7. Health status

Information on the health status of Aboriginal people is gathered as a matter of course in the day-to-day operation of the health care system in the Northern Territory. Information at the regional level, as in the case of Thamarrurr, is not routinely available in the public domain. Consequently, data on the current health status of the Thamarrurr population was compiled, summarised, and made available by the Northern Territory Department of Health and Community Services (NTDHCS) in their role as a partner to the ICCP trial, and in response to a special request on behalf of the Thamarrurr Council.

As is often the case, there is a need for aggregation of some health data to at least SLA level (roughly equivalent to the Top End West Primary Health Care Access Program [PHCAP] zone) in order to produce statistically reliable health indicators. This is because of the relatively small size of the Thamarrurr population in a statistical sense. While this inevitably involves some loss of geographic detail, it nonetheless enables the estimation of some key indicators (notably here, the mortality rate), that otherwise would be unavailable. Morbidity rates, based on hospitalisation data, are calculated for Thamarrurr itself, although with a fairly brave proviso (following the evidence in Chapter 2) that estimated resident population figures and hospital admissions data are assumed to be sufficiently compatible for the former to be employed as a meaningful denominator for the latter.

Estimation of mortality

The mortality rate can be used as a proxy measure of health status. While the usual residence of Aboriginal people is recorded in death statistics held by the ABS these are coded only to the SLA level. In the case of Thamarrurr, this refers to the Daly SLA. Between 1997 and 2001, a total of 88 Indigenous deaths were officially recorded for this area—59 male, and 29 female. With these data, it is possible to calculate a standardised Aboriginal mortality ratio for the Daly SLA to account for the quite different age structure of the Aboriginal population compared to the standard. The assumption here is that the resulting rate would be very similar to that calculated for Thamarrurr, if such a calculation were possible.

Given the relatively small size of the Aboriginal population in the Daly SLA, and the consequent unreliability of age-specific death rates, it is appropriate to apply indirect standardisation as is the practise of the ABS (ABS 2002a: 107). This is calculated by applying published age- and sex-specific death rates for the total Australian population (ABS 2002a: 50) to the 2001 Daly SLA Indigenous ERP age/sex distribution. An annual figure for deaths in the Daly SLA is then estimated by averaging recorded deaths over the period 1997–2001 to account for annual variation. This observed figure of 18 Aboriginal deaths for the region is then compared to the expected number (five) derived from the application of the standard age-specific death rates. This produces a standardised mortality ratio for the Aboriginal population of 3.6, indicating in excess of three times

more Aboriginal deaths in the region than would be expected if the mortality profile observed for the total Australian population were to apply.

In terms of an indirectly standardised Aboriginal death rate for the Daly SLA, this translates into 24 deaths per 1000, which is 18 per cent higher than the equivalent indirect rate of 20 deaths per 1000 calculated for Aboriginal people in the Northern Territory as a whole (Table 7.1). Higher male mortality accounts for all of this difference. Compared to the total non-Aboriginal population of the Northern Territory, overall Aboriginal death rates in the Daly SLA are four times higher. The comparable figure for all Aboriginal people in the Territory is 3.4 times higher. It is not surprising, then, to discover that the median age at death for Aboriginal people in the Daly SLA was only 46 years.

Table 7.1. Aboriginal and non-Aboriginal indirect standardised death rates[a] for the Daly SLA and Northern Territory, 2001

	Male	Female	Total pop.
Aboriginal Daly SLA	38.2	12.2	23.8
Aboriginal Northern Territory	27.2	14.5	20.2
Non-Aboriginal Northern Territory	N/a	N/a	6.0

a. Per 1000

Source: Calculated from ABS Deaths registration data, and information in ABS (2002a: 35, 87)

Cause of death

Cause of death data are coded using the World Health Organisation (WHO) method of disease classification that follows the Ninth Revision, International Classification of Diseases (ICD9) up to July 1999, and the ICD10 classification thereafter. Briefly, the ICD consists of 17 primary disease chapters plus two supplementary classifications dealing with external causes of injury and poisoning, and contact with health services. The ICD10 comprises 21 chapters, incorporating the two previous supplementaries.

Ideally, cause of death for the Aboriginal population of Thamarrurr region would be identified using these classifications. However, the ABS does not provide deaths data below SLA level and direct information on the Thamarrurr population is therefore not available. One option, then, would be to use data for the larger Daly SLA on the assumption that this would be representative of the situation at Thamarrurr. However, only 88 Indigenous deaths were officially recorded for this larger area in the five years between 1997 and 2001 resulting in too few deaths to provide a meaningful distribution across categories.

