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**Mortality and morbidity data dissemination via interactive data cubes – a new
initiative**

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A. Mortality data dissemination via interactive cubes – a new initiative

Ron Casey, Australian Centre, Australian Bureau of Statistics

1 In Australia, as in most other countries, the principal method of making mortality data readily available to the general community has traditionally been via paper publications, and more recently, electronic versions of these paper publications. Data is also disseminated through the provision of non-identified unit record files, and by ad-hoc tabulations, although the clients for these products are often quite sophisticated, with specialised skills in data manipulation.

2 With the advent of more user-friendly computer products, the Australian Bureau of Statistics (ABS), has investigated various methods by which it can make more statistical data readily available to a general audience. This has resulted in the development of a number of multidimensional datasets (affectionately referred to as datacubes), which can be easily manipulated by SuperTABLE (developed by Space-Time Research Pty Ltd), a powerful and extremely user-friendly electronic tabulation package.

3 The ABS loaded its first mortality datacube on the ABS website in December 2000 to coincide with the release of the 1999 Causes of Death, Australia (Cat No. 3303.0) publication. Experience to date suggests that this datacube has generated considerable interest, especially within the academic community, based on the number of "hits" recorded.

4 In July 2001, the Office of National Statistics (ONS) UK requested and was provided with the hierarchical ICD tables which the ABS had developed for its mortality datacube. ONS are considering developing a similar output system.

5 ABS recognises that datacubes cannot fulfil total client needs. Major users of mortality data require finely disseminated data for all or most available variables, and these needs are satisfied only by complete deaths files. Datacubes do however fill a number of niches between the novice user and major user and offer the flexibility denied by published data.

6 As part of its future mortality dissemination policy, ABS will load annual mortality datacubes to its website. These will be supplemented by a series of "thematic" or topic based datacubes. Such topics will include suicides, accidents, drug related deaths, firearms related deaths and others reflected by client needs. Due to practical size constraints, the datacube loaded to the ABS website in December 2000 contains data for underlying cause only. However, Ron Casey will be demonstrating a prototype datacube to interested delegates which incorporates both underlying and multiple causes of death.

B. Hospital morbidity data dissemination via interactive cubes – a new initiative

Jenny Hargreaves, Australian Centre, Australian Institute of Health and Welfare

Data from Australia's National Hospital Morbidity Database at the Australian Institute of Health and Welfare (AIHW) have been made available in recent years through the AIHW's annual *Australian Hospital Statistics* reports. In the early 1990s, these reports were produced in traditional hard copy form. However, in recent years, there has been a transition to greater electronic data dissemination, first with the inclusion in the hard copy report of a diskette with additional data in Excel tables, and then to the dissemination of larger amounts of Excel table-based data accompanying the reports on the Institute's internet site.

In 2000, this electronic dissemination was taken a step further with the inclusion of interactive cubes of data from the National Hospital Morbidity Database on the AIHW's web site at www.aihw.gov.au/hospitaldata/datacubes/index.html. These cubes can be accessed at no charge, allow users to specify tables and graphs as required and to examine data at greater levels of detail than is available in the published *Australian Hospital Statistics* reports or their accompanying Excel tables. They are prepared using Cognos software.

There are four data cubes currently available:

- Principal diagnoses for 1993–94 to 1997–98 (using ICD-9-CM to classify diagnoses)
- Principal diagnoses for 1998–99 and 1999–00 (using ICD-10-AM to classify diagnoses)
- Australian Refined Diagnosis Related Groups (AR-DRGs) version 4.0/4.1 for 1997–98 to 1999–00
- Principal diagnoses for separations including specialised psychiatric care for 1998–99 (using ICD-10-AM to classify diagnoses)

Later in 2001, data cubes covering procedure and external cause information (classified using ICD-10-AM) will be added and the cube relating to specialised psychiatric care will be updated to include 1999–00 data.

Each cube includes information on the number of separations (same day and overnight), patient days and average length of stay, by age group and sex and year of separation, for each diagnosis or AR-DRG. The cube on specialised psychiatric care also includes data on the mental health legal status of the patient for each separation.

