Northern Territory Hospital Morbidity Dataset

Validation of Demographic Data 1997

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Summary

Administrative data collections are becoming more important in the management, financing and monitoring of health services. The hospital morbidity dataset is particularly important in this regard since the introduction of Casemix manangement and funding of hospital inpatient services and cross-border charging for inpatient treatment of interstate residents. High data quality is vital when financial allocation and management decisions are based on the hospital morbidity dataset.

Considerable attention has been paid to the accuracy of morbidity coding in recent years, but less to the accuracy of recording of the ‘demographic’ data items about hospital inpatients. No previous assessments of the accuracy of demographic data in the hospital morbidity dataset have been undertaken in Northern Territory public hospitals.

A data quality audit was conducted in late 1997 in the five NT public hospitals. Patients were interviewed while they were in hospital by an interviewer independent of the hospital patient administration processes. The interviewer asked each patient their Indigenous status, sex, date of birth, marital status, place of residence and country of birth. Data obtained at interview were compared to the same data items in the hospital morbidity dataset.

There was a very high level of agreement between the interviews and the hospital morbidity dataset on patient’s sex (99%) and Indigenous status (94%), and a reasonable level of agreement on country of birth (91%).

Agreement was not adequate on place of residence (78%), marital status (77%) and date of birth (75%).

State of residence is derived from place of residence in the hospital morbidity dataset. Despite the low level of accuracy of place of residence (ie, the exact town or community in which the person lived), state of residence was incorrect for only 2% of records.

Data quality varies between hospitals, but the number of patients interviewed in the three smaller hospitals was too small to provide reliable results for those hospitals.

Interviews with patient administration staff involved in Patient Services departments and on hospital wards indicated that current procedures and training need to be improved to increase the accuracy of patient demographic data.

Recommendations to improve data quality include:

- modification of the physical layout of interview areas in admissions and emergency departments to provide privacy to patients during interviews
- standardisation of admissions forms and procedures across all NT public hospitals, and patient administration procedures manual be revised
- improved training of Patient Services department staff, particularly in cross-cultural training to improve their ability to communicate with Aboriginal people
- annual monitoring of data quality, including a sufficient sample in each hospital to provide a reliable measure of data quality for each hospital.
1. Introduction

The Northern Territory hospital morbidity dataset contains a summary of every inpatient episode in the five NT public hospitals. The collection commenced in 1976. For the years 1989-92 the collection was not maintained well, and each of these years is to some extent incomplete. However, since 1993 the data are complete for all NT public hospitals.

The ability of staff to accurately record data about patients who present for treatment at NT hospitals is important for both patient care, hospital management and statistical reporting. Information generated from poorly collected, stored and retrieved data leads to uninformed decision making.

Since the early 1990’s there has been greater emphasis on management of the ‘production’ of hospital services. The hospital morbidity dataset is now part of the basic information required to manage and fund acute inpatient care, particularly the Casemix system of classification and funding of discrete categories of health care ‘product’.

The completeness and quality of the hospital morbidity dataset has become crucial to the management of hospitals. Considerable effort has gone into improving the accuracy of coding of diagnoses and procedures over recent years. Equally as important is the accuracy of demographic data such as place of residence and date of birth.

Since the introduction of ‘cross border charging’ each state is now billed for any of their residents who are treated in interstate hospitals. This occurs whether patients are referred interstate for specialist services or are treated interstate of their own initiative, such as when travelling on holidays. Accurate recording of place of residence is now vital - payments for treatment of interstate residents amounts to several million dollars per year in the NT.

Accurate recording of Indigenous status is particularly important in the NT, where Aboriginal people comprise 29% of the population, and over 40% of hospital inpatients. The severe health problems of Aboriginal people, particularly adult chronic diseases, are increasing the demand for acute inpatient services.

Accurate identification of Aboriginal inpatients is important to understand and monitor this increasing demand. It is essential for evaluating the effectiveness of initiatives to reduce the need for acute care such as the Coordinated Care Trials in the Tiwi Islands and the Katherine West areas.

This study attempts to measure the quality of the key hospital morbidity dataset items that are recorded as part of the registration process for people being admitted to hospital. These data items are recorded in the patient administration system of NT public hospitals (called the ‘Caresys’ Information System).

At the time of discharge from hospital, details of each person’s illness, procedures and other data are coded and entered into Caresys. These data, and the basic demographic data recorded at the time of admission, are then extracted as an unidentified summary dataset, with one record for each ‘separation’ (ie, for each person leaving hospital). This summary data is the hospital morbidity dataset.

