and from South African Bantu-speaking Blacks. Amplification and sequencing of exon 11 of 1A1 revealed a point mutation in codon 429 at the second position. It is remarkable that this mutation was found in the Australian 1A1 variant and in the African 1A1 variant, and raises the question whether the mutation in these two ethnic groups has a common origin. Genomic DNA of the 2A variant called 2A9 was obtained from South Germany and a point mutation also concerning position 429 in exon 11 was found. The nucleotide exchange in this case, however, was at the first position of the codon. The widely distributed genetic polymorphism of DBP/GC is located in exon 11 and is characterized by substitution at amino acid positions 416 and 420. Variant 1A1 is due to a second site mutation of the allele GC*1F; variant 2A9 is due to a mutation in the GC*2 allele.

Kunitz SJ, Streatfield R, Santow G, De Craen A

Health of populations in northern Queensland Aboriginal communities: change and continuity
Hum Biol 66: 917–943, 1994

We show that Australian Aborigines living in North Queensland have had an impressive decline in infant mortality over the past 50 years. Since the early 1970s, much of the decline can be attributed to preventive and curative medical services. On the other hand, the growth trajectory of infants and children has improved only slightly since the early 1970s, and mean and median weights are still well below international standards. In addition, there is no evidence that life expectancy at birth has improved significantly since the early 1970s. The pattern of declining infant mortality and stagnant life expectancy is accounted for by unchanging mortality at older ages. The major contributing causes are heart disease and accidents and violence. We suggest that the decline of infant mortality is the result of specific policy decisions made by the providers of preventive health services that infant health would be the focus of their efforts. The result was that many other aspects of health were not dealt with and adult mortality stagnated. We also suggest tentatively that the reduction in infant mortality coupled with persistent high rates of low

birthweight and low weight for age at one year may be related to the high rates of young adult deaths from ischemic heart disease observed in Aboriginal populations.

Leach AJ, Boswell JB, Asche V, Nienhuys TG, Mathews JD

Bacterial colonization of the nasopharynx predicts very early onset and persistence of otitis media in Australian Aboriginal infants

Pediatr Infect Dis J 13: 983-989, 1994

Otitis media (OM) develops in the first months of life and persists throughout childhood in many rural Aboriginal children. We have followed Aboriginal and non-Aboriginal infants from birth to determine the relationship of the early onset of OM to nasopharyngeal colonization with respiratory pathogens. Aboriginal infants were colonized with multiple species of respiratory bacteria (*Moraxella catarrhalis*, *Haemophilus influenzae*, *Streptococcus pneumoniae*) at a rate of 5% per day and the timing of colonization predicted the onset of persistent OM in individual Aboriginal infants. Non-Aboriginal infants became colonized by *M. catarrhalis* alone at the slower rate of 1% per day and experienced transient episodes of OM in the absence of colonization. We attribute early bacterial colonization in most Aboriginal infants to high rates of cross-infection due to overcrowding, poor hygiene and high rates of bacterial carriage. Early age of infection and the multiplicity of bacterial types may contribute to prolonged carriage and to eustachian tube damage leading to persistent OM. Thus Aboriginal infants are 'otitis-prone' and might qualify for prophylactic antibiotics.

Lee AJ, Bailey AP, Yarmirr D, O'Dea K, Mathews JD

Survival tucker: improved diet and health indicators in an Aboriginal community

Aust J Public Health 18: 277-285, 1994

The poor nutritional status of Aboriginal Australians is a serious and complex public health concern. We describe an unusually successful health and nutrition project initiated by the people of Minjilang, which was developed, implemented and evaluated with the community. Apparent community dietary intake, assessed by the 'store-turnover' method, and biochemical, anthropometric and haematological indicators of health and nutritional status were measured before intervention and at three-month intervals during the intervention year. Following intervention, there was a significant decrease in dietary intake of sugar and saturated fat, an increase in micronutrient density, corresponding improvements in biochemical indices (for example, a 12% decrease in mean serum cholesterol, increases in serum and red cell folate, serum vitamin B6 and plasma ascorbic acid), decrease in mean systolic and diastolic blood pressures, a normalisation of body mass index, and a normalisation of haematologic indices. The success of this project demonstrates that Aboriginal communities can bring about improvements in their generally poor nutritional status, and that the store-turnover method provides a valid, inexpensive and noninvasive method for evaluating the resultant changes in community diet. Although the project was undoubtedly effective in the short term, further work is in progress to assess individual strategies with respect to sustainability, cost-effectiveness and generalisability.