Evidence from the Northern Territory as whole points to the fact that excess deaths among Aboriginal people are mostly attributed to diseases of the circulatory system, respiratory diseases, endocrine disorders (especially diabetes), neoplasms, and external causes. These five disease categories alone accounted for 75 per cent of Aboriginal deaths

in the Northern Territory between 1999 and 2001 (ABS/Australian Institute of Health and Welfare [AIHW] 2003: 193–8), and there is no reason to doubt that a similar profile exists for Thamarrurr. Such a profile of mortality typifies the trend towards 'lifestyle' diseases as the primary cause of Aboriginal death, and this underlines the importance of collaborative links between the new Thamarrurr regional governance structures and the Wadeye clinic, especially with the recent appointment to the latter of a chronic disease coordinator (with a focus on diabetes management), a drug and alcohol nurse, and a child health nurse (NTDHCS 2003). One option here for baseline profiling, would be to apply an aetiological fraction methodology to estimate the proportion of illness or injury that can be attributed to a particular risk factor. The two risk factors commonly measured in this way are poor nutrition or alcohol consumption (Holman et al. 1990; Lester 1994: 223; Unwin et al. 1997). However, this requires that alcohol and diet-related diseases (including injuries in the former case) are separately identified using appropriate ICD codes. Unfortunately, the level of detail required precludes this possibility for the Thamarrurr population.

Hospital separations

Hospital separations data for patients from Thamarrurr (defined as those who indicated in the hospital admissions process that a locality within Thamarrurr was their usual place of residence) were provided by NTDHCS for unique patients cumulated over the period 1998–2002, and for admitted patient separations reported in each financial year and aggregated over 1998/99–2001/02. These numbers were provided according to Major Diagnostic Category (MDC) as used in the Australian Refined Diagnosis Related Group (AR-DRG) classification. These data form the basis for compiling a profile of major morbidity for the regional population. However, because the focus is on conditions serious enough to warrant hospitalisation, they do not provide a full measure of the burden of ill health in the region. An indication of this is provided by data from the Chronic Disease Register as recorded by District Medical Officers on visits to Wadeye.

Before considering the hospitalisation data in detail, it is important to note that the number of admissions far exceeds the number of individuals admitted. This is obviously because many people are admitted more than once. Among Aboriginal residents of the Thamarrurr region, a total of 2929 hospital separations were recorded between 1998 and 2002. However, these separations were generated cumulatively by just 1460 individuals producing an average of 2.01 separations per patient. Table 7.2 shows the numbers of patients and separations by broad age groups (at least for those whose age was available). By far the largest number of both patients and separations occur among infants and young children. Of course, this is to be expected given the age distribution of the population, and so it is more meaningful to employ rates of morbidity, particularly in the context of baseline profiling.

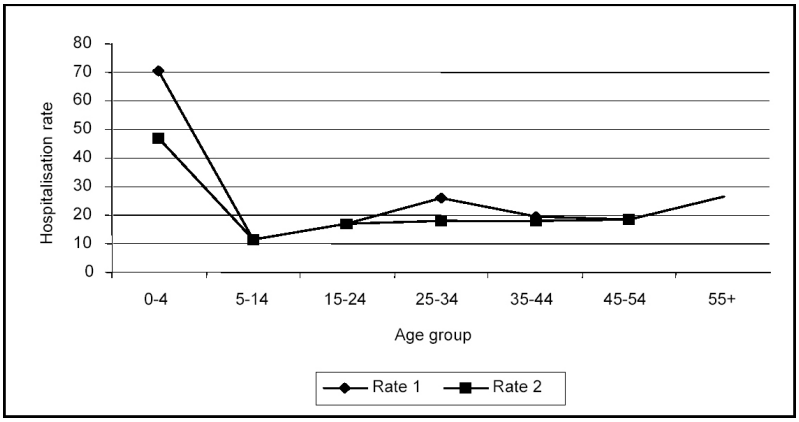
Table 7.2. Number of Aboriginal hospital patients and separations: Thamarrurr region residents, 1998–2002

	Patients			Separations		
Age group	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
0-4	296	256	552	380	335	715
5-14	85	70	155	110	81	191
15-24	41	211	252	42	374	416
25-34	53	163	216	61	313	374
35-44	26	94	120	34	314	348
45-54	17	48	65	18	377	395
55+	29	71	100	35	485	500
Total	547	913	1460	680	2279	2939

Source: NTDHCS, Darwin

Calculation of such rates is not straightforward owing to data quality issues. However, using the four-year cumulated data provided for unique patients by broad age group, it is possible to approximate age-specific hospitalisation rates by taking an average of the four-year numbers and using the ABS ERP as the denominator as stipulated by the NTDHCS for the calculation of rates. The result is shown in Figure 7.1. Given the uncertainties inherent in this approach, the rates shown here are indicative only, although they reveal an expected pattern of age-specific morbidity.

Figure 7.1. Apparent age-specific hospital patient rates: Aboriginal population of Thamarrurr region, 1998–2002[a]



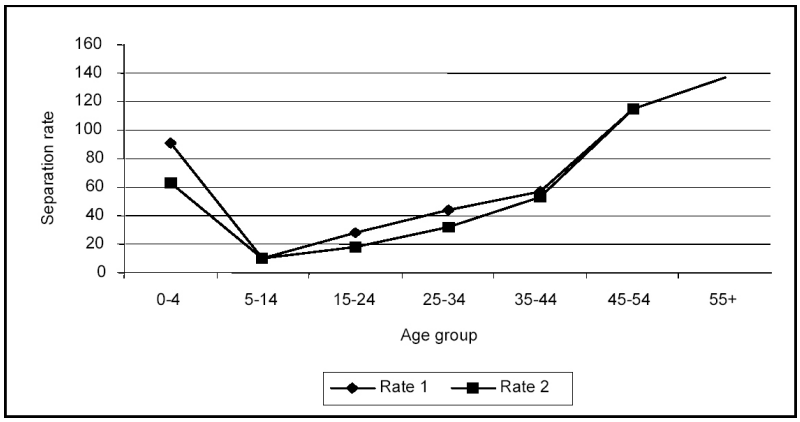
a. Based on unique patient numbers

Two rates are shown. Rate 1 includes all unique patients and thus incorporates those hospitalised as newborns and neonates (MDC 15), as well as women for childbirth (MDC 14). Not surprisingly this raises the rate at ages 0–4 (from 47% to 70%) and 25–34 (from 18% to 26%) above the calculation where MDC 14 and 15 are omitted (Rate 2). Either way, the pattern is the same with very high rates of hospitalisation among infants, fol-

lowed by a sharp decline among school age children, a shallow but steady rise thereafter to age 54, beyond which the rate of hospitalisation rises to almost 30 per cent among the aged.

As mentioned, individual patients may be hospitalised more than once, either for the same cause or for several separate causes. This results in separation rates that are much higher than unique patient-based hospitalisation rates. Using the same formula for calculating age-specific rates as outlined above, Figure 7.2 shows overall separation rates by broad age group. While the same pattern emerges, the distinguishing features are the noticeable effect of repeat hospital admissions among women of childbearing age, and, more strikingly, the very frequent hospital admissions among those aged over 45 years. Among these older people, the average patient is admitted to hospital 5.5 times.

Figure 7.2. Apparent age-specific separation rates: Aboriginal population of Thamarrurr region, 1998–2002[a]



a. Based on all recorded separations

Because of their somewhat distinct morbidity profiles, it is useful to consider the differences between males and females in terms of age-specific rates. However, the relatively small numbers in certain categories prevents the calculation of meaningful statistics. One alternative, then, is to observe the sex ratio (males as a proportion of females) among patients and separations at each age group. This is done in Table 7.3.

Table 7.3. Sex ratios of Aboriginal hospital patients and separations: Thamarrurr region residents, 1998–2002

Age (years)	Patients	Separations
0-4	1.16	1.13
5–14	1.21	1.36
15–24	0.19	0.11
25–34	0.33	0.19
35–44	0.28	0.11
45–54	0.35	0.05
55+	0.41	0.07
Total population	0.60	0.30

Source: NTDHCS, Darwin

There are more male patients and separations in the 0-4 age group, partly reflecting the higher sex ratio at birth, although this is even more so among the relatively few patients and separations that occur among school age children. From mid-teens onwards, however, females predominate. While the very low sex ratios between ages 15 and 44 partly reflect childbirth among women, there remain relatively few male patients, and even fewer separations at older ages beyond 45 years. Overall, the number of male patients is only two-thirds that of females, and the number of male separations only one-third that of female separations.

Hospitalisation diagnoses

In profiling the nature of morbidity as defined by principal disease diagnosis, data for all hospital separations (including repeat separations) are utilised. This is because individuals can, and often are, admitted to hospital more than once, but for quite different reasons. Accordingly, the distribution of cumulated Thamarrurr hospital patients and separations between 1998 and 2002 is shown by sex and MDC in Table 7.4. These are also illustrated in Figures 7.3 and 7.4 to assist interpretation.

Table 7.4. Distribution of Thamarrurr region hospital patients and separations by MDC and sex, 1998–2002

	Patients			Separations		
MDC	Males	Females	Total pop.	Males	Females	Total pop.
1	3.7	1.3	2.2	4.7	0.7	1.6
2	1.1	1.3	1.2	0.9	0.8	0.8
3	7.5	4.8	5.8	6.5	2.3	3.2
4	11.7	8.3	9.6	14.6	5.0	7.2
5	1.5	2.5	2.1	1.3	1.7	1.6
6	10.8	5.8	7.7	11.3	3.0	4.9
7	0.0	0.0	0.5	0.7	0.4	0.5
8	9.7	4.1	6.2	9.6	1.9	3.7
9	6.6	4.8	5.5	5.7	2.4	3.2
10	5.3	4.7	4.9	5.7	2.6	3.3
11	2.2	2.2	2.2	3.2	39.7	31.3
12	7.9	0.0	2.9	6.6	0.0	1.5
13	0.0	2.4	1.5	0.0	1.1	0.8
14	0.0	17.6	11.0	0.0	12.5	9.6
15	16.8	10.2	12.7	16.8	4.8	7.6
16	1.5	0.9	1.1	1.3	0.5	0.7
17	0.0	0.0	0.0	0.0	0.0	0.0
18	1.5	0.9	1.1	1.2	0.4	0.6
19	0.0	0.0	0.5	0.0	0.0	0.2
20	0.0	0.0	0.0	0.0	0.0	0.0
21	3.8	1.8	2.5	3.1	0.7	1.3
22	2.0	0.8	1.2	1.6	0.3	0.6
23	4.2	24.6	17.0	4.0	18.8	15.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

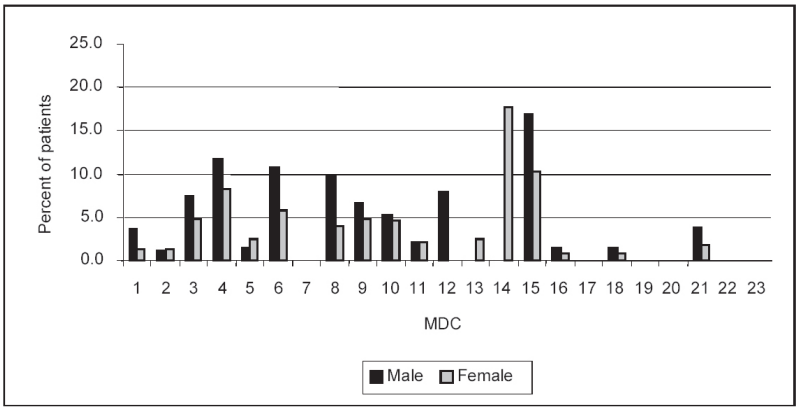
Key to MDCs: 1. Nervous system; 2. Eye; 3. Ear, nose, mouth and throat; 4. Respiratory system; 5. Circulatory system; 6. Digestive system; 7. Hepatobilliary system and pancreas; 8. Musculoskeletal system and connective tissue; 9. Skin, subcutaneous tissue and breast; 10. Endocrine, nutritional & metabolic diseases and disorders; 11. Kidney and urinary tract; 12. Male reproductive system; 13. Female reproductive system; 14. Pregnancy, childbirth & the puerperium; 15. Newborns and other neonates; 16. Blood and blood-forming organs and immunological; 17. Neoplastic disorders; 18. Infectious & parasitic diseases; 19. Mental diseases and disorders; 20. Alcohol/drug use & alcohol/drug induced organic mental disorders; 21. Injuries, poisonings & toxic effects of drugs; 22. Burns; 23. Factors influencing health status & other contacts with health services.

Source: NTDHCS, Darwin

The first point to note is the quite distinct difference between male and female causes of hospitalisation. Almost one-fifth of separations among females were related to pregnancy and childbirth, while a similar proportion for males related to newborns and neonates. While concentration in these categories somewhat distorts comparison, it is still apparent

that males and females have fairly different morbidity profiles. Thus, among males, diseases of the respiratory system, digestive system, and musculoskeletal system account for one third of all patients; among females, on the other hand, factors influencing health status and other contacts with health services (MDC 23) alone account for one-quarter of all patients. In line with the pattern across the Northern Territory, much of this contact with health services is haemodialysis treatment related to end-stage renal disease (ABS/AIHW 2003: 136–9). Some clue to this variation by sex is provided in Figure 7.4 which shows that separations among females for MDC 23 are four times higher as a share of all separations.

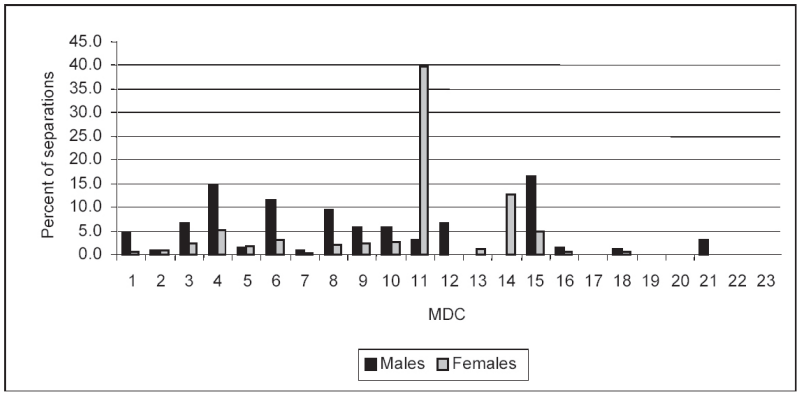
Figure 7.3. Distribution of Thamarrurr region hospital patients by MDC and sex, 1998–2002



Key to MDCs: 1. Nervous system; 2. Eye; 3: Ear, nose, mouth and throat; 4. Respiratory system; 5. Circulatory system; 6. Digestive system; 7. Hepatobilliary system and pancreas; 8. Musculoskeletal system and connective tissue; 9. Skin, subcutaneous tissue and breast; 10. Endocrine, nutritional & metabolic diseases and disorders; 11. Kidney and urinary tract; 12. Male reproductive system; 13. Female reproductive system; 14. Pregnancy, childbirth & the puerperium; 15. Newborns and other neonates; 16. Blood and blood-forming organs and immunological; 17. Neoplastic disorders; 18. Infectious & parasitic diseases; 19. Mental diseases and disorders; 20. Alcohol/drug use & alcohol/drug induced organic mental disorders; 21. Injuries, poisonings & toxic effects of drugs; 22. Burns; 23. Factors influencing health status & other contacts with health services.

Source: NT DHCS, Darwin

Figure 7.4. Distribution of Thamarrurr region hospital separations by MDC and sex, 1998–2002



Key to MDCs: 1. Nervous system; 2. Eye; 3. Ear, nose, mouth and throat; 4. Respiratory system; 5. Circulatory system; 6. Digestive system; 7. Hepatobilliary system and pancreas; 8. Musculoskeletal system and connective tissue; 9. Skin, subcutaneous tissue and breast; 10. Endocrine, nutritional & metabolic diseases and disorders; 11. Kidney and urinary tract; 12. Male reproductive system; 13. Female reproductive system; 14. Pregnancy, childbirth & the puerperium; 15. Newborns and other neonates; 16. Blood and blood-forming organs and immunological; 17. Neoplastic disorders; 18. Infectious & parasitic diseases; 19. Mental diseases and disorders; 20. Alcohol/drug use & alcohol/drug induced organic mental disorders; 21. Injuries, poisonings & toxic effects of drugs; 22. Burns; 23. Factors influencing health status & other contacts with health services.

Source: NT DHCS, Darwin

Primary health status

Public domain data on the primary health status of Thamarrurr residents are limited. Although each active client of the Wadeye clinic has a clinical and medical record that provides essential background for health care delivery at the individual level, in terms of developing population health indicators such data are rarely aggregated for community-wide profiling. One notable exception is the reporting of chronic disease incidence via the Chronic Disease Register which is used by District Medical Officers on their visits to Wadeye. The purpose of the register is to provide a clinical summary of individual clients. Such data were provided by NTDHCS for June 2003 and the recorded instances of chronic disease are shown for males and females in Table 7.5.

This reveals many of the underlying chronic conditions that contribute to the morbidity statistics outlined above. Thus, diabetes and its associated conditions of renal disease, hypertension, hyperlipidemia, and coronary heart disease are most prevalent, along with rheumatic heart disease and chronic lung disease. In combination, these are indicative of past and current crowded living conditions, dietary patterns, and general lifestyle regimes. Of particular interest, though, is the degree to which chronic disease reporting is much higher for females as indicated by the very low sex ratios, especially for diabetes,

early renal disease, asthma, and rheumatic heart disease. Reasons for this are unclear, especially given the context of higher adult male mortality, although this may indicate variable screening of the population.

Table 7.5. Notification of chronic diseases by sex: Wadeye clinic, June 2003

Disease	Males (1)	Females (2)	Total	Sex ratio (1/2)
Angina	*	*	5	*
AMI (heart attack)	*	*	7	*
Diabetes	19	49	68	0.39
IGT	*	10	12	*
Hypretension	61	55	116	1.11
Renal disease (early)	31	61	92	0.51
Renal disease (late)	*	*	10	*
Hyperlipedemia	10	12	22	0.83
Chronic lung disease	29	24	53	1.21
Asthma	19	32	51	0.59
Rheumatic fever	6	8	14	0.75
Rheumatic heart disease	12	41	53	0.29
Chronic liver disease	11	12	23	0.92
Schizophrenia	*	*	7	*
Epilepsy	7	*	10	*
Total	205	304	543	0.67

* indicates data suppressed for confidentiality

Source: NTDHCS, Darwin

Table 7.6 shows recorded instances of chronic diseases by broad age group and indicates the increase in reporting with age as well as the early onset of diabetes, renal, and rheumatic heart disease. On advice from NTDHCS, accurate calculation of the prevalence of chronic diseases is hampered by the uncertain extent and composition of population screening, by the lack of presentation of early symptoms (for example of angina), and by variable maintenance of the database. More fundamentally, many episodes of illness are not recognised at either the individual or household level and for that reason may not be presented for clinical assessment. With these limitations in mind, it nonetheless appears that chronic diseases are reported for somewhere in the region of one-quarter of the Thamarrurr population, with universal prevalence among the aged and affecting around two-thirds of those aged 35–54.

Child health

Many of the conditions that contribute to the overall profile of Aboriginal adult morbidity and mortality in the Thamarrurr region are likely to have their antecedents in poor childhood and maternal nutrition. Measures of weight and height gain provide a standard public health measure of poor nutrition by yielding estimates of children aged less than five years who are below average height for age (stunted), underweight for height (wasted), and below average weight for age (underweight). Levels of anaemia among those aged 6–9 months are also employed. These data are gathered as part of the NTDHCS Growth Assessment and Action (GAA) program and Table 7.7 shows the numbers of children reported for each of these characteristics against the total numbers measured at Wadeye clinic in 2002.

Table 7.6. Notification of chronic diseases by broad age group: Wadeye clinic, June 2003

	Age (years)				
MDC	**<15**	**15–34**	**35–54**	**55+**	**Total**
Angina	*	*	*	*	5
AMI (heart attack)	*	*	7	*	7
Diabetes	0	10	27	31	68
IGT	*	*	*	*	12
Hypertension	0	12	63	41	116
Renal disease (early)	0	15	52	25	92
Renal disease (late)	*	*	*	6	10
Hyperlipidemia	*	*	9	10	22
Chronic lung disease	*	*	11	35	53
Asthma	10	12	18	11	51
Rheumatic fever	*	9	*	*	14
Rheumatic heart disease	*	25	20	*	53
Chronic liver disease	*	12	*	*	23
Schizophrenia	*	*	*	*	7
Epilepsy	*	6	*	*	10
Total	10	101	207	159	543

*indicates data suppressed for confidentiality

Source: NTDHCS, Darwin

Table 7.7. Growth assessment of children aged less than five years: Wadeye clinic, 2002

Growth assessment	No. of children with the characteristic	Total measured	% of children measured	Coverage
Stunted	43	220	20.0	100.0
Underweight	47	220	21.0	100.0
Wasted	23	220	10.0	100.0
Anaemic[a]	8	184	4.0	98.0

a. According to NTDHCS, an unknown proportion of the anaemia results in the GAA data set were post-treatment

Source: NTDHCS, Darwin

As shown, an estimated 20 per cent of children were found to be stunted, 21 per cent were underweight, and 10 per cent wasted. By comparison, the proportion anaemic was relatively low at four per cent, with population coverage of all relevant cohorts deemed to be comprehensive.

One further indicator of child health which is important as it reflects increased risk of neonatal and infant morbidity and mortality, is birthweight. This also reflects a number of preconditions including prematurity, poor maternal nutrition, high alcohol intake and smoking. Between 1997 and 2001, a total of 23 Aboriginal births to Thamarrurr mothers were recorded with a birthweight less than 2500 grams, out of a total of 200 live births. Thus, 11.5 per cent of births over this period were classified as low weight, which is slightly less than the figure of 13.6 per cent recorded for Aboriginal births in the Northern Territory as a whole between 1998 and 2000 (ABS/AIHW 2003: 126). It should be noted, however, that meaningful inter-regional comparison is compromised by the fact that the Thamarrurr rate is based on relatively few births and, in any case, there is potential undercount of births for designated communities such as Wadeye due to limitations in data recording.

Nutrition

It has long been recognised that poor diet and nutritional status are strongly associated (along with other risk factors) with a variety of chronic, preventable, and non-communicable diseases that are highly prevalent in Aboriginal communities. Primary among these in later life are cardiovascular disease and diabetes, but malnutrition also forms part of the general complex of reduced resistance to infectious and other disease and may engender its own morbidity profile. Not surprisingly, public health programs, especially those targeted at improving health outcomes among Aboriginal people, increasingly identify improved nutrition as an essential intervention. A prerequisite to successful intervention, however, is the identification of structural impediments to improved nutrition, many of which are behavioural and economic in nature, including patterns of household expenditure, store management, and food prices (Taylor & Westbury 2000).

As far as the last of these is concerned, the NTDHCS monitors supermarket, shop and community store food prices over time in order to establish price relativities in respect of a defined 'healthy basket' of goods. The monitoring device is the Community Market Basket Survey conducted annually. The survey was developed to ensure that the price of healthy foods was monitored; hence the focus on a standard 'healthy food basket' of 28 items. In addition to the price of goods, the quality and variety of selected food items is also established. By benchmarking these variables, the survey creates a capacity to assess changes in price, quality, and variety that may occur due to strategic interventions. It also allows for assessment of the capacity of community residents, given their incomes, to purchase a 'healthy basket' of food sufficient to feed a 'typical' family of six persons for 14 days. In the data provided by the NTDHCS, this assessment was based on an estimated fortnightly income from welfare payments of $1566 for this 'typical' family in 2002. This estimated income is set against the local cost of a healthy basket of food to establish the share of income required for its purchase.

The methodology employed in the surveys merits scrutiny because it affects the nature and scope of the data. The surveys are conducted annually and the data refer to a single day (usually in May of each year). Given the potential vagaries of store management and of food supply, the timing of each survey can thus be crucial in determining results. It should also be noted that if a price cannot be established for an item in the community store, then the town-based supermarket price is substituted: this may have the effect of deflating overall prices. No distinction is drawn between healthy and non-healthy takeaway foods, and the focus on healthy foods means that frequently purchased non-healthy items, such as carbonated soft drinks and potato chips, are not recorded. Finally, the data refer to the store at Wadeye, and so do not take into account the additional costs involved in purchasing food that is incurred by outstation residents.

With these limitations and biases in mind, the cost of purchasing components of a 'healthy basket of goods' at Wadeye in May 1999 is shown in Table 7.8, together with the district average for similar communities and for Darwin supermarkets. Overall in 2002, a total basket of food in Wadeye cost 10 per cent more than the District community average (as indicated by the ratio of the two prices at 109.7), and almost 40 per cent more than in Darwin supermarkets (ratio of 137.9). However, price relativities for different items in the healthy basket varied considerably, with the highest price gaps in 2002 recorded for bread and cereals and dairy foods. No items were cheaper in Wadeye compared to Darwin supermarkets, although Wadeye prices for fruits and vegetables were lower than the average for similar communities in the District.

Overall, the total cost of a healthy basket of goods at Wadeye per fortnight ($586) represents 37 per cent of the 'typical' family income, leaving just $980 for all other family requirements. With a total of 448 Centrepay deductions in Wadeye reported by Centrelink in April 2003, actual disposable income for most families in the region for remaining essentials such as clothing, transport, household and personal items, would be somewhat less than the $980 calculated above.

Table 7.8. Fresh food category by cost: Wadeye, Darwin and District stores, 2002

	Bread & cereals	Fruits	Vegetables	Meat, milk, eggs, cheese	Dairy foods	Other food	Total basket
	Comparison between Wadeye and district community						
Wadeye	$102	$124	$102	$98	$128	$32	$586
District community average	$83	$132	$112	$86	$95	$26	$534
Per cent difference	122%	0.94%	0.91%	114%	134.7%	123.0%	109.7%
	Comparison between Wadeye and Darwin supermarket						
Wadeye	$102	$124	$102	$98	$128	$32	$586
Darwin supermarket	$63	$121	$80	$68	$78	$14	$425
Per cent difference	161.9%	102.4%	127.5%	144.1%	164.1%	228.6%	137.9%

Source: NTDHCS, Darwin

A range of other data items are available from the Community Market Basket Survey including whether stores have a store management committee, or a food nutrition policy, the number of Aboriginal and non-Aboriginal workers employed at the store (six and 12 respectively at the Murrin-Patha Nimmipa store at Wadeye), the number of trainees and whether the store supports sporting and school activities as well as religious, cultural and funeral activities. Also indicated is the variety (different forms) and quality of individual fresh food groups—for example different types of vegetable, fruit and meats. Of the 15 food item categories surveyed, Wadeye store had a greater number of choices available than the district average in seven categories, and had less choice in four categories (low sugar canned fruit, frozen vegetables, dried vegetables, canned fish), although some of this difference may reflect that fact that far greater choice of fresh fruit and vegetables was available at Wadeye. As for the quality of fresh food items, out of 39 fruit and vegetable items, only three were considered of 'poor' quality, four items were 'fair', and the vast majority (32) was classified as 'good'. As for the availability of healthy foods other than fresh foods (baby foods, oils, margarine, milk, legumes, and other foods), 80 per cent of the 24 items listed for survey were available at Wadeye store.

Health-related quality of life assessment

The extent to which policy interventions are perceived by individuals to effect an improvement in their quality of life is an emergent concern of health policy in Australia, including in regard to Aboriginal people (Brady, Kunitz & Nash 1997). This concern with measures of health status that go beyond objective indicators such as morbidity and mortality is based on the recognition that a full assessment of health status should include physical, mental, social, and spiritual dimensions.

A more practical reason is the need for timely assessment of health interventions which may take a long time to translate into changes in conventional indicators of health status, such as those compiled using hospitals separations data, especially at the whole-of-population level. Furthermore, it appears that many health treatments, while effective from a biomedical point of view, may actually compromise quality of life. An example is the treatment of end-stage renal disease, which requires the relocation of rural-based patients into Darwin for dialysis with attendant difficulties in sustaining the comfort and care provided by family members. Individuals also have to adjust to living in an unfamiliar and institutional environment and financial hardships can be incurred, especially in terms of the wider caring responsibilities of family groups. All these factors can make treatment costly in terms of loss of quality of life, and may make non-compliance (and associated shortened life expectancy) preferable to adherence (Willis 1995).

A number of standard instruments have been developed in an attempt to discover individuals' perceptions of their own health-related quality of life (QOL). These can be repeated over time to monitor changes in condition, and produce results that are comparable with other groups. They cover a number of QOL-related aspects of health, such as physical functioning, emotional well-being and support from family. Some of these instruments, such as the question on self-assessed health status within the main sample of National Health Survey (NHS), are regularly used in Australia and are considered to be reliable, valid, and responsive to changes in clinical condition. While this conclusion has been drawn for Aboriginal people in urban settings, the same cannot be claimed for data from remote communities where mainstream conceptions of quality of life and links to health status are indeterminate and poorly understood (ABS/National Centre for Epidemiology and Population Health (NCEPH) 1997; Senior 2003).

As far as the Thamarrurr region is concerned such population-based assessments are non-existent, although to the extent that Thamarrurr residents participated in the 1994 National Aboriginal and Torres Strait Islander Survey (NATSIS), their responses to the standard global question, 'In general, would you say that your health is excellent, very good, good, fair or poor?' would be subsumed with the responses for the Jabiru ATSIC Region as a whole. In this much wider region, as with elsewhere in remote Australia, answers to this question appeared somewhat counter-intuitive. For example, although 33 per cent of respondents reported an illness in the two weeks prior to the survey, and 22 per cent reported one or more long-term illness, 98 per cent considered themselves to be in very good or excellent health, while just one per cent described their health as being poor (ABS 1996a: 17–19). Although this raises an obvious question of why people rate their health as good or excellent when the statistics show it to be otherwise, no research is available to provide an answer.

Primary health care services

One factor that has been identified as influential in determining health outcomes is the degree of access to primary health care services. Planning for such access in the Thamarrurr region falls within another new but wider regional structure in the form of the Top End West Primary Health Care Access Planning (PHCAP) zone. Within this

framework, levels of primary health care service resources were estimated for the Top End Regional Indigenous Health Planning Committee of the Northern Territory Aboriginal Health Forum in 2000 (Bartlett & Duncan 2000). This exercise aimed to establish measures of access to health services based on the notion of an ideal staff to service population ratio for Aboriginal health workers (AHWs), nurses and doctors. The results for each community in the Northern Territory were then ranked to provide a relative measure of staffing needs. With some accommodation for economies of scale, the ideal staffing ratios adopted were one AHW for every 50 people, one nurse for every 200 people, and one doctor for every 400 people. On the author's own admission, this formula provides a very basic assessment of staffing needs using quite limited parameters (Bartlett & Duncan 2000: 37). However, it did suggest that in 2000, Wadeye performed rather poorly relative to many other localities as it was ranked 33rd out of 49 communities in terms of the adequacy of its health staff resources (Bartlett & Duncan 2000: 204).

Table 7.9 shows the actual staffing situation at Wadeye clinic in June 2003. Overall, 11 personnel were employed, although this amounted to only eight full-time equivalent positions, two of which were non-medical. The most striking feature for a population centre that is set to exceed the size of present-day Nhulunbuy within a generation, is the continuing lack of a resident doctor.

Table 7.9. Staff by stream and Indigenous status: Wadeye clinic, June 2003

	Full-time equivalent			Head count		
	Indigenous	Non-Indigenous	Total	Indigenous	Non-Indigenous	Total
Administrative	1.0	0.0	1.0	1	0	1
AHW	1.9	0.0	1.9	5	0	5
Nursing	0.0	4.0	4.0	0	4	4
Physical	1.0	0.0	1.0	1	0	1
Total	3.9	4.0	7.9	7	4	11

Source: NTDHCS, Darwin