This study was conducted to assess the current data quality of the hospital morbidity dataset and to identify patient administration procedures and practices that needed to be improved. It was also intended that the data quality audit developed for the ‘demographic’ variables in the hospital morbidity dataset would be suitable for monitoring data quality on a regular (perhaps annual) basis. A single audit will serve no useful purpose if no action is taken to improve problems identified, and if the effect of these improvements is not measured in the future.

Patient registration data included information recorded for patients admitted through pre-
admission or anaesthetic clinics and those admitted from the emergency department. The practices and procedures for capturing this data were observed by the project officer in each hospital.

It is anticipated that the results of this study will influence the following:

- design and establishment of a THS client master index and unique identification
- Patient Services staff’s understanding of data quality matters, and their procedures and training
- analysis and interpretation of hospital utilisation information in the NT.

The project was conducted from September to December 1997 by the Clinical Nurse Consultant (Midwifery) at Katherine Hospital, Desley Williams, during a secondment to the Information Management Unit, Epidemiology Branch, Territory Health Services. The cooperation of the management of Katherine Hospital, and in particular the Director of Nursing, Marie Hughes, enabled Ms Williams participation in this project.

The participation of the hospital patients who agreed to be involved in this audit, ward staff and particularly Patient Services staff, is also greatly appreciated.

This study included all NT public hospitals. The NT hospital morbidity dataset does not include data from the Darwin Private Hospital. The study examined demographic data collection for the hospital morbidity dataset, and perinatal data collection for the Midwives Collection. This report presents only the results for the Hospital Morbidity Dataset. Results for the Perinatal Collection will be presented in a separate report.
2. Data quality audit

Methods

The audit of data quality in the hospital morbidity dataset was undertaken by comparing items from hospital morbidity dataset records for a sample of inpatients to data obtained from independent interviews of these inpatients during their hospital stay. These interviews were conducted by a single interviewer who was not a member of the Patient Services department or ward staff.

This method relies on the assumption that the data obtained at these special interviews are 'correct'. It is not possible to guarantee that this is so, but it is very likely that the interview data is more accurate than the routinely collected data because of:

- the special purpose of these interviews
- the consistency of having the same interviewer involved in all interviews
- the standardisation of the interview structure and data collection methodology
- the fact that the interviewer actually asked each patient (or parent/relative) rather than relying on old information from previous admissions or the impressions of the patient registration clerk (a particular problem with recording of indigenous status)

The study was initiated by the Information Management Unit of the Epidemiology Branch, which has responsibility for maintaining the NT hospital morbidity dataset.

The principle aim was to assess the quality of the hospital morbidity dataset for the entire Northern Territory.

The audit was designed to sample a similar proportion of patients in each hospital. A sample of 1% of annual admissions for each of the five public hospitals was selected for audit, based on the number of admissions to each hospital in 1996.

This sampling method produced an unweighted sample of the entire NT dataset and samples of adequate size to assess data quality in the larger hospitals, but did not produce large enough samples for the smaller hospitals.

A single report on data quality for the entire NT does not provide specific information on, nor motivation to improve, data quality in each hospital. It will thus have very limited effect in initiating action to improve the procedures and practices on which data quality depends. The quality of the hospital morbidity dataset will only improve if action is taken to improve patient admission practices in each hospital. To provide reliable results for each hospital the same sample size should have been selected in each hospital.

Permission to conduct the study was granted by hospital administrators.

Patients were selected each morning by obtaining the admissions list for the previous 24 hours from Patient Services. Patients admitted to intensive care units and special care areas were not interviewed. Using a simple form, the project officer interviewed patients in most wards of each hospital until the number specified for each hospital was reached. Parents or carers provided the information for children and Aboriginal Health Workers assisted in some situations.

The following data items were selected for audit:

- gender
- indigenous status
- date of birth
- place of residence
- country of birth
- marital status

Patients were very willing to participate in the project. Patient Services managers were enthusiastic and keen to see the results for their own hospitals. The time taken for interviews varied but the process was not lengthy - most were completed in 1-5 minutes.
The original design of the data recording form was unsuitable. The first question was date of birth, but a number of Aboriginal patients did not know the answer to this and they became visibly uncomfortable and appeared anxious about what else might be asked. When the order of questions was reversed and address was asked first and date of birth last, this anxiety was avoided.

Analysis

Four hundred and twelve patient interview questionairres were completed.

The patient interview records were matched with the corresponding hospital morbidity dataset record for each episode by matching on Hospital Registration Number (HRN) and hospital, where the interview date was between the admission and discharge dates to ensure that the same person and hospital inpatient episode were being matched.