Lee AJ, Bonson AP, Yarmirr D, O'Dea K, Mathews JD

Sustainability of a successful health and nutrition program in a remote Aboriginal community

Med J Aust 162: 632-635, 1995

OBJECTIVE: To assess the long-term effect of a nutrition program in a remote Aboriginal community (Minjilang). **DESIGN:** Evaluation of nutritional outcomes over the three years before and the three years after a health and nutrition program that ran from June 1989 to June 1990. Turnover of food items at the community store was used as a measure of dietary intake at Minjilang and a comparison community. **SETTING:** A community of about 150 Aboriginal people live at Minjilang on Croker Island, 240 km north-east of Darwin. A similar community of about 300 people on another island was used as the comparison.

RESULTS: The program produced lasting improvements in dietary intake of most target foods (including fruit, vegetables and wholegrain bread) and nutrients (including folate, ascorbic acid and thiamine). Sugar intake fell in both communities before the program, but the additional decrease in sugar consumption during the program at Minjilang 'rebounded' in the next year. Dietary improvements in the comparison community were delayed and smaller than at Minjilang. **CONCLUSIONS:** The success of the program at Minjilang was linked to an ongoing process of social change, which in turn provided a stimulus for dietary improvement in the comparison community. When Aboriginal people themselves control and maintain ownership of community-based intervention programs, nutritional improvements can be initiated and sustained.

Lee AJ, O'Dea K, Mathews JD

Apparent dietary intake in remote Aboriginal communities

Aust J Public Health 18: 190-197, 1994

Apparent per capita food and nutrient intake in six remote Australian Aboriginal communities using the 'store-turnover' method is described. The method is based on the analysis of community-store food invoices. The face validity of the method supports the notion that, under the unique circumstances of remote Aboriginal communities, the turnover of foodstuffs from the community store is a useful measure of apparent dietary intake for the community as a whole. In all Aboriginal communities studied, the apparent intake of energy, sugars and fat was excessive, while the apparent intake of dietary fibre and several nutrients, including folic acid, was low. White sugar, flour, bread and meat provided in excess of 50% of the apparent total energy intake. Of the apparent high fat intake, fatty meats contributed nearly 40% in northern coastal communities and over 60% in central desert communities. Sixty per cent of the apparent high intake of sugars was derived from sugar per se in both regions. Compared with national Australian apparent consumption data, intakes of sugar, white flour and sweetened carbonated beverages were much higher in Aboriginal communities, and intakes of wholemeal bread, fruit and vegetables were much lower. Results of the store-turnover method have important implications for community-based nutrition intervention programs.

Lester S, Cassidy S, Humphreys I, Bennett G, Hurley CK, Boettcher B, McCluskey J

Evolution in HLA-DRB1 and major histocompatibility complex class II haplotypes of Australian Aborigines. Definition of a new DRB1 allele and distribution of DRB1 gene frequencies

Hum Immunol 42: 154-160, 1995

The distribution of HLA-DRB1 alleles was studied in Australian Aborigines from different parts of Australia. There were significant differences in the frequencies of DRB1*0412, 1409, and 1410 between the Central Desert and Yuendumu populations and the previously reported Cape York and Kimberley Aboriginal populations. A new DRB1 allele, DRB1*1414, present at low frequency in the Central Desert population, was identified. DRB1*1414 appears to be closely related to DRB1*1407 and is proposed to have arisen by intragenic recombination. A novel DR-DQ haplotype, DRB1*1402-DRB3*0101-DQA1*0501-DQB1*0402, was also identified. This haplotype may be ancestral to the DRB1*1409-DQB1*0402 haplotype present in these populations. The presence of alleles and haplotypes apparently confined to Australian Aboriginal populations and differences in the distribution of these alleles in different populations suggests that evolution has occurred in the class II region in the period since colonization of Australia, an estimated 50,000 years ago.

Lienert K, McCluskey J, Bennett G, Fowler C, Russ G

HLA class I variation in Australian Aborigines: characterization of allele B*1521