Accompanying the cubes (and hyperlinked to them) is comprehensive information on the scope and coverage of the data collections, definitions for the various data elements and concepts incorporated into the cubes, and guidance on the use of ICD-9-CM and ICD-10-AM, as used to classify the diagnoses, procedures and external causes.

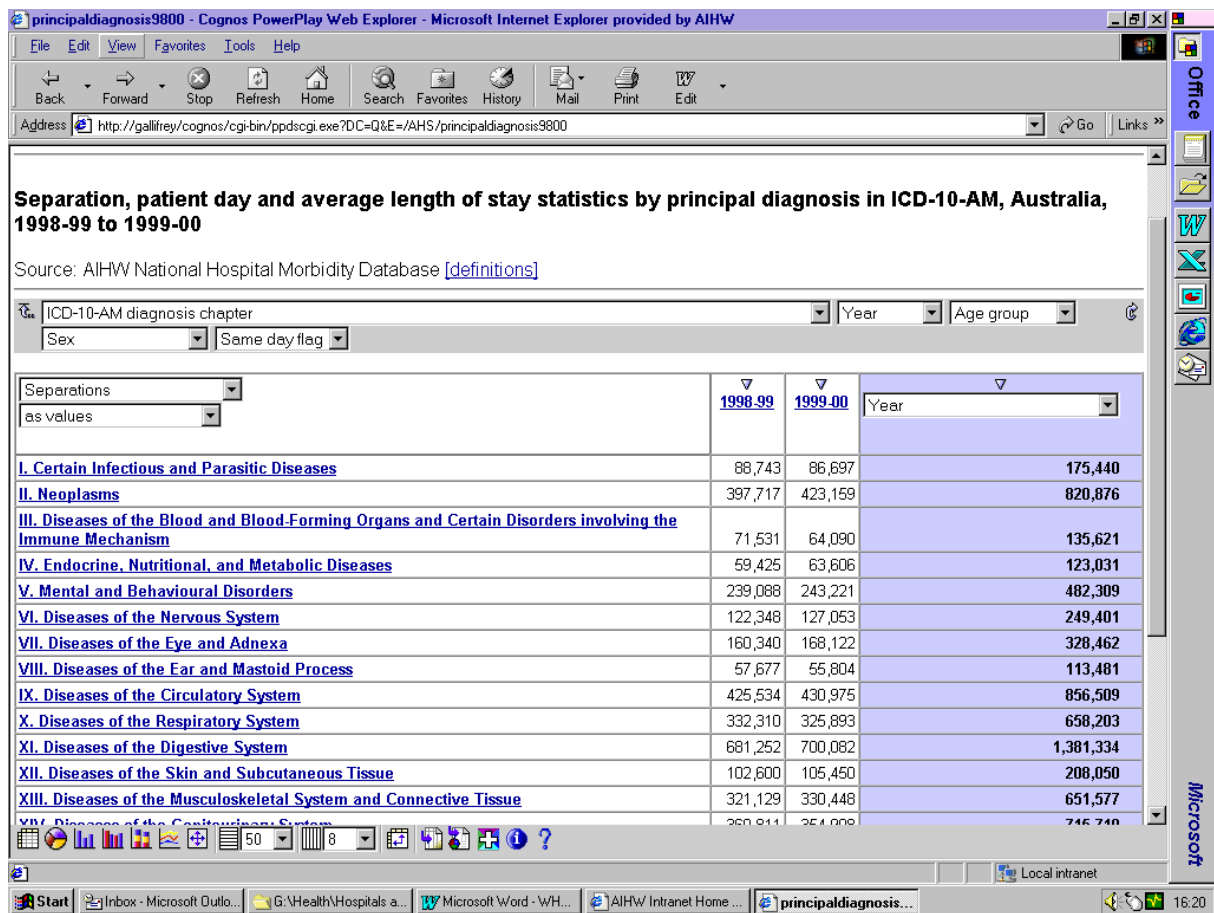
The site has been designed for use by those with some familiarity with Australia's hospital morbidity data and with ICD-9-CM and ICD-10-AM. It complements the summary statistical information published annually in *Australian Hospital Statistics* and an individualised data request service offered to those with more complex data

needs. It is envisaged that these cubes will serve the needs of a subset of data users with some familiarity with the data and the ICD-10-AM classification.