Hospital morbidity dataset records could not be found for three patients who were interviewed. Interviews were conducted from September to November 1997. The hospital morbidity dataset is extracted from Caresys at the end of each month for all separations that have occurred during that month. When interview data was first matched to the hospital morbidity dataset in December 1997, twenty one interviews could not be matched to hospital morbidity dataset records.

These twenty one patients had not been discharged from hospital by the end of November, so the hospital morbidity dataset record for those episodes had not yet been extracted from Caresys. When the matching was repeated in July 1998 only three interviews could not be matched to hospital morbidity dataset records.

Of the 412 records of patient interviews:
- four interviews which would not match to hospital morbidity dataset records were found to have incorrectly recorded HRNs. These were corrected following consultation with the relevant hospital’s patient services department
- the HRN recorded for one interview did not match to a hospital morbidity dataset record, and could not be found on Caresys. This interview was excluded
- two interviews did not have a HRN recorded, and were excluded
- six patients had been interviewed twice. The second interview for each patient was excluded
- the questionnaires from three interviews had been entered twice. One of each was excluded.

Four hundred records remained to be analysed. Approximate ninety-five percent confidence intervals have been calculated for the percentage of records with all items correct in each hospital1 (Table 2.1).

The sample for each hospital was designed as a census of all inpatients over a short period of time (1-2 weeks). A random sample of patients over a longer period of time may have detected a greater degree of variability in the results because of factors such as staff changes. These confidence intervals illustrate the degree of variability of these results for each hospital (and the NT overall) due to the size of the sample only.

Results

The number of patients interviewed in each hospital (after the above exclusions) is presented in Table 2.1, with the percentage of each variable that was correct in the hospital morbidity dataset.

Also presented in Table 2.1 for each hospital is the overall percentage of hospital morbidity dataset records which had all variables correct, and 95% confidence intervals for this percentage to indicate the degree of reliability of these results. As can be seen from the width of these confidence intervals, the small samples taken in the smaller hospitals make the individual results for these hospitals too unreliable to be useful.

The overall percentage excludes date of birth because of the high number of patients who were unable to provide their date of birth at interview. The date of birth recorded in the hospital morbidity dataset may be correct for these people, but cannot be assessed from the data obtained at interview (see the specific results for date of birth).

Data quality was high for gender and Indigenous status and reasonably high for country of birth. There was agreement between the audit interviews and the hospital morbidity dataset for 99% of records regarding the gender of patients, and for 94% of records regarding their indigenous status. Agreement was high in every hospital.

Data quality was reasonable (but could be improved) for country of birth, with agreement between 91% of interview and hospital morbidity dataset records. This was similar for all hospitals.

Data quality was unsatisfactory for marital status, place of residence and date of birth. There was agreement between interview and hospital morbidity dataset on only 78% of records for place of residence, 77% for marital status, and 75% for date of birth.

The overall measure of agreement on all data items (excluding date of birth) for each hospital was 68% for Alice Springs Hospital but only 43% for Royal Darwin Hospital. The number of interviews at each of the three smaller hospitals was inadequate to provide reliable estimates, as can be seen from the very wide confidence intervals around their results.

<table>
<thead>
<tr>
<th>Data item</th>
<th>Royal Darwin</th>
<th>Alice Springs</th>
<th>Tennant Creek</th>
<th>Katl</th>
</tr>
</thead>
<tbody>
<tr>
<td>patients interviewed</td>
<td>197</td>
<td>119</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>sex</td>
<td>98</td>
<td>98</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>indigenous status</td>
<td>92</td>
<td>96</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>country of birth</td>
<td>88</td>
<td>93</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>place of residence</td>
<td>74</td>
<td>80</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>marital status</td>
<td>72</td>
<td>92</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>date of birth</td>
<td>80</td>
<td>74</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>all items correct*</td>
<td>46</td>
<td>71</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>(95% conf. interval)</td>
<td>(39, 52)</td>
<td>(61, 78)</td>
<td>(39, 83)</td>
<td>(σ)</td>
</tr>
</tbody>
</table>

* excluding date of birth, because of the high proportion of people unable to st
Gender

Gender was recorded correctly in 395 (99%) hospital morbidity dataset records. Three females were classified as males at Royal Darwin and two males were classified as females at Alice Springs Hospital.

Indigenous Status

The indigenous status of patients was correct in the hospital morbidity dataset for 94% of records (Table 2.2).

Table 2.2 Indigenous status

<table>
<thead>
<tr>
<th>HM Dataset</th>
<th>Interviews</th>
<th>Aboriginal &amp;/or TSI</th>
<th>non-Aboriginal</th>
<th>not stated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aboriginal and/or TSI</td>
<td>200</td>
<td>20</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>non-Aboriginal</td>
<td>16</td>
<td>176</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>not stated</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>total</td>
<td>216</td>
<td>182</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Twenty four people had their indigenous status incorrectly recorded in the hospital morbidity dataset. Sixteen of these errors were Aboriginal patients incorrectly recorded as being non-Aboriginal. Five non-Aboriginal patients were incorrectly recorded as Aboriginal. The other three patients were recorded as of unknown indigenous status in either the interview or the hospital morbidity dataset.

Of the 205 people recorded as indigenous in the hospital morbidity dataset, 200 (98%) were actually indigenous.

Two hundred and sixteen patients identified at interview as indigenous. Two hundred of these (93%) were correctly recorded as indigenous in the hospital morbidity dataset.

To correct for this undercount of indigenous people in the hospital morbidity dataset a correction factor of 216/205=1.05 is required (ie, a 5% increase in the number of indigenous hospital separations).

Country of Birth

Country of birth was correct in the hospital morbidity dataset for 97% of records (Table 2.3).

Twelve people had their country of birth incorrectly recorded in the hospital morbidity dataset. Four of these were patients born in Australia who were incorrectly recorded as being born overseas. Seven people born overseas were incorrectly recorded as born in Australia. One patient was recorded as of unknown country of birth in the hospital morbidity dataset.

Three hundred and forty seven were identified at interview as being indigenous. Two hundred of these (93%) were correctly recorded as indigenous in the hospital morbidity dataset.

Of the 349 people identified as Australian born in the hospital morbidity dataset, 342 (98%) were correct (according to the patient interviews).

Table 2.3 Country of birth (Australian or overseas born)

<table>
<thead>
<tr>
<th>HM Dataset</th>
<th>Interviews</th>
<th>Australia</th>
<th>overseas</th>
<th>not stated</th>
<th>tots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>342</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>347</td>
</tr>
<tr>
<td>overseas</td>
<td>4</td>
<td>46</td>
<td>0</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>not stated</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>total</td>
<td>347</td>
<td>53</td>
<td>0</td>
<td>0</td>
<td>400</td>
</tr>
</tbody>
</table>
Table 2.4 presents the marital status of patients according to whether the person was married (including defacto) or not married (never married, separated, divorced or widowed). Analysis of agreement between the hospital morbidity dataset and the data quality audit interviews is presented on this basis.

<table>
<thead>
<tr>
<th>HM Dataset</th>
<th>Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>not married</td>
<td>married</td>
</tr>
<tr>
<td>not married</td>
<td>199</td>
</tr>
<tr>
<td>married (inc defacto)</td>
<td>19</td>
</tr>
<tr>
<td>unknown</td>
<td>5</td>
</tr>
<tr>
<td>total</td>
<td>223</td>
</tr>
</tbody>
</table>

Table 2.6 (pg 15) presents agreement between these two sources for all categories of marital status.

On the basis of agreement as to whether the patient was married or unmarried, marital status was correct in the hospital morbidity dataset for 83% of records.

Sixty seven people had their marital status incorrectly recorded in the hospital morbidity dataset. Nineteen of these were unmarried people incorrectly recorded as being married. Forty one married people were incorrectly recorded as being unmarried. Seven people were recorded as of unknown marital status in the hospital morbidity dataset.

Two hundred and twenty three people were identified at interview as being unmarried. One hundred and ninety nine of these (89%) were correctly identified as unmarried in the hospital morbidity dataset.

Of the 240 people identified as unmarried in the hospital morbidity dataset, 199 (83%) were correct.

Date of birth was not recorded at interview for seventy-four of the 400 interviewed patients. Almost all (71) of these were Aboriginal people.

Fifteen of the people who could not provide a full date of birth were able to provide a year of birth. For the 341 patients who were able to provide at least a year of birth, the date of birth was correct in the hospital morbidity dataset for 300 (88%), and the year of birth was correct for 327 (96%).

Many older Aboriginal people, particularly from remote communities, do not know their date of birth because dates were not used in their society at the time of their birth. Many of these people have been ‘assigned’ a date of birth (usually a year of birth recorded as January 1st or July 1st) by church or government staff based on an approximation of their age when first ‘enrolled’ on government or mission records.

These estimated dates of birth are now utilised routinely in health and other government/business records, so it is possible for older Aboriginal people to have an estimated date of birth that they do not remember. All seventy four of the Aboriginal people who were unable to provide their date of birth at interview had a date of birth recorded in the hospital morbidity dataset. How accurate these recorded dates of birth are in relation to the actual age of the individual is impossible to say.

All of the seventy four people who could not provide a date of birth at interview had a date of birth recorded in the hospital morbidity dataset. The date of birth recorded in the hospital morbidity dataset for these people ranged across the entire age spectrum (including fourteen children less than three years of age) indicating that this is not exclusively a problem of elderly Aboriginal people.
**Place of Residence**

Place of residence is coded to individual communities in rural and remote areas of the Northern Territory, to individual towns for the smaller towns, and to individual suburbs in Darwin and Palmerston. For the purposes of this audit, individual suburbs in Darwin and Palmerston were recoded as either ‘Darwin’ or ‘Palmerston’.

At the level of specific place of residence coding, place of residence was correct in the hospital morbidity dataset for 310 of 400 records (76%).

State of residence, derived from place of residence coding, was correct in the hospital morbidity dataset for 391 of 400 records (98%, Table 2.7).

Since the introduction of ‘cross border charging’ for hospital inpatient care, state of residence has assumed considerable financial importance. From the NT government’s point of view, the accuracy of residence coding at the ‘NT/non NT’ level is the critical issue.

The ‘NT residence’ status of nine records (2%) was incorrect in the hospital morbidity dataset. Six of these were NT residents incorrectly recorded as interstate or overseas in the hospital morbidity dataset. Three were interstate or overseas residents incorrectly recorded as being residents of the NT.

Of the twenty one patients who stated at interview that they were interstate residents, three (14%) were incorrectly recorded as being NT residents. Of the 379 patients who stated at interview that they were NT residents, six (2%) were incorrectly recorded in the hospital morbidity dataset as being interstate residents.

Health services are organised in seven administrative districts in the NT, which are almost identical to the seven ATSIC regions. Coding of specific place of residence is recoded in the hospital morbidity dataset to district of residence, and also to state of residence.

Analysis of the accuracy of district of residence was restricted to the 379 people who stated at interview that they were residents of the Northern Territory (Table 2.8).

District of residence was correct in the hospital morbidity dataset for 338 of 379 records (89%). Of the forty one records with incorrect district of residence, almost half (18) had an ‘unknown’ district of residence coded from their place of residence data in the hospital morbidity dataset. The place of residence was recorded as interstate in the hospital morbidity dataset for six of these eighteen records.

<table>
<thead>
<tr>
<th>Table 2.5: Northern Territory Residence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviews</td>
</tr>
<tr>
<td>HM Dataset</td>
</tr>
<tr>
<td>Northern Territory</td>
</tr>
<tr>
<td>Interstate or overseas</td>
</tr>
<tr>
<td>not stated</td>
</tr>
<tr>
<td>total</td>
</tr>
</tbody>
</table>
### Table 2.6 Marital status - specific categories

<table>
<thead>
<tr>
<th>HM Dataset</th>
<th>never married</th>
<th>separated</th>
<th>divorced</th>
<th>widow</th>
</tr>
</thead>
<tbody>
<tr>
<td>never married</td>
<td>150</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>separated</td>
<td>0</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>divorced</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>widowed</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>married (inc defacto)</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>unknown</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>157</td>
<td>25</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

### Table 2.7 State of residence

<table>
<thead>
<tr>
<th>HM Dataset</th>
<th>Northern Territory</th>
<th>New South Wales</th>
<th>Victoria</th>
<th>Western Australia</th>
<th>Overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Territory</td>
<td>373</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victoria</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Australia</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Australia</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overseas</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>379</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 2.8: District of residence, NT residents only

<table>
<thead>
<tr>
<th>HM Dataset</th>
<th>Darwin Urban</th>
<th>Darwin Rural</th>
<th>Katherine</th>
<th>East Arnhem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Darwin Urban</td>
<td>114</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Darwin Rural</td>
<td>2</td>
<td>20</td>
<td>0</td>
<td>C</td>
</tr>
<tr>
<td>Katherine</td>
<td>1</td>
<td>0</td>
<td>60</td>
<td>C</td>
</tr>
<tr>
<td>East Arnhem</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Barkly</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>C</td>
</tr>
<tr>
<td>Alice Springs Urban</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>C</td>
</tr>
<tr>
<td>Alice Spring Rural</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>C</td>
</tr>
<tr>
<td>Unknown</td>
<td>6</td>
<td>6</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>total</td>
<td>125</td>
<td>31</td>
<td>62</td>
<td>38</td>
</tr>
</tbody>
</table>
3. Patient Services procedures, staff practices and attitudes

Methods

The project officer conducted interviews with Patient Services department managers and clerks in all hospitals, and with nurses and ward clerks who are responsible for the admission of patients where the Patient Services department does not provide a twenty-four hour service. A meeting was arranged with each Patient Services department manager and the methods, aims and objectives of the study were discussed. The project officer was then introduced to available staff for further discussion of the project. These discussions needed to be repeated as staff changed shift.

Some interviews were conducted on a one-to-one basis and some in groups depending on staffing numbers and availability. The interviews were semi-structured and the main issues addressed were:

- the processes for admission/registration of patients
- follow up to complete missing information
- the collection of data items for date of birth, marital and indigenous status
- difficulties experienced in the collection of data
- recommendations for improvement.

The group interviews were completed in forty-five to ninety minutes depending on the number of staff and issues raised. Staff were generally interested in presenting their views and discussing problems in data recording. No staff approached refused to cooperate or expressed any concerns about participating in the interviews.

The admission process was documented for each hospital and a general description can be found below. The results of the data item questions, difficulties and suggestions for improvements were recorded by the project officer. Common and recurring themes were extracted for each topic and are summarised below.

Time was spent by the project officer in observing the process for collecting patient registration details in each hospital. These observations took place during different shift times for 2-3 hours at a time and included Patient Services departments, Accident & Emergency and ward areas. Particular attention was given to observing the manner in which the questions of date of birth, Indigenous and marital status were asked and recorded.

In the preliminary discussion the project officer emphasised to staff that she would not be reporting on individual performance but was making general observations of the consistency of approach to the recording of data. This reassurance needed to be repeated to a small number of staff who seemed anxious, particularly if they were relatively new employees. Most however, appeared welcoming and appreciated the opportunity for further discussion of issues concerned with data collection. These comments were recorded and are reported in the results section of this paper.

No observations on individual staff practices have been reported to supervisors or managers, nor are individual observations reported here.

It must be noted that bias could be present in this observation process because of modification to practice whilst observation was taking place.

The admission process

A patient is admitted to hospital by a number of different staff in a number of different settings. The following is a general description of the process followed in each hospital as described to and observed by the project officer. A number of issues have been raised by this study and some recommendations are made to address them.

Patients whose hospital stay is planned in
advance attend a pre-admission or anaesthetic clinic where registration details are completed. New patients are asked to complete a series of forms that provide registration, account payment details, and election as a public/private patient for Medicare charging purposes. This information is reviewed by the Patient Services clerk and entered into the patient administration information system (‘Caresys’) during the interview with the patient.

There is no pre-admission clinic or process in Tennant Creek Hospital. Patients are interviewed by clerical staff in the emergency department during office hours and by nursing staff after hours. On the day of admission the patient is admitted on the ward by the ward clerk in some hospitals and by Patient Services clerks in others.

Patients who require an unplanned admission are admitted by clerical staff or nursing staff after hours in the emergency department. Patients who are unable to be interviewed on arrival have their registration details taken later on the ward by clerical or nursing staff.

Some patients are transferred to another hospital before complete details are obtained, usually in emergency cases. In some instances Patient Services staff from the transferring hospital contact the receiving hospital at a later time to obtain missing details. However, this is not done consistently, and does not occur in all hospitals or for all patients.

Maternity patients who are in labour or requiring admission are mostly directed to the maternity unit and their details telephoned to Patient Services. In the three smaller hospitals, when Patient Services is closed at the time of admission midwives enter the admission details in Caresys.

Patient registration forms are not standard in all hospitals. Each hospital has its own patient registration form which is usually given to patients on their first presentation to hospital. A copy of the form used in each hospital can be found in Appendix B.

Staff interviews

General comments

The recording of accurate patient details was seen as important by most staff. However, few expressed knowledge of the extent to which this data is used beyond the day-to-day requirements of managing each patient’s admission.

When other uses of patient data were mentioned during interviews, several staff expressed interest in knowing about these uses as this raised the importance of their role in recording accurate patient details. Most said that they had not been given any formal training in data collection and relied on each other for help when problems arose.

Presence of assisting documentation and training

None of the hospitals have documented procedures for staff to follow when admitting a patient. The only manual available for staff is the Caresys manual which gives details of the computer screens and instructions on their completion.

Most staff commented that it was not always possible to have the same person training new staff therefore information was not consistent. Some said that it was often some time before they discovered that they had been incorrectly informed about some processes and were concerned about the effect this had on data quality.

Staff recommended that there be a data collection procedure manual available. This could help to standardise the recording of the data and give instruction for obtaining consistent information from patients.

In the three smaller hospitals, staff reported high turnover, with some staff being employed on short contracts. These hospitals do not have on-site computer trainers. Although training is conducted regularly, it may be three to four weeks after commencement before a staff member is trained. There is little on-site support
between these visits. Nursing education in recent years includes training in computer skills and information systems, but often more experienced nurses have not been informed or trained in these areas.

Emergency department and midwifery nursing staff in the three smaller hospitals expressed their frustration with this situation in very strong terms. Some stated that it is not unusual to find staff in tears because of their inability to deal with an unfamiliar system. They have had to absorb these tasks often without the allocation of extra resources.

This problem was greatest in areas which are staffed by one or two nurses after hours eg. emergency departments. They find it impossible to keep up to date with changes to the system and feel that their nursing care can be compromised because of the amount of time needed to complete computer screens.

Privacy
Staff in all hospitals expressed concern about the lack of privacy for patients when registering information. During the observation phase of the project, the project officer noted the lack of privacy to be astounding.

The reception desks where patients present to register are located beside waiting areas in all hospitals. Alice Springs and Katherine hospitals have admission offices where information can be obtained in private but these are only open during office hours. Several reception desks are protected with perspex that is a barricade between the patient and the receptionist. This inhibits both staff and patient in the asking and giving of personal information which may affect data quality.

Cultural awareness
Both patient services and nursing staff stated that cross cultural training specific to collection of data from Aboriginal patients would be most helpful. Some said that if they had more cross cultural information they would be able to ask questions in a more sensitive manner and this could also lead to more accurate data collection. Some staff who have worked with Aboriginal people for a long period of time have developed a number of different techniques for asking questions and are used by other staff to help with communication difficulties.

Observation of staff practice in the patient registration process
Patients who had never previously attended an NT public hospital, and were thus not registered in Caresys, were asked to complete a patient registration form. Almost all Aboriginal people observed were previously registered on Caresys.

Patients who were already registered in Caresys were often asked only their current place of residence and next of kin. Indigenous status was rarely asked of people who were previously registered. The only area observed where all details were checked for all patients was the Day Surgery Unit at Royal Darwin Hospital.

Marital status
There is a general lack of consistency in the way the question of marital status is asked. The options are not always given so that patients can answer appropriately. Examples of the way in which the question of marital status was asked include:

- “Are you married?” If the answer was “no” many people entered “never married” without giving other options
- a number of people continue to use the term “single” eg. “Are you married or single” instead of “never married”
- The option of “married including de facto” was often not asked

Indigenous status
There is a lack of consistency in the way in which the question on indigenous status is asked. This question was rarely asked when information was being updated for people previously registered on Caresys. On those occasions that it was, not all options were given. This applied in particular to the differentiation between Aborigines and Torres Strait Islanders.
A majority of hospital staff said that they asked if the patient was of Aboriginal or Torres Strait Islander descent only if it was assessed by appearance or name that they were, or if the interviewer was unsure. A number of staff felt that they could determine the status themselves and did not ask each person but made an entry based on their assessment. This was confirmed by observation of the registration process by the project officer.

Many people said that they felt uncomfortable asking this question of someone who had an obvious foreign accent or who had an obviously Aboriginal appearance. They felt that this caused the patient to question their powers of observation and competence. In one small hospital it was said to be embarrassing to ask people who had been known to the member of staff for years.

Others said that they felt uncomfortable asking the question at all because they were concerned about negative responses eg. “what business is it of yours”. When asked how they handled these kind of responses most said “It is part of my job to ask” or “The computer requires an entry.” Some said that they were hesitant to ask because it could be interpreted that there would be differences in the care given.

**Date of birth**

It was observed that if a patient was unable to recall or did not know the date of birth most interviewers offered the date entered into the system on a previous occasion and asked if this was correct. The answer was invariably “yes”. There is no way of knowing if this date has ever been confirmed eg. from existing community records.

If the patient had not been seen before, and only the year of birth was known, some staff said that they entered the date as ‘1/1/19xx’ and others said ‘1/7/19xx’. Given that some people are actually born on these dates this system seems very odd!

The design of date fields in information systems often limits data entry to valid dates only. This is inappropriate for a date of birth field when some people do not know part or all of their date of birth.

**Preferred language**

Preferred language was rarely asked. This was said to be because it is not a mandatory field in the system.

**Country of birth**

This was rarely asked if the information was already in the system.

**Place of residence**

This question was mostly phrased as “Where do you live?” or “What is your address?”

During patient interviews conducted for the data quality audit (see section 2), the project officer noted that is was sometimes difficult for Aboriginal people from remote communities to provide a single community of residence in answer to this question. They moved frequently between communities within their country and/or language group and did not regard any one community as their ‘usual place of residence’.
4. Discussion and Recommendations

Regular monitoring of data quality

The data quality audit conducted in this study is simple, requires few resources and could be repeated on a regular basis as a quality assurance exercise for Patient Services departments. Regular data quality audits do not need to be done by a single project officer across all hospitals, but could be done by staff within each hospital.

However, a standardised interview procedure and resources such as interview forms and data collation tools are required. This could be either a customised computer spreadsheet or paper worksheets. This is important to simplify the audit for individual hospital staff, to ensure that results are comparable between hospitals, and so that results from each hospital can be collated to provide an estimate of data quality for the NT hospital morbidity dataset as a whole.

Recommendation
1. The Information Management Unit of the Epidemiology Branch and all Patient Services department managers collaborate to develop a standardised data quality audit process and materials.

2. A data quality audit be conducted annually in all NT hospitals under the direction of the Patient Services manager in each hospital

3. The Information Management Unit be responsible for collating the results from each hospital into an annual report on the data quality of the NT hospital morbidity dataset.

Aboriginal interviewer

The project officer involved in the patient interviews had many years experience in communicating with Aboriginal people. This is regarded as being very important in obtaining accurate data during these interviews.

However, it is possible that the information provided from some Aborigines at the patient interviews may be more accurate if they were interviewed by an Aboriginal person.

Recommendation
4. The next data quality audit be undertaken by an appropriately trained Aboriginal person (Aboriginal Health Worker, Aboriginal Hospital Liaison Officer, or Aboriginal staff member of Patient Services), and by a non-Aboriginal person experienced in communication with Aboriginal people from remote communities, and the results of the two be compared to see if a greater degree of discrepancy between interviews and HM dataset data was detected by the Aboriginal interviewer.

Limitations of sample size

The sample size of this audit was different in each hospital, being a constant proportion (1%) of the annual admissions to each hospital. This provided an estimate of the accuracy of the NT hospital morbidity dataset as a whole, and a reasonably reliable estimate for the two larger hospitals. However, the sample in the smaller hospitals was too small to provide reliable results for each hospital.

The same sample size is required in each hospital to assess the quality of data recorded in that hospital and determine whether current practices need to be improved in each hospital.

The sample size at Alice Springs Hospital was 119 patients interviewed. The overall agreement between interviews and hospital morbidity dataset records was 71%. The width of the 95% confidence interval was no more than +/-10% on either side of the estimate. A higher estimate of the percentage agreement would produce even narrower confidence intervals. This level of precision due to sample size (+/-10%) would seem reasonable, particularly as data quality probably fluctuates considerably over short time periods because of factors such as staff changes.
5. The data quality audit in each hospital include a minimum of 120 patients.

**Data collection procedure manual**

In NT hospitals a number of staff from different disciplines are responsible for recording data at patient registration/admission. Staff turnover is high and training of new staff is a constant process.

The availability of a procedure manual is recommended for all areas where patient registration/admissions take place. This would contribute to the recording of consistent and accurate data.

Information about how the data is used would make its collection more relevant to Patient Services staff.

6. A standard Patient Services procedures manual should be introduced in all NT hospitals, including procedures to monitor data quality and a description and examples of management reporting and statistical uses of Hospital Morbidity data.

**Cultural awareness training**

Many new staff have had little or no previous contact with Aboriginal people and minimal exposure to issues of cultural significance. This was a constant theme evident in the staff interviewing process and it was reinforced in the observations made by the project officer.

The need for all staff to participate in cultural awareness programs has been recognised by THS in the department’s Corporate Plan. The findings of this study support the need for such training.

7. All Patient Services staff, and patient administration staff in other areas such as Emergency departments, receive Aboriginal cultural awareness training.

**Client Privacy**

The issue of privacy needs to be addressed in all hospitals as a matter of urgency. Situations where sensitive information is being asked in a public arena is common to all hospitals.

Whilst it is recognised that staff security must be ensured, the perspex windows in some hospitals inhibit the passage of information. The provision of an admission/registration office where details can be taken and recorded in private is strongly recommended.

8. The physical layout of admissions and emergency department front desks and interview areas be modified to enable client interviews to be conducted without being overheard by other clients

**Standard patient admission/registration form for all hospitals**

Registration forms are used in all hospitals to register details for new patients. Presently, each hospital uses a different form. Since the details required are common to all THS hospitals a standard form could be developed and used in all NT public hospitals.

9. The Patient Services manager from each hospital develop a single patient registration form for use in all hospitals