Tissue Antigens 45: 12-17, 1995

Traditional methods of serological typing have largely used antisera of Caucasoid origin, which can overlook HLA heterogeneity in non-Caucasoid populations. Therefore, we have used molecular techniques to evaluate potential polymorphism in HLA class I molecules of Aborigines from the central desert and northern coast of Australia. The DNA sequence of common Aboriginal HLA-A and B antigens were compared with serological reaction patterns which suggested new polymorphisms. Although serological data indicated that long and short variants of A34 may exist, regardless of the serological pattern, all individuals carried the A*3401 allele. Therefore, the variation in A34 reaction pattern observed serologically was not attributable to primary sequence variation in the HLA A*3401 allele. Similarly, there was no detectable polymorphism in the sequences of selected HLA-B alleles, even though some of these alleles showed unusual serological reaction patterns. However, a new allele of B15 (B*1521) was detected in two individuals carrying this serotype. The cells from both of these individuals showed ambiguous reaction patterns with monospecific B62 and B75 sera. cDNA sequencing of the HLA B15 gene from these cells revealed a B15 allele that differed from B*1502 by a single nucleotide change. This change occurred at position 272, resulting in a C to G substitution at residue 67 in the consensus B15 cDNA sequence. Hence, the Australian Aborigines as an ethnic group show very little primary sequence polymorphism within the class I loci, consistent with the results obtained from previous serological studies.

McConnel FB, Douglas FP, Nienhuys TG, Westwater A, Foreman AW, Mathews JD

Causes of chronic suppurative otitis media (CSOM) in Australian Aboriginal infants and children

Arctic Med Res Suppl: 620-622, 1991

McDermott RA, Williams WM

Invasive pneumococcal disease in central Australia [letter]

Med J Aust 162: 553-554, 1995

McLaren B

Reflections on 18 months in a remote Aboriginal practice

Aust Fam Physician 24: 1479-1483, 1485; 1488, 1995

This article aims to address some issues glossed over by the literature on Aboriginal health. An attempt is made to balance the joys and pitfalls of practising in such a setting. I hope doctors considering working in the 'bush' will find it encouraging and informative.

Michael JM, Michael MA

Health status of the Australian Aboriginal people and the native Americans—a summary comparison

Asia Pac J Public Health 7: 132-136, 1994

Mollison L, Liew D, McDermott R, Hatch F

Red-back spider envenomation in the red centre of Australia

Med J Aust 161: 701; 704-705, 1994

OBJECTIVE: To examine the incidence, symptoms and treatment of red-back spider envenomation at a rural hospital. **METHODS:** A retrospective review of all patients admitted to the intensive care unit of Alice Springs Hospital with red-back spider envenomation from 1 January 1991 until 31 December 1992. **RESULTS:** Thirty-two patients were identified, of whom 12 were Australian Aborigines (35%). Mean time

from bite to presentation was 21 hours. Twenty-six patients required antivenom. All patients responded well to therapy and adverse reactions to the antivenom were observed. Two antivenom recipients had had previous bites requiring treatment. Aboriginals received antivenom later than non-Aboriginals (27.0 hours vs. 16.5 hours) and this delay was associated with more sweating and fever in Aboriginals.

CONCLUSION: Red-back spider envenomation is common in central Australia. Aboriginals and non-Aboriginals are equally at risk but later presentation is more common in Aboriginals who thereby suffer greater systemic symptoms. Antivenom use is safe and effective.

Mollison L, Pyper A

HTLV-I and infection control [letter]

Med J Aust 161: 342, 1994

Morell V

Who owns the past? [news]

Science 268: 1424-1426, 1995

Mowry BJ, Lennon DP, De Felice CN

Diagnosis of schizophrenia in a matched sample of Australian Aborigines

Acta Psychiatr Scand 90: 337-341, 1994

Cross-cultural phenomenology is one method of studying mental disorders such as schizophrenia. There are few data of this nature available on Australian Aborigines. Using a retrospective medical record review of 39 matched pairs of Aboriginal and non-Aboriginal patients discharged as schizophrenic from a psychiatric hospital, this study investigated whether any phenomenological differences, using DSM-III-R criteria, existed between the two groups. Of all criteria, bizarre delusions, social deterioration, illness duration and organic exclusion were statistically significant, with fewer Aboriginal subjects having documentation for each of these variables. Possible explanations for these findings, including intergroup phenomenological differences and assessment variation, are discussed.

Najman JM, Williams GM, Bor W, Andersen MJ, Morrison J

Obstetrical outcomes of Aboriginal pregnancies at a major urban hospital

Aust J Public Health 18: 185-189, 1994

While a number of previous papers have documented the poor general health of Australia's Aboriginal population, relatively few have considered the health of Aborigines living in Australia's urban centres. In this latter instance, Aborigines have access to conventional medical services and they live in a physical environment that does not differ greatly from that experienced by the lower-class White population. Of course, racial, familial and economic differences may continue to influence differentially the perceived accessibility of services to Aborigines and their non-Aboriginal neighbours. This paper compares the pregnancy outcomes of Aboriginal women and non-Aboriginal women living in a major urban centre in Australia. The data indicate that urban Aboriginal women have adverse pregnancy outcomes at one and a half to two times the rate experienced by the non-Aboriginal population. Much of the difference can be attributed to lifestyle variations in the groups being compared.

Nerurkar VR, Song KJ, Bastian IB, Garin B, Franchini G, Yanagihara R

Genotyping of human T cell lymphotropic virus type I using Australo-Melanesian topotype-specific oligonucleotide primer-based polymerase chain reaction: insights into viral evolution and dissemination
J Infect Dis 170: 1353-1360, 1994

Sequence variants of human T cell lymphotropic virus type I (HTLV-I), genetically distinct from cosmopolitan strains of HTLV-I from Japan, the Americas, the Caribbean, and Africa, have been discovered among Melanesians in Papua New Guinea and the Solomon Islands, and among Australian Aborigines. By using oligonucleotide primer pairs derived from sequences unique to the gp46- and gp21-encoding regions of the env gene of the Melanesian HTLV-I variants, HTLV-I strains from widely separated geographic regions could be grouped into either of two major geographic-specific genotypes or topotypes: Australo-Melanesian and cosmopolitan. These primers did not permit amplification of the corresponding env gene regions in strains of simian T cell lymphotropic virus type I from Asia and Africa. Phylogenetic analysis also supported two distinct lineages, consistent with evolution of HTLV-I in Australia and Melanesia independent from that in other parts of the world.

Nienhuys T, Westwater A, Dillon H, McConnel F

Developmental and educational effects of conductive hearing loss among Australian Aboriginal children and implications for educational management

Arctic Med Res Suppl: 642-645, 1991

Norton R, Mollison L

Mycoplasma hominis pneumonia in Aboriginal adults

Pathology 27: 58-60, 1995

Mycoplasma hominis (*M. hominis*) is a well-recognized extragenital pathogen. Its role as a pathogen of the respiratory tract, however, remains difficult to determine. Four cases of pneumonia are presented in which *M. hominis* was isolated from blood, tracheal aspirates or post-mortem lung tissue. All four of these isolates were in young Aboriginal adult males. *M. hominis* is the least fastidious of the human mycoplasmas and grows well on most blood-containing bacteriological media. The recognition and identification of *M. hominis* is important as it is commonly resistant to erythromycin which would be the drug of choice in most atypical pneumonias. Early recognition and treatment with tetracycline instead may influence outcome.

Parker R

Ritualised self harm in traditional Aboriginal society [letter]

Aust N Z J Psychiatry 28: 696-697, 1994

Pearce MC, Sheridan JW, Jones DM, Lawrence GW, Murphy DM, Masutti B, McCosker C, Douglas V, George D, O'Keefe A, et al.

Control of group C meningococcal disease in Australian Aboriginal children by mass rifampicin chemoprophylaxis and vaccination

Lancet 346: 20-23, 1995

An outbreak of 12 cases of meningitis, 11 caused by *Neisseria meningitidis* serogroup C, occurred at Doomadgee from September 1990 to April 1991. The incidence of meningitis was 17.55/10(3) person-years. Only children aged 1-10 years were affected. In October 1990, or shortly thereafter, 473/509 children aged between 1 and 15 years inclusive had one dose of Mencevax AC. From the time of vaccination until April, 1991, a further eight cases occurred, six in vaccinated children. Vaccine efficacy in 1-15 year olds was calculated as 77%. Despite this, in April 1991, the prevalence of antibody to group C polysaccharide in

vaccinated children (78%) was not significantly different from that in unvaccinated children and adults. Forty six nonresponders were revaccinated, and, in February, 1992, 78% had antibodies to group C polysaccharide. In April 1991, an estimated 3.0% of the population had group C organisms, carriage being directly related to household crowding. In June 1991, two months after mass prophylaxis with rifampicin, none of these individuals were carriers. In October 1991, the carriage rate of group C organisms was 0.64%. There have been no further cases caused by the epidemic strain. Although uncrowded housing is a basic need, mass chemoprophylaxis and two doses of vaccine for children should be used in similar outbreaks.

Pearce RL

Subungual desmoplastic melanoma in an Aboriginal woman [letter]

Med J Aust 162: 611-612, 1995

Perkins JJ, Sanson Fisher RW, Blunden S, Lunnay D, Redman S, Hensley MJ

The prevalence of drug use in urban Aboriginal communities

Addiction 89: 1319-1331, 1994

The use of both licit and illicit drugs has been identified as a major health issue for Australian Aborigines. However, data on the proportion of people who use such drugs is scant. This cross-sectional survey of a randomly selected sample of urban Aboriginal people provides information on the use of the drugs alcohol, tobacco, marijuana, cocaine and heroin, as well as petrol sniffing. Overall, a significantly smaller proportion of Aboriginal people were found to be current alcohol drinkers compared to non-Aboriginal Australians. A larger proportion of these drinkers were, however, found to be drinking at levels that were hazardous to their health. A significantly greater proportion of people from the Aboriginal sample were also found to be smokers compared to their non-Aboriginal counterparts. An examination of the use of the illicit substances revealed that a greater proportion reported they had ever used marijuana, compared to the other substances. The findings are discussed in terms of their implications for the health of Aboriginal people.

Perkins JJ, Sanson Fisher RW, Girgis A, Blunden S, Lunnay D

The development of a new methodology to assess perceived needs among Indigenous Australians

Soc Sci Med 41: 267-275, 1995

The present study examined a new methodology to assess the perceived needs of Indigenous Australians in two urban communities. This methodology, utilizing graphics, allowed for the classification of general areas of need into four domains, namely health, education and employment, and housing, as well as social issues and community facilities. In addition, participants were able to prioritize their identified needs both within the four domains as well as across domains. Overall, a number of similarities of perceived needs were noted between the communities. The results are discussed in terms of the lack of information on Indigenous Australian peoples' perceptions of their needs and the use of the new methodology to allow a wider examination of perceived needs.

Prociv P, Luke RA

The changing epidemiology of human hookworm infection in Australia

Med J Aust 162: 150-154, 1995

OBJECTIVE: To document the distribution of human hookworm infection in Australia. **DESIGN:** A retrospective study of published data and accessible archival records. **METHODS:** The core data were derived from the report of the Australian Hookworm Campaign, annual reports of various State health departments and the Queensland Institute of Medical Research, and unpublished files of the former Queensland Aboriginal Health Programme. **FINDINGS:** Today, hookworm infection is endemic only

among Aboriginal communities of northern Western Australia and the Northern Territory, where *Ancylostoma duodenale* may be the sole species. Early this century, infection was also established in Queensland and northern New South Wales, in both Aboriginal and White communities, and *Necator americanus* predominated. The origin of these parasites is obscure. Sustained control programs seem to have eradicated hookworms from Queensland. CONCLUSIONS: Improved sanitation, hygiene and chemotherapy have eliminated hookworms from White populations of Australia. Continued anthelmintic campaigns will also clear the parasites from Aboriginal communities, but unless living conditions improve significantly infection will recur.

Riedel A, Klekamp J, Harper C, Kretschmann HJ

Morphometric study on the postnatal growth of the cerebral cortex of Australian Aborigines and Caucasians

J Hirnforsch 35: 531-540, 1994

Ring I

An open letter to the president of the Public Health Association [letter]

Aust J Public Health 19: 228-230, 1995

Ruben AR, Walker AC

Malnutrition among rural Aboriginal children in the Top End of the Northern Territory

Med J Aust 162: 400-403, 1995

OBJECTIVE: To calculate the minimum prevalence of malnutrition among rural Aboriginal children under two years of age in the Top End of the Northern Territory (NT) using World Health Organization (WHO) criteria. METHODS: We calculated weight-for-height and height-for-age Z-scores (WHO-endorsed references) for all children under two years who were admitted to hospital with diarrhoeal disease between May 1990 and April 1991. Weights recorded 48 hours after admission were used to allow for acute dehydration. Malnutrition was defined in terms of 'wasting' and 'stunting' when weight-for-height and height-for-age were more than two standard deviations below the median of the WHO reference population. The denominator population was calculated from NT Department of Health and Australian Bureau of Statistics data. RESULTS: From an average population of no more than 480 children under two years, 34% were admitted to hospital at least once with diarrhoeal disease in the 12 months; 59% were malnourished (wasting alone, 36%; stunting alone, 10%; both, 13%). In the study period, an estimated minimum of 20% of all Aboriginal children in the Top End were malnourished (wasted, 12%; stunted, 3%; both, 5%). CONCLUSIONS: The 20% prevalence of malnutrition is many times higher than would be expected statistically, and higher than in many underdeveloped countries. International relief agencies regard a prevalence of wasting in children of more than 8% as a nutritional emergency. We urge that programs to alleviate the poor socioeconomic conditions, and mechanisms for early detection and intervention in childhood malnutrition, be offered to Aboriginal communities.

Sayers SM, Powers JR

An evaluation of three methods used to assess gestational age of Aboriginal neonates [letter]

J Paediatr Child Health 31: 261, 1995

Schmitt LH, Harrison GA, Spargo RM, Pollard T, Ungpakorn G

Patterns of cortisol and adrenaline variation in Australian Aboriginal communities of the Kimberley region
J Biosoc Sci 27: 107-116, 1995

Urinary cortisol and adrenaline excretion rates were measured in three Australian Aboriginal communities in the Kimberley region in the north-west of the country. The three communities, Derby, Kalumburu and Kupungarri, differ in size and remoteness and some lifestyle parameters. Cortisol excretion rate is associated with age and urine flow rate, but there is no association with smoking or the consumption of alcohol. All three communities show very high cortisol excretion rates compared to a sample of UK (Oxford) residents, and there are also differences between the three communities. Adrenaline excretion rate also shows associations with age and urine flow rate, but not with smoking. Aboriginal people in the Kimberley region excrete adrenaline at a slightly higher rate than that found in Oxford, which itself is high by world standards. There are no marked differences between communities in their adrenaline excretion rates. Alcohol drinkers in Derby, where alcohol is freely available, have higher adrenaline output than non-drinkers.

Skov S, Miller P, Mulvey G

Syphilis in pregnancy: experience from a rural Aboriginal community [letter]
Aust N Z J Obstet Gynaecol 35: 230-231, 1995

Smith LR, Douglas RM

High and low roads to Aboriginal health
Med J Aust 163: 97-99, 1995

Smythe AD

The Royal Flying Doctor Service of Australia: its foundation and early development [letter]
Med J Aust 162: 167-168, 1995

Spencer AJ, Davies M, Slade G, Brennan D

Caries prevalence in Australasia
Int Dent J 44(4 Suppl 1): 415-423, 1994

The prevalence of caries in Australian children has decreased markedly since its peak in the 1950s. More than half the child population has no experience of caries. However, a small minority, approximately one in 16 may be considered still at high risk with an unacceptably large number of teeth with caries experience. This is leading to the addition of high risk strategies to programmes for caries prevention and management. While the prevalence of caries in children has decreased, caries experience in adults has remained widespread and extensive. The majority of teeth in dentate adults have experienced caries. Comparisons over time indicate little change in caries experience in middle-aged adults, but an increase in filled teeth and decrease in missing teeth. The prevalence of caries has not changed substantially, but the management of the disease has moved towards maintenance and repair of teeth. Tooth retention has increased over recent decades. Edentulism has decreased markedly and dentate adults are retaining more teeth. Sizeable increases in the pool of teeth at risk of caries give emphasis to the continued need for preventive measures to reduce caries activity in adults.

Streeton CL, Hanna JN, Messer RD, Merianos A

An epidemic of acute post-streptococcal glomerulonephritis among Aboriginal children

J Paediatr Child Health 31: 245-248, 1995

OBJECTIVE: To describe an epidemic of acute post-streptococcal glomerulonephritis (APSGN) that occurred in Aboriginal children in three remote Aboriginal communities in Far North Queensland between July and October, 1993. **METHODOLOGY:** Children at the communities aged 2-14 years were screened so as to identify all cases of APSGN. Parenteral penicillin was administered to all 583 children who presented for the screening procedure. **RESULTS:** APSGN was diagnosed in 58 (10%) of the 583 children. A further 142 (24%) children had microscopic haematuria. Children aged 5-8 years had the highest APSGN attack rate, and the highest prevalence of microscopic haematuria. Of all 583 children, 34% had skin sores, and group A streptococci (GAS) were isolated from 71% of the skin swabs. The prevalence of both skin sores and GAS were greater in the children with APSGN, and in those with microscopic haematuria, than in children with normal urine. A marked decline in the number of cases of APSGN occurred after the mass administration of penicillin. **CONCLUSIONS:** The epidemic of APSGN was associated with GAS skin infections. The mass use of penicillin may have had an effect in reducing the transmission of the nephritogenic strain of GAS. Microscopic haematuria was a significant finding in many of the children, and further prospective studies are required to understand the significance of this finding.

Tattam A

All things to all people [interview by Chris Evans]

Aust Nurs J 2: 26-27, 1994

Torzilla PJ, Hanna JN, Morey F, Gratten M, Dixon J, Erlich J

Invasive pneumococcal disease in central Australia

Med J Aust 162: 182-186, 1995

OBJECTIVES: To document the incidence, case fatality, clinical and demographic features of invasive pneumococcal disease in central Australia. **DESIGN:** Invasive isolates from the regional central laboratory were prospectively recorded over five years and case notes retrospectively reviewed. Population denominators were calculated from national Census data from 1986 and 1991. **RESULTS:** The population estimates for the region were 14,568 for Aboriginals and 28,680 for non-Aboriginals. There were 185 episodes of invasive pneumococcal disease over the five years, 162 (87.5%) in Aboriginals and 23 (12.5%), in non-Aboriginals. The incidence in Aboriginal children under two years of age was 2052.7 per 100,000 and for those 20-59 years was 178.2 per 100,000. The relative risk in Aboriginals compared with non-Aboriginals was 10.8 (95% CI 5.6-20.7; $P < 0.0001$) for those aged 0-4 years and 20.4 (95% CI 9.7-42.5; $P < 0.0001$) for those 15-59 years. Forty-one Aboriginal adults aged over 14 (62%) had at least one conventional risk factor for pneumococcal disease; alcohol abuse was present in 27 (41%). There were 13 Aboriginal deaths and the case fatality rose from 2% in those under four years to 40% for those over 59 years. **CONCLUSIONS:** Central Australian Aboriginals have the highest incidence of invasive pneumococcal disease reported. The rate for children under two years is 59-80 times the rates for children in the United States and Sweden. These data have implications for improving vaccine use, health service delivery and environmental health in Aboriginal communities.

Unwin CE, Gracey MS, Thomson NJ

The impact of tobacco smoking and alcohol consumption on Aboriginal mortality in Western Australia, 1989–1991

Med J Aust 162: 475–478, 1995

OBJECTIVES: To compare the estimated death rates associated with alcohol and tobacco use for Australian Aboriginals in Western Australia with those for non-Aboriginals. **METHOD:** Deaths attributable to tobacco smoking and alcohol consumption were estimated for 1989–91 with the aetiological fractions method, using data from the Health Department of Western Australia's mortality database. **RESULTS:** Tobacco smoking was responsible for 15.4% of all deaths and 13.9% of Aboriginal deaths, and alcohol consumption for 5% and 9.2%, respectively. The age-standardised death rates per 100,000 person-years for tobacco and alcohol were: Aboriginal males, 271 and 152; other males, 113 and 29; Aboriginal females, 118 and 56; and other females, 32 and 15. Of those who died as a result of tobacco use, 49% of Aboriginal males and 48% of Aboriginal females died before 55 years of age, compared with 11% and 10%, respectively, in non-Aboriginal males. For alcohol-related deaths, 62% of Aboriginal males and 70% of Aboriginal females died before 55 years of age, compared with 35% and 23%, respectively, in non-Aboriginals. **CONCLUSION:** During 1989–91 tobacco smoking and alcohol consumption were responsible for much higher death rates among Aboriginals than among non-Aboriginals in Western Australia.

Vidovich M

The black hole of black health [editorial]

Aust Nurs J 1: 3, 1994

Wan X, Mathews JD

Primary hepatocellular carcinoma in Aboriginal Australians

Aust J Public Health 18: 286–290, 1994

We identified incident cases of primary hepatocellular carcinoma (PHC) in the Northern Territory from 1980 to 1989: there were 18 Aboriginal and six non-Aboriginal cases, yielding incidence rates of 5.2 per 100,000 (Aboriginal) and 0.5 per 100,000 (non-Aboriginal) with a relative risk of 10.4 (95% CI 4.0–26.6). The carcinoma was more frequent in males (2.3 per 100,000) than in females (0.7 per 100,000), with a relative risk of 3.4 (CI 1.3–9.3). Incidence increased with age; the trend was statistically significant in Aboriginal ($\chi^2(1) = 4.7$, $P < 0.05$) but not in non-Aboriginal ($\chi^2(1) = 3.4$, $P > 0.05$). Hepatitis B virus (HBV) serology was available for 11 Aboriginal and four non-Aboriginal cases; seven of the Aboriginal cases and two of the non-Aboriginal cases were positive for hepatitis B surface antigen (HBsAg). The prevalence of HBsAg in Aboriginal patients with the carcinoma (63.6%) was much higher than that (13.1%) in Aborigines surveyed from communities in the Northern Territory ($\chi^2(1) = 21.7$, $P < 0.001$). Our results show that the age-specific incidence of PHC in Aboriginals in the Northern Territory (30.9 for ages 40 and over) is comparable to that in high-incidence countries such as China (36.9 for ages 40 and over), and that hepatitis B is of major aetiological importance in the Aboriginal population. This underlines the importance of universal immunisation for prevention of HBV infection and for long-term prevention of PHC.

Wan XA, Guthridge SL, Green MM, Currie BJ, Mathews JD

Good seroconversion after a fourth hepatitis B vaccination in Aboriginal children [letter]

Med J Aust 162: 336, 1995

Weeramanthri T, Plummer C

Land, body and spirit—talking about adult mortality in an Aboriginal community

Aust J Public Health 18: 197–200, 1994

The aim of this article is to describe a classificatory framework, 'Land, body and spirit', which addresses the underlying causes of disease and which has proved useful in discussing with Northern Territory Aboriginal communities the causes and possible responses to premature adult deaths. Pie charts displaying proportional mortality ratios according to underlying cause of death, age and sex have also proved useful in such discussions.

Westwater A, Rebgetz P, Douglas FP, Nienhuys TG, McConnel F, Mathews JD

Epidemiology of otitis media in Aboriginal children in Australia

Arctic Med Res Suppl: 623–625, 1991

Young MJ, Taylor LK, Beard JR, Randall A, Coldwell S

The vaccination status of Aboriginal children in the North Coast Health Region of New South Wales

Med J Aust 161: 301–305, 1994

OBJECTIVE: To determine the vaccination status of Aboriginal children resident in the North Coast Health Region of New South Wales. **DESIGN:** Cross-sectional descriptive study. **SETTING AND PARTICIPANTS:** The vaccination status of Aboriginal children aged four months to 11 years and resident in selected villages/isolated communities, small and large towns in the North Coast Health Region of New South Wales was determined by review of vaccination records. Data were obtained from general practitioners, the Aboriginal Health Service, Community Health Centres and Local Government Councils. **MAIN OUTCOME MEASURES:** Vaccination status according to the childhood immunisation schedule recommended by the National Health and Medical Research Council, defined as fully or partially documented, with a generous lag time. **RESULTS:** The study population comprised 1,179 children—55% of the estimated Aboriginal population under 12 years of age in the North Coast Health Region. Data collection on Sabin vaccine was incomplete and was not included in the analysis. Of 1,094 children whose records were analysed, 9% had fully documented and 27% fully or partially documented evidence of up-to-date vaccinations. For measles vaccination, 28% of children aged 18 months or more had fully documented and 35% fully or partially documented evidence of vaccination. There was no fully documented evidence of any vaccinations for 52% of children. **CONCLUSION:** The vaccination status of Aboriginal children in the North Coast Health Region is poor. The 1989–90 National Health Survey showed overall vaccination rates for New South Wales and Australia to be more than twice those found for this population.

Zinn C

Aboriginal health gap widens [news]

BMJ 310: 1157–1158, 1995

Guidelines for contributors

Reports of investigations or contributions including critical analysis and review of available information which could be published as 'Original articles', 'Brief communications', 'Health-related statistics' and 'Subject reviews' are considered. Non-standard, free format articles are also accepted for publication.

Articles submitted or published elsewhere but of significant relevance to Aboriginal health workers are included on the understanding that they have been made available for wider dissemination, and that the permission to reproduce the material has been obtained from the copyright holders.

No strict peer review is intended; however, the manuscripts are submitted to external referees to ensure consistency and relevance of the contents to the Bulletin's aims and scope.

The Editor would be grateful for any assistance in the compilation of the Bulletin, particularly with regards to current topics, recently published and unpublished reports, articles and theses.

Authors are urged to submit their manuscript in electronic format as far as possible. The preferred format is Apple Macintosh, Microsoft Word, but manuscripts in other formats will be accepted. References should be kept to a minimum and must be in the style shown below:

Knapp L, Schimdt R, Stein L. Alcoholism and hospitalisation in central Australia. *Aboriginal and Torres Strait Islander Health Information Bulletin* 16: 23-34, 1992

Hunter L, Merlo N. Trends in Aboriginal mortality. *Hum Biol* 23: 190-196, 1995

Schmidt L. Fetal alcohol syndrome. In *Consequences of Alcohol Misuse*, edited by J Ram, P Paul and L Schmidt. Sydney: Lotka Press, 1991, pp. 35-41

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Australian Institute of Health and Welfare. *Australia's Health* 1994. Canberra: Australian Government Publishing Service, 1994

Hogg R, Thomson N. *Fertility and Mortality of Aborigines Living in the Queensland Aboriginal Communities 1972-1990*. Australian Institute of Health and Welfare: Aboriginal and Torres Strait Islander Health Series, No. 8. Canberra: Australian Government Publishing Service, 1992