

Funding of Northern Territory public hospitals

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Abstract

The Northern Territory is Australia's third largest jurisdiction by land mass but it is the smallest by population. By proportion it accommodates the largest number of Aboriginal people who suffer the greatest burden of disease with high morbidity, mortality, admission rates and lengths of stay.

Output based funding by DRG is based on the "typical" Australian population which is not that of the Northern Territory. The NT has had to significantly modify its approach to funding to meet the needs of its population. The current funding method based on detailed analyses of clinical data with small numbers may be inappropriate where simpler methods tailored to the NT population could suffice.

Background

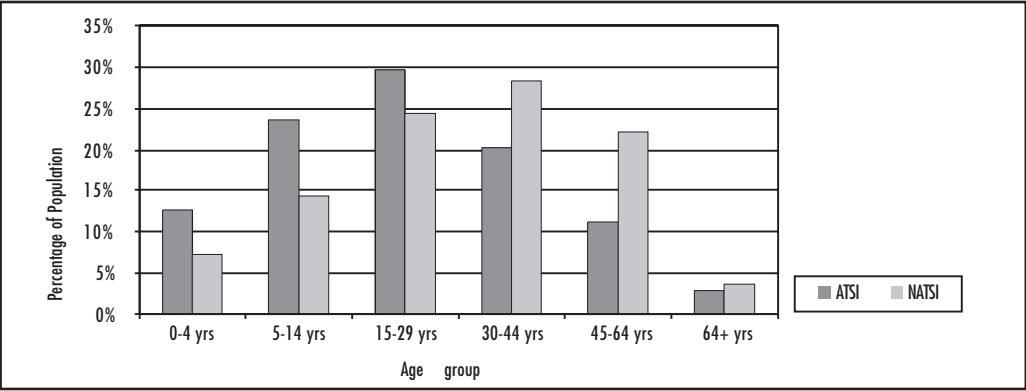
The Northern Territory (NT) has a land area of 1,346,200 sq km and occupies 17.5% of the Australian land mass. It is the third largest jurisdiction in Australia, after Western Australia and Queensland. However its population of 198,000 is only 1% of the Australian total.

The climate is a critical factor in the NT and human activities have to be synchronised with variations in weather. The northern parts have a tropical monsoonal climate with up to 2 metres of rain falling between November and April (the Wet) and virtually none in the other months (the Dry). The interior is arid with around 250mm annual rainfall and extremes of temperatures between Summer and Winter.

The 56,300 people of Aboriginal or Torres Strait Islander (ATSI) descent make up 28.3% of the population. Their age distribution is akin to that of a developing country with almost 50% being under the age of 21, compared to 30% for the Australian population (Condon, Warman, and Arnold, 2001).

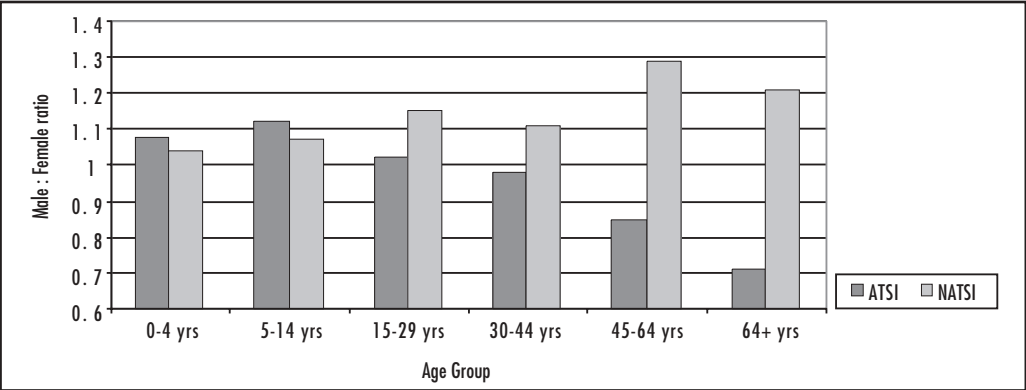
Significant differences exist in the gender distributions in the Northern Territory, not only across age groups but also ethnic groups (Figures 1 & 2) (Northern Territory Department of Health and Community Services). This is in part explained by two factors. Firstly, the nature of the employment of non-ATSI (NATSI) people whereby the armed forces, mining and pastoral work traditionally are male dominated areas. Secondly there is a higher death rate for young ATSI males (Condon, Warman, Arnold L 2001a). This in turn has an effect on the overall rates of hospitalisations where gender is important, including parturition, circulatory diseases and cancer (Condon, Warman, and Arnold, 2001).

Figure 1: Age distribution by ethnicity and age group Northern Territory 2001



Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

Figure 2: Gender ratio by ethnicity and age group Northern Territory 2001



Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

The majority of the population live in the major centres of Darwin and Alice Springs (Table 1). In the rural areas, the population is clustered around the three towns of Katherine, Tennant Creek and Nhulunbuy (Gove). There are also ATSI settlements and their outstations, ranging in size from a few family groups to 3,000 people, or pastoral properties. There are significant seasonal movements of ATSI people between communities.

Table 1: Population of the Northern Territory (2001 estimates)

Jurisdiction (major town)	Population	Percentage of total	Percentage ATSI descent
Darwin - greater urban area	107,218	53.8%	10.2%
Darwin - Rural	12,493	6.3%	75.3%
Alice Springs - Urban	28,142	14.1%	19.3%
Alice Springs - Rural	11,513	5.8%	80.0%
East Arnhem (Nhulunbuy)	13,838	7.0%	61.7%
Katherine (Katherine)	18,590	9.3%	46.6%
Barkly (Tennant Creek)	7,149	3.6%	58.3%
Total	198,943	100.0%	28.3%

Source: Department of Health & Community Services projections from ABS data

ATSI communities are widely dispersed often with poor transport facilities. Aircraft are routinely used in all aspects of life and are a necessity in the “Wet” when the majority of the roads become impassable for several months at a time. Coastal communities are supplied by barge.

Overview of health status of ATSI people

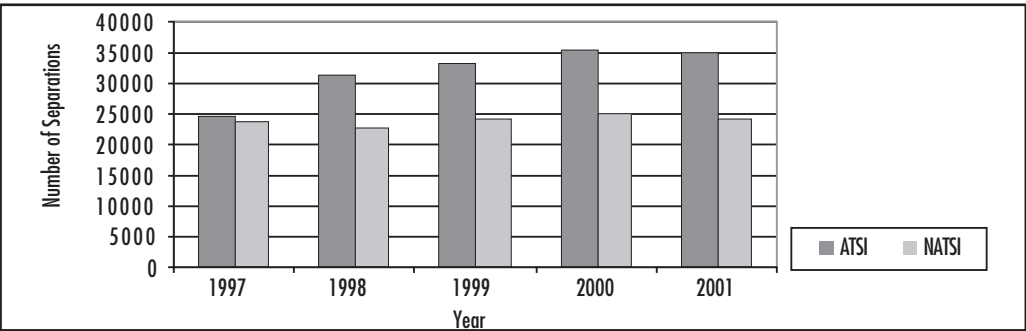
ATSI people in the NT suffer significant socio-economic disadvantage compared to the non-ATSI population. Their living conditions are poorer with overcrowding and inadequate sanitation a prominent feature of many communities. Rates of unemployment and incarceration are significantly higher than for other Australians. Literacy and school attendance levels have been falling for several decades. The abuse of alcohol and other drugs remains widespread. Factors such as these have led to poorer health status than those enjoyed by their fellow Australians. Compared to non-ATSI children, an ATSI child born in the 1990's had three times the risk of death in the first year of life and had a life expectancy 20 years lower than for other Australians. In all, 58% of ATSI deaths occur before the age of 55 years, compared to 17% for non-ATSI Australians and death rates for all major causes exceed those of non-ATSI Territorians. ATSI people have significantly higher rates of disease. This includes those more typically associated with developing countries, such as infections, and those typical of transition and developed countries, such as diabetes, heart disease and renal failure (Condon, Warman, Arnold L 2001a). The combined effect of cultural differences and geographical isolation makes provision of equitable health services to the ethnically diverse population of the Northern Territory of Australia a tremendous challenge.

Renal dialysis

The burden of renal failure to the health system is high and increasing. The activity from renal dialysis is very high and distorts the overall pattern of separations even more so than in other states.

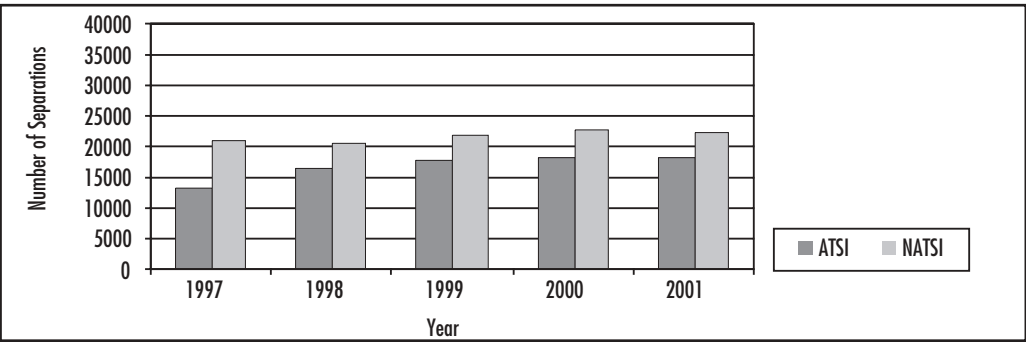
Analysis of Department of Health and Community Services figures show that 31% of all hospital separations are from same-day renal dialysis cases (Figures 3, 4) (Northern Territory Department of Health and Community Services).

Figure 3: Number of separations, Northern Territory 1997-2001. Same day renal dialysis included



Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

Figure 4: Number of separations, Northern Territory 1997-2001. Same day renal dialysis excluded



Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

There are marked differences in the proportions of renal dialysis for ATSI and NATSI separations, with 57% and 11% respectively of all adult separations (age > 14 years) arising from this single DRG. Closer review of the ATSI separations shows in the years 1997-2001 just 200 ATSI individuals accounted for 54% of all adult ATSI separations for all causes (Northern Territory Department of Health and Community Services).

Therefore, in the review of the data same-day renal dialysis cases have been excluded. Private hospital activity is also not included in these figures.

Hospitals

Each of the major towns in the five districts has a public hospital; since 1987 Darwin has also had a private hospital with 150 beds. The hospitals in Darwin and Alice Springs also service populations resident in adjacent areas of Western and South Australia. Although people of ATSI descent in the NT make up 28% of the total they account for 44% of inpatient episodes for the years 1997-2001 (Northern Territory Department of Health and Community Services).

Table 2: NT hospitals inpatient separations by year from 1997 – 2001.
(Figures in brackets show the proportion of separations by ATSI people).
Same day renal dialysis and guests/boarders excluded.

	1997	1998	1999	2000	2001
Alice Springs	9636 (48%)	10536 (57%)	10847 (58%)	11107 (58%)	11778 (58%)
Gove District	2077 (66%)	1977 (69%)	2166 (71%)	2557 (71%)	2288 (69%)
Katherine	3498 (51%)	3906 (58%)	4255 (60%)	4167 (57%)	4033 (58%)
Royal Darwin	17318 (25%)	18783 (31%)	20676 (30%)	22027 (31%)	21305 (32%)
Tennant Creek	1486 (61%)	1479 (69%)	1454 (68%)	1354 (72%)	1137 (72%)
Total Public Hospitals	34015 (38%)	36681 (45%)	39398 (45%)	41212 (45%)	40541 (45%)

Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

Privately insured patients in public hospitals account for only a small proportion of the total with only 6943 of 191540 separations (3.6%) in the 5-year period 1997-2001. Of these, 291 (0.4%) were separations from people of ATSI descent (Northern Territory Department of Health and Community Services).

Table 3: NT hospitals inpatient separations by hospital and Age group.
Figures reflect annual average numbers of years 1997-2001. Figures in brackets show
ATSI separations. Renal dialysis, guests/boarders and neonates excluded.

Hospital	Age Group - (Average annual numbers)						Total
	0-4 years	5-14 years	15-29 years	30-44 years	45-64 years	65+ years	
Alice Springs	2308 (69%)	633 (62%)	2721 (58%)	2550 (53%)	1858 (46%)	713 (36%)	10781 (56%)
Gove District	508 (82%)	193 (69%)	585 (75%)	530 (61%)	338 (52%)	59 (66%)	2213 (69%)
Katherine	783 (69%)	300 (62%)	1128 (61%)	886 (53%)	626 (44%)	249 (44%)	3972 (57%)
Royal Darwin	3471 (42%)	1147 (36%)	5083 (31%)	4412 (29%)	3935 (40%)	1814 (13%)	20022 (30%)
Tennant Creek	271 (82%)	89 (70%)	344 (66%)	331 (71%)	226 (58%)	110 (56%)	1382 (68%)
Total each age group	7341 (58%)	2360 (51%)	7224 (46%)	8869 (42%)	6983 (34%)	2944 (24%)	38369 (44%)

Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

Northern Territory hospitals are also the primary tertiary health providers for the populations of South and Western Australia who reside near the borders. In all, 7% of all NT hospitalisations are from interstate residents with these two states accounting for the majority.

Table 4 shows the high level of hospitalisations for people of ATSI descent. This is most pronounced in the 0-4 year age group (Northern Territory Department of Health and Community Services). As the relevant population denominators are not available for interstate separations, only NT residents are included in the calculations shown. Separations from the three Northern Hospitals (Darwin, Gove and Katherine) have been combined (Top End Services Network) as have the separations from the two in Central Australia (Alice Springs and Tennant Creek) into the Central Australia Services Network. This is because Royal Darwin and Alice Springs are the local referral centres for the more remote hospitals and patients may not always pass through their local institution. Patients transferred between hospitals are counted only once.

Table 4: NT hospitalisation rate by operational area and age group. Average annual rate 1997-2001. Neonates, same day renal dialysis and boarders are excluded .

	AGE (YEARS)						
	0-4	5-14	15-29	30-44	45-64	65+	TOTAL
TOP END (DARWIN/KATHERINE/EAST ARNHEM)							
ATSI	31%	8%	23%	29%	36%	46%	23%
NATSI	13%	5%	13%	12%	14%	38%	13%
TOTAL	19%	6%	16%	15%	17%	40%	15%
CENTRAL AUSTRALIA (ALICE SPRINGS, BARKLY)							
ATSI	49%	10%	29%	40%	41%	46%	31%
NATSI	18%	7%	17%	15%	18%	43%	16%
TOTAL	35%	8%	22%	23%	24%	44%	22%
NORTHERN TERRITORY TOTAL	23%	7%	18%	17%	19%	41%	17%

Source: Northern Territory Department of Health and Community Services Hospital Morbidity data set.

Hospitalisation rates are particularly high, especially among Aboriginal children from Central Australia and older people of both ethnic groups. The hospitalisation rate for ATSI infants (excluding neonates) exceeds 60% in the Top End and 100% in Central Australia (Northern Territory Department of Health and Community Services).

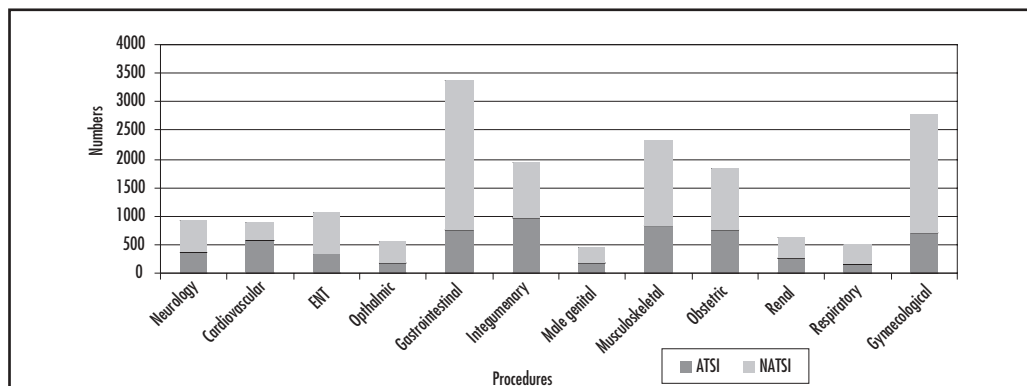
Table 5 describes the differences in the types of diseases seen in ATSI and NATSI hospitalisations (Northern Territory Department of Health and Community Services). Figure 5 shows the differences in the types of procedures undertaken in ATSI and NATSI hospitalisations (Northern Territory Department of Health and Community Services). The major differences seen relate to endoscopy and termination of pregnancy which mainly occur in NATSI episodes.

Table 5: Number of separations by Major Diagnostic Category for NT hospitalisations. Total 1997-2001 by ethnicity. Renal dialysis patients, neonates and boarders excluded.

Major Diagnostic Category	Number of separations		Percentage of separations	
	ATSI	NATSI	ATSI	NATSI
Alcohol/Drug Use and Alcohol/Drug Induced Organic Mental Disorders	637	434	0.8%	0.4%
Burns	422	296	0.6%	0.3%
Diseases and Disorders of the Blood and Blood Forming Organs and Immunological	897	874	1.2%	0.9%
Diseases and Disorders of the Circulatory System	4158	6551	5.5%	6.6%
Diseases and Disorders of the Digestive System	6493	12625	8.6%	12.7%
Diseases and Disorders of the Ear, Nose, Mouth and Throat	3616	5959	4.8%	6.0%
Diseases and Disorders of the Eye	1381	2265	1.8%	2.3%
Diseases and Disorders of the Female Reproductive System	2415	5152	3.2%	5.2%
Diseases and Disorders of the Hepatobiliary System and Pancreas	1427	1817	1.9%	1.8%
Diseases and Disorders of the Kidney and Urinary Tract	3096	3047	4.1%	3.1%
Diseases and Disorders of the Male Reproductive System	976	1368	1.3%	1.4%
Diseases and Disorders of the Musculoskeletal System and Connective Tissue	5648	10019	7.5%	10.1%
Diseases and Disorders of the Nervous System	3582	4136	4.7%	4.2%
Diseases and Disorders of the Respiratory System	11498	6576	15.2%	6.6%
Diseases and Disorders of the Skin, Subcutaneous Tissue and Breast	5361	5417	7.1%	5.4%
Endocrine, Nutritional and Metabolic Diseases and Disorders	2280	1328	3.0%	1.3%
Factors Influencing Health Status and Other Contacts with Health Services	3215	3814	4.3%	3.8%
Infectious and Parasitic Diseases (Systemic or Unspecified Sites)	1570	1831	2.1%	1.8%
Injuries, Poisonings and Toxic Effects of Drugs	3382	3562	4.5%	3.6%
Mental Diseases and Disorders	1117	2530	1.5%	2.5%
Neoplastic Disorders (Haematological & Solid Neoplasms)	344	1884	0.5%	1.9%
Pregnancy, Childbirth and the Puerperium	11902	17971	15.8%	18.1%
TOTAL	75417	99456	100.0%	100.0%

Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

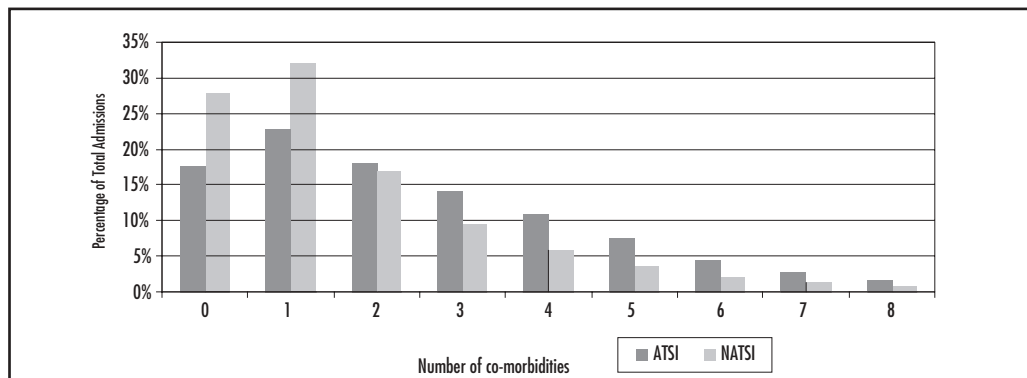
Figure 5: ICD procedural groupings in NT hospitalisations, annual average 1997-2001 by ethnicity. Renal dialysis patients, neonates and boarders excluded.



Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

For each separation a greater proportion of ATSI people have multiple co morbidities compared to NATSI patients (Figure 6). Sixty percent of NATSI separations are associated with 0 or 1 co morbidities while almost the same proportion (59%) of ATSI separations are associated with 2 or more (Northern Territory Department of Health and Community Services).

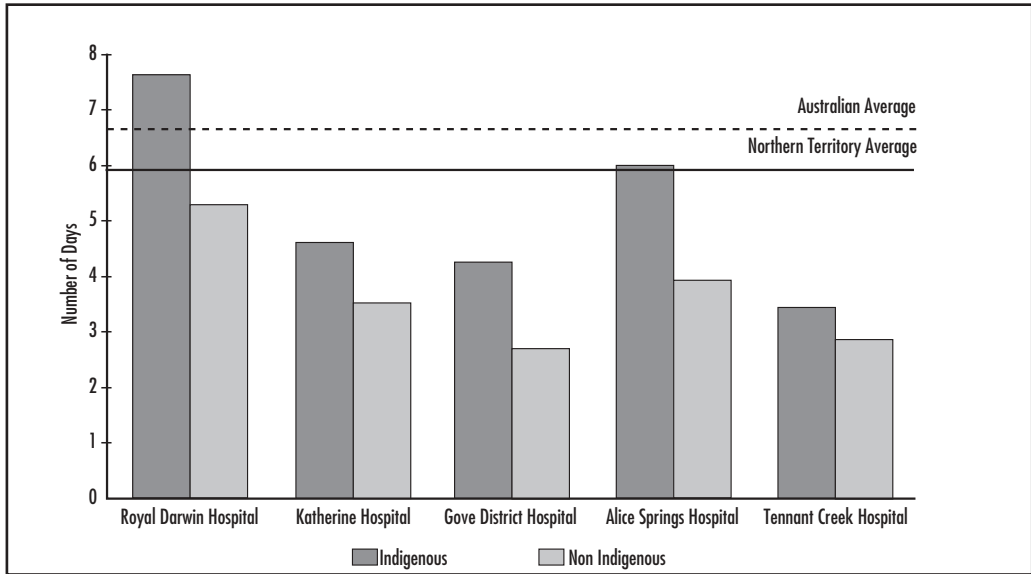
Figure 6: Proportion of patients with co morbidities, NT hospitalisations 1997-2001 by ethnicity. Renal dialysis patients, neonates and boarders excluded.



Source: Northern Territory, Department of Health and Community Services Hospital Morbidity data set.

Length of stay

A review of inlier separations demonstrates that the NT has shorter length of stays than the Australian Average (Figure 7) (Territory Health Services 2001a). There are significant differences in the casemix of ATSI and NATSI separations and the number of co morbidities in children. Furthermore, living in a remote area and being of young age are associated with prolonged stay for ATSI children (Ruben & Fisher, 1998 and Fisher, Murray, Cleary, & Brewerton, 1998).

Figure 7: Average length of stay, 2000-2001, inlier separations

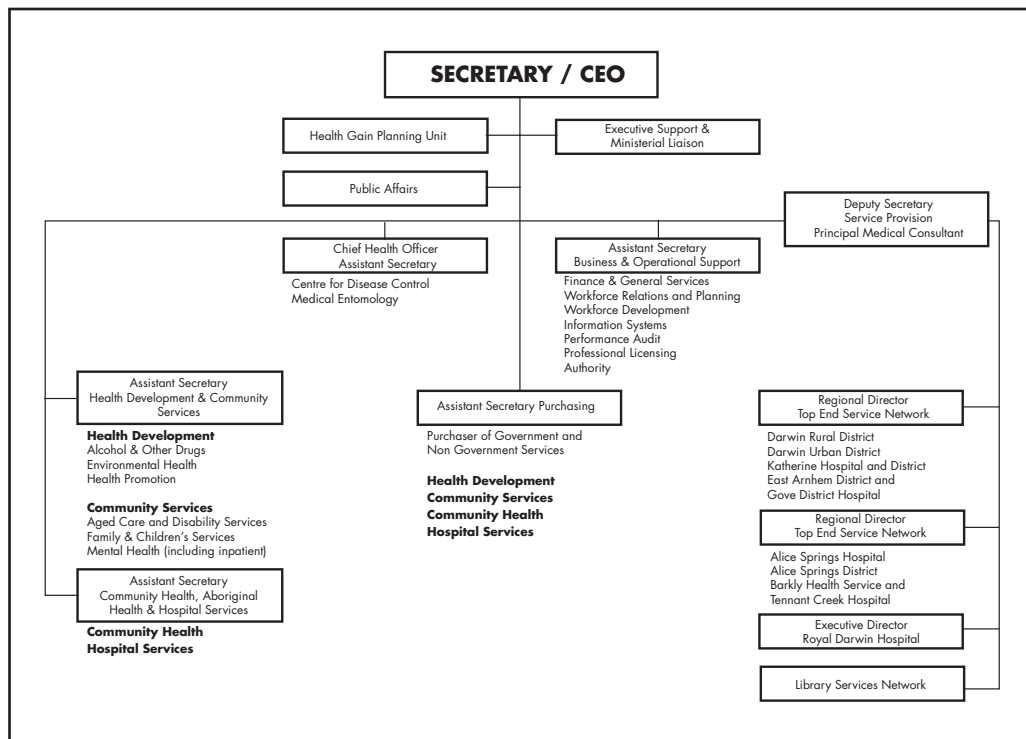
Source: Territory Health Services Annual Report 2000-2001

The central administrative structure of the NT Department of Health and Community Services (DHCS)

Health services in the Northern Territory, including public hospitals, are directly managed by the relevant government department. The Chief Executive Officer (Secretary) of the DHCS appoints an executive including the heads of the major operational areas. While the heads oversee a classical vertical structure including branch directors, project managers and their staff, there is also an active horizontal structure interaction in the form of Funder/Purchaser/Provider.

A Deputy Secretary of Service Provision oversees the three main jurisdictions of health delivery, Top End Services Network, Central Australian Services Network (both with a regional director) and Royal Darwin Hospital. These represent the “providers”. The “Purchasing” division also sits within the responsibilities of the Deputy Secretary “Service Provision”. The “funding” unit is within the “hospital services” directorate headed by the Assistant Secretary, Community Health, Aboriginal Health and Hospital Services (Figure 8).

Figure 8: Structure of Department of Health and Community Services



Source: Territory Health Services Annual Report 2000-2001

Strategic directions of the Hospital Services Funding Unit

The five public hospitals with 570 beds in total have traditionally been the only facilities with the infrastructure and professional expertise capable of providing the complete range of services ranging from primary care, to teaching, research and acute and chronic service provision. More recently, private service providers have been contracted in areas including radiology and cardiology.

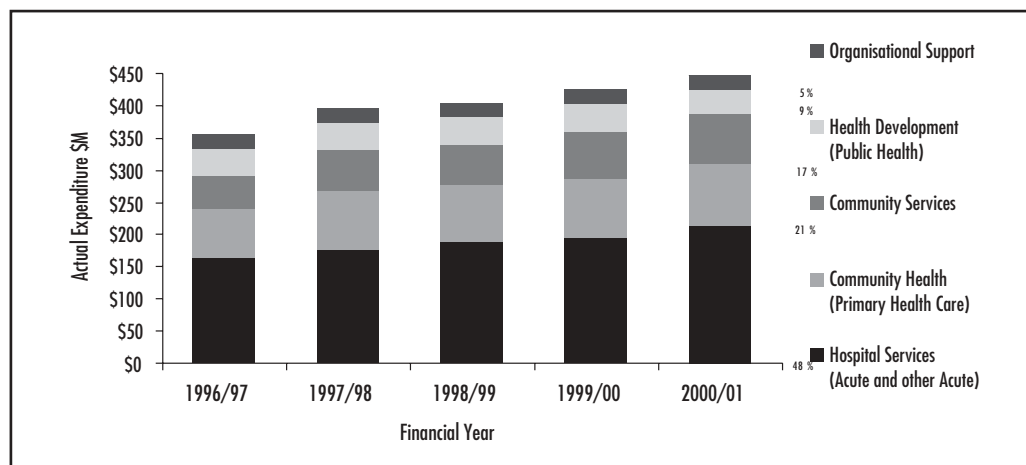
The *Hospital Services* mission is to “provide leadership and/or collaborate to:

- Project and analyse the acute care health requirements of the Territory’s population;
- Develop the infrastructure and technology base required for health professionals to deliver comprehensive high quality tertiary services that are appropriate and cost-effective;
- Create incentive for health professionals to pursue long term career paths in the Territory; and
- Develop alternative services within the community to reduce inappropriate admission and length of stay in hospital”

The Unit aims to achieve

- Sustainable acute care services supported by contemporary health practices and technology
- Acute care funding that is needs focussed and directed to the most appropriate and most effective provider for a defined population
- Improved acute care services for Territorians that are balanced with the assessment and minimisation of risk to all parties
- Hospital services policies that are integrated and complementary to strategic policy across program areas and improve the linkages between hospitals and community based service providers.

Figure 9: Allocation of agency funds to programs



Source: Territory Health Services Annual Report 2000-2001

The history of funding and casemix in the Northern Territory

The Medicare Agreement (1993-1998) between the States/Territories and the Commonwealth included a commitment to move to a nationally consistent casemix based management and information system that could serve as an alternative for hospital funding. In March 1995, the NT DHCS (then called Territory Health Services) approved a staged development of such an output based funding model.

- | | |
|--------------------------|---|
| Stage 1: March-July 1995 | Develop basic model |
| Stage 2: June-July 1996 | Run model parallel to current financial appropriation. Evaluate and refine models |
| Stage 3: July 1 1996 | Implement hospital funding model as basis of funding |

Thus by design the funding model was to appropriate to historical funding. The first case based funding model (Territory Health Services 1996) incorporated an activity payment, a fixed payment and a transition payment. Activity included a price per weighted inlier equivalent separation (WIES) for acute inpatients and a per diem payment for non-acute inpatients and boarders. Cost weights were determined for nine clinical categories of outpatients.

The fixed component covered medical salaries, teaching compensation, patient travel grant, affiliated facility support grant, worker's compensation and a non-productive payment (staff relocation, extra holidays, staff accommodation, cars etc). As well as the fixed payments, special allowances were made for services including Self care unit, Emergency Dept, Intensive Care Unit, Magnetic Resonance Imaging, Oncology / chemotherapy, hyperbaric unit, reproductive medicine and official travel.

Other payments at the time and at varying levels of negotiation included capital, cross border revenue bonus and special purpose payments.

This first casemix funding policy emanated from the NT DHCS implementation of that aspect of the current Medicare Agreement. It is debatable that it achieved its initial purpose. In the Northern Territory, where service providers generally operate in the environment of a monopoly, it was unlikely to achieve the productivity gains that may be applicable to larger jurisdictions with more competitive environments.

Its associated information and management system however did unbundle costs for clinical managers. This set the scene for improved cost efficiency as devolution of budgets to clinical areas was instituted. Improved measurement of outputs allowed clinical units to engage in appropriate benchmarking of quality and efficiency. In the five years since output based funding has been a part of the hospital funding model, there has been a consistent and significant increase in funding above the prevailing rate of annual inflation (Territory Health Services 2001a).

The second year of casemix saw a name change from *funding* to *budgeting* model in recognition of the fact that this policy did not determine funding. In reality, at best it could inform the funding debate between hospitals and DHCS. Furthermore, these early Hospital budgeting models could be used as benchmarks to explain variations in expenditures (Territory Health Services 2001b).

Issues relating to cost peculiar to the Northern Territory

By virtue of hospital size and isolation in the Territory, a greater proportion of costs are fixed. This diseconomy of scale is good justification for the deviation from a funding or budgeting model based primarily on casemix formulae. Furthermore, a relatively small population with a very different disease profile will tend to be mistreated by the “bell curve” intrinsic in the bundling into DRGs. That is, DRGs are created on a basis of clinical and resource use homogeneity as recognised by ALOS data from the National hospitals’ database. They are therefore applicable to a hospital when its population is comparable to that “typical” in Australia. Remote NT hospitals service catchments with a high proportion of Aboriginal patients and are different to the population on which the “norm” has been defined as outlined earlier in this chapter. Budgeting and funding on this basis alone is therefore intrinsically flawed in such jurisdictions.

In 1998/1999, DRG (L61Z) *admit for renal dialysis* accounted for 17,786 separations at a cost of over \$15 million. This accounts for 4.2% of national separations for this DRG while the NT overall accounts for just 1.5% of all national separations. Such data has prompted significant investment in early intervention programmes and research (Commonwealth Department of Health & Aged Care 2000).

DHCS Hospital Funding Model

The latest version of the DHCS HFM (generation 6) was published in February 2001. It specifies how payments to hospitals are calculated. It maintains the original approach of variable and fixed components.

Variable component

For acute care, WIES are calculated with formulae applied to the management of short and long stay outliers and also transferred patients. Weights are used from the Commonwealth national cost weight study. A benchmark WIES price is different for each hospital and calculated by the addition of component costs including medical, nursing, pathology, imaging, allied health, pharmacy etc.

A diseconomy of scale or disability factor is applied to the model via an increased WIES price in the smaller jurisdictions e.g. RDH \$2,758, GDH \$3,194, Tennant Creek Hospital \$3,077. These costs theoretically should be managed via the fixed cost component but this approach was taken by DHCS as requested by NT Treasury.

There are 2 psychiatry categories funded by DRG or, if non-acute, as part of block funding. Renal admissions are counted via one of eight possible paths but are funded by episode of dialysis unless part of an acute admission in which case a payment by DRG is applicable. Boarders and non-acute admissions including rehabilitation are funded per diem. Inpatient stays will in addition be assigned to an episode of care. It is therefore possible for

a patient to have several such episodes in one admission with statistical discharges and readmissions. Current episodes are rehabilitation, palliative care, non-acute care, acute care, unqualified new born, boarder, other, unknown, non-acute psychiatric care, acute psychiatric care and post-humous care.

Fixed component

This component is derived from analysis of hospital general ledgers to measure historical costs not captured elsewhere, either in inpatient activity or alternative funding arrangements. It includes capital, repairs and maintenance, IT services, non-hospital medical costs, and other non-inpatient related services e.g. staff accommodation, official travel. Emergency Department and Intensive Care Units are block funded. Notional allowances are made for a variety of other expenditures including Hospital in the Home, teaching, outpatients and Continuous Ambulatory Peritoneal Dialysis.

Table 6: NT Hospitals finance allocation, \$ 000.

	Hospital Funding Model (HFM)	Final Budget	Expenditure	Variation	% Variation	WIES	% Growth	Renal	% Growth Renal
1996/97		156,719	158,862	2,143	1.37%	33,934		13448	
1997/98		173,194	172,951	-243	-0.14%	35,244	3.86%	15884	18.11%
1998/99	186,487	185,365	186,324	959	0.52%	37,096	5.25%	17775	11.91%
1999/00	199,814	198,543	200,302	1,759	0.89%	38,798	2.59%	18763	5.56%
2000/01	206,934	197,322	213,000	15,678	7.95%	39,598	2.06%	18851	0.47%

Source: Territory Health Services Annual Report 2000-2001

Special issues in funding of acute inpatient care

Outsourcing of specific services

In keeping with interstate trends, DHCS has outsourced some fundamental services including cardiology, chemotherapy and radiology. When a service is being developed and there is a deficiency in clinical expertise in the public sector then there is often good reason to assist establishment of services in the private sector. In each of these areas by example, a financial relationship exists between private (local and interstate) providers and DHCS. Contracts typically involve a price for provision of service to public patients, some support to establish the service and an exclusivity agreement.

Outreach services

Specialists employed by DHCS are required to visit remote communities regularly. Most larger communities receive specialist visits particularly in general medicine, obstetrics and gynaecology, ophthalmology and paediatrics. General surgery, orthopaedics, ENT, and other specialist services depending on availability (rather than need) visit the regional hospitals and, at times, more remote communities. Specialist medical visits may include cardiology and renal, again depending on supply rather than demand. Such costs are not explicitly identified within the budgets of hospitals and health regions.

Hospital in the Home (HITH)

The NT is no different to the rest of Australia in that there are fewer beds now available in public hospitals than in previous years. While there is an increasing need for innovative services such as "Hospital in the Home" there is currently no nationally accepted classification or costing system. Without this, small jurisdictions such as the NT have difficulty with funding approaches. It is not realistic to create one's own classification, coding, costing and funding system.

Currently the NT HITH programme separations are counted as hospital inpatients. There is a “paper ward” from which patients may be admitted and discharged. Admission criteria are conventionally defined. The disadvantage for service providers is their invisibility in data. They become less accountable and are denied the opportunity to expand based on merit.

Patient assisted travel

The Patient Assisted Travel Scheme (PATS) covers the costs relating to travel for patients who are referred interstate for treatment or transferred from a DHCS hospital. Table 7 demonstrates the total costs of travel for patients referred between NT regions and also interstate whether it be elective (commercial) travel, medical evacuation or inter hospital. In the last 3–4 years, a trend of decreasing PATS transfer costs (mostly interstate) and interhospital transfers may reflect improved local service provision in NT hospitals. For services such as coronary angiography, ophthalmology and ENT services there has been a sharp decrease in interstate transfers due to the employment of locally based specialists. Increased medical evacuations within the NT we believe demonstrate improved surveillance and primary care services as well as more comprehensive specialist outreach services.

Table 7: Total costs for patient transfers

Years	PATS	IHT	Medivac	Total
1995/1996	\$3,558,630	\$1,411,708	\$4,109,425	\$9,079,763
1996/1997	\$3,554,294	\$1,614,535	\$4,007,231	\$9,176,060
1997/1998	\$4,481,616	\$2,660,126	\$3,922,742	\$11,064,484
1998/1999	\$4,545,826	\$3,084,937	\$5,113,673	\$12,744,436
1999/2000	\$4,723,454	\$3,640,464	\$5,484,544	\$13,848,462
2000/2001	\$4,088,212	\$2,852,141	\$5,855,086	\$12,795,438

The costs for this program include air travel and accommodation where deemed necessary. Authority for expenditure is overseen by Directors of Medical Services, Heads of Clinical Divisions and “PATS Committees” following strict criteria. For instance, escorts are only provided for those with a high risk of interstate death, or for minors. A 6 month accommodation allowance is the maximum for those needing to stay away for prolonged periods, including solid organ transplants, leukaemia treatment etc.

Cross Border expenses and claims

Cross Border Charging, introduced in the Medicare Agreement of 1993/1998, requires all States and Territories to meet the cost of inpatient services provided to their residents interstate. The figures (see Table 7) represent a significant portion of the total health budget of DHCS as it remains quite dependant on major centres interstate to provide the full range of services to its population. For example until cardiac catheterisation was introduced to Darwin in March 2001, no invasive cardiology was available in the NT. Thus *Diseases and Disorders of the Circulatory System* represented the largest single reason for cross border flow. It has also experienced the largest growth in activity. The increase in this MDC coincided with recruitment of the NT’s first resident cardiologist.

Northern Territory residents interstate and becoming unwell or travelling to seek medical attention of their own volition will also add to NT cross border costs.

Cross border charges are difficult to cap and therefore accurately predict budget. It therefore carries complexities for the funding process. Two in three of NT patients managed interstate are managed in SA. Table 8 describes the pattern of these flows, and their annual growth. Prices and total activity are described in Tables 9 and 10.

Table 8: Place of hospitalisation for NT residents treated outside the NT (Separations)

Year	ACT	NSW	QLD	SA	TAS	VIC	WA	Total	Growth
95/96	3	142	362	1353	4	91	171	2126	
96/97	15	164	341	1434	6	113	155	2228	4.80%
97/98	6	160	381	1579	2	122	145	2395	7.50%
98/99	1	175	335	1818	0	230	167	2726	13.82%

Table 9: Hospitalisation for NT residents treated outside the NT (Weighted Separations)

Year	ACT	QLD	SA	TAS	VIC	WA	Total	Growth
95/96	1.41	447	2591	1.56	185	195	3597.3	
96/97	11.32	443	2978	4.72	249	201	4104.5	14.10%
97/98	12.23	507	3098	1.21	258	149	4235.5	3.19%
98/99	0.91	417	3696	0	406	189	4939.5	16.62%

Table 10: Cross border prices

Payment Year	Private price	Public price
1995/1996	\$1,123	\$2,451
1996/1997	\$1,145	\$2,502
1997/1998	\$1,160	\$2,536
1998/1999	\$1,053	\$2,275
1999/2000	\$1,223	\$2,539
2000/2001	\$1,391	\$2,721

Funding of future services

The usual factors to be considered when proposing a new service include needs, appropriateness, alternative services, costs and political will. Each of these issues are somewhat more complex in the Northern Territory. While most services have a defined population base required to justify development, in the NT, where disease incidence and prevalence is greater, a smaller population may justify **need**. Even, where the argument may not be proven by “need”, **appropriateness** may add to the argument. This is more pronounced where service provision may not be met due to the requirement to travel long distances. Such examples for this include cardiac catheterisation (recently introduced in Darwin) and radiotherapy (unavailable in the NT).

In the NT, few tertiary services are duplicated. Decisions on new services are based on comparisons with interstate **alternative services**. Invariably, therefore the comparison involves the social and economic **costs** of interstate travel and accommodation for the patient and often family versus the alternative development of a local service. This requires additional costs for recruitment, development of local expertise, and capital expenditure. Investing in a new local service also requires a commitment to cost associated with sustainability.

Finally, **political will** has the potential to defy any parameters defined by clinicians and the department. It nonetheless can have a major impact on a defined budget.

Funding of non-acute services

The Northern Territory has an inadequate number of beds for non-acute patients including rehabilitation, palliative care and nursing home type patients. There is no hospice nor out of hospital accommodation for rehabilitation patients. As a result there is relentless demand on acute hospital beds by sub-acute/ non-acute patients with the associated lower case based funding. The NT needs to confront this problem in the short term to appease a problem causing unnecessary stress on the public hospital system.

Conclusion

The delivery of hospital based services in the Northern Territory is complicated by a number of factors which, although are frequently present interstate, exist in the NT in proportions that significantly raise their importance. These factors relate to the population, remoteness, sparsity, disease type and prevalence as well as cultural appropriateness. Sophisticated health services in the NT are in the midst of a period of rapid development. This development is based on need and cost effectiveness. Underwriting all current and planned services is an economy of scale disadvantage.

The move in the mid 1990's, from historically based funding to that which relates to an output basis has significantly informed the administration about hospital activity. It is arguable however that efficiency has improved. In general, efficient areas have been acknowledged and "inefficient" areas have generally been justified (for example based on co morbidities, remoteness etc). As a result, hospital funding has increased at a rate greater than inflation and probably paralleling what would have been the case were historical trends implemented.

So has the development of the health funding "industry" in the NT been worthwhile?

It has certainly provided volumes of information on which to base decisions but it could be argued that such funding decisions would have been no different had good but merely empirical advice been followed. (Un)fortunately this is not the real world and today we operate by an assessment of quantitative data outlining arguments in favour and against. Purchasers, funders (and taxpayers) demand accountability, which is quantifiable, even if those of us with simplistic views cannot see the gains in such added tiers of bureaucracy.

As in clinical care, however, such administrative activity has an inherent economy of scale disadvantage. There are fixed and variable costs with the fixed costs of a funding model being similar irrespective of the size of the population involved. The DHCS has a responsibility to justify any resources steered away from patient health service provision. As such, the aim should be to keep a funding model simple, relevant and useful. It should resist the temptation for detailed analyses of clinical areas with small numbers. Variations can never reach significance and funding is mostly dependant on fixed costs. It would not be unreasonable for example to calculate the funding for the three smaller hospitals on historical trends, particularly now that there has been a few years of casemix "checks and balances".

Furthermore, activities such as annual refinements of the model could be questioned in the NT. A review of essential versus elective tasks could see a move away from activities simply because they are done in other State departments.

Acknowledgements

We would like to acknowledge the many individuals in the NT Department of Health and Community Services who assisted in our preparation of this chapter. Most sincerely we thank Allison Grierson for her provision of information and advice as well as manuscript review.

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