Example of use of the data cubes

The data cubes are constructed such that the hierarchical nature of ICD-10-AM shapes the presentation of the data. The first screen of data presented (Figure 1) therefore shows the number of separations by year and by ICD-10-AM diagnosis chapter.

Figure 1: Interactive hospital morbidity data cube for principal diagnosis information in ICD-10-AM, showing first level categorisation by ICD-10-AM chapter



By clicking on any of the chapters, sub-chapter groups of codes can be viewed in the same format. Thus, for example, by clicking on X. *Diseases of the respiratory system*, the display will change to show the number of separations for J00-J06 *Acute upper respiratory infections*, J10-J18 *Influenza and pneumonia*, J20-J22 *Other acute lower respiratory infections*, and so on through the chapter. In turn, clicking on any of the

Figure 2: Interactive hospital morbidity data cube for principal diagnosis information in ICD-10-AM, showing average length of stay for J10-J18 *Influenza and pneumonia*

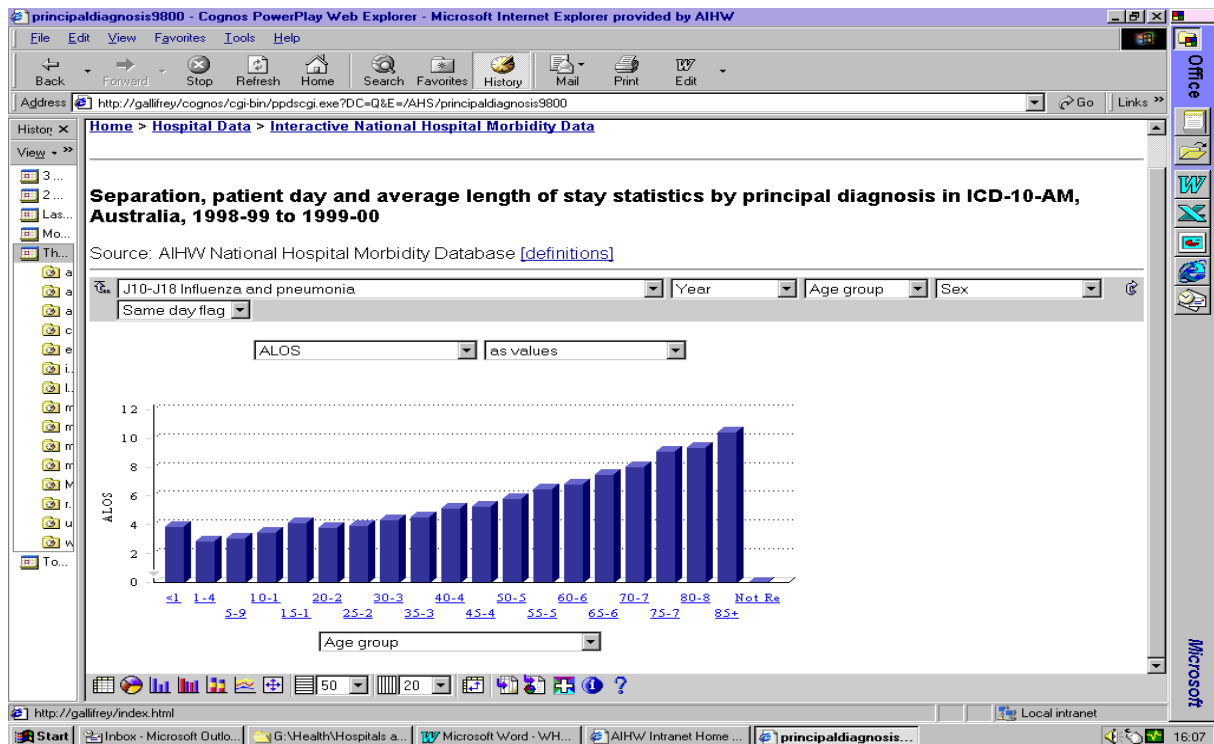
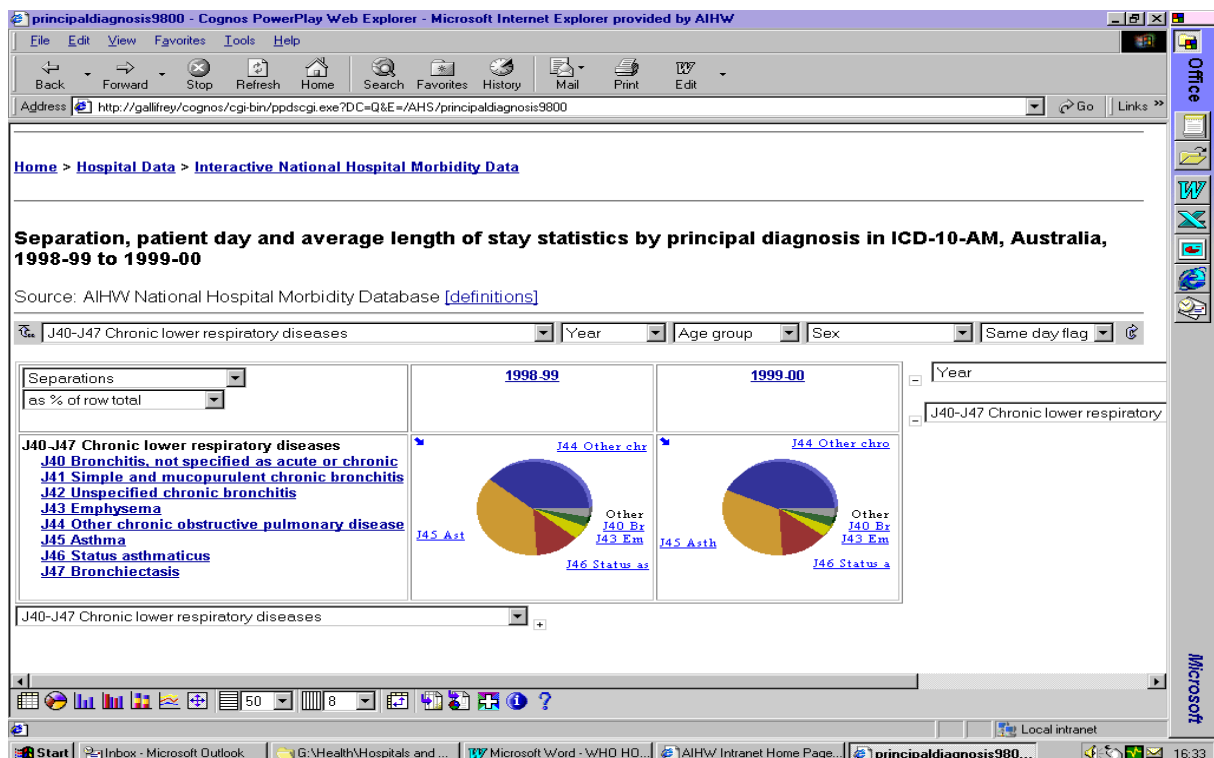


Figure 3: Interactive hospital morbidity data cube for principal diagnosis information in ICD-10-AM, showing separations as a percentage of the total for 3-character groups within J40-J47 Chronic lower respiratory disease



sub-chapter groups will result in the display of 3-character groups, then 4-character groups, then 5-character groups.

At each level of the ICD-10-AM classification, the data display can be varied to show, for example, the number of separations, the average length of hospital stay, or the number of separations as a percentage of the total. The display can use any of the data elements in the data cubes, including age group, sex and year, and specify, for example, the include or exclude specific types of records, for example, same day separations. Users can also specify the form of tabular and graphical data presentation, with options for tables, pie charts and various bar charts available. Once prepared, the tables and graphs can then be exported in various ways for further use.

Figures 2 and 3 provide examples of the data presentations. Figure 2 presents average length of stay (in days) data for separations with a principal diagnosis within J10–J18 *Influenza and pneumonia*, with Figure 3 displaying pie charts of separations as a percentage of the total for 3-character ICD-10-AM groups within J40–J47 *Chronic lower respiratory disease*.

The interactive internet hospital morbidity data cubes thus flexibly provide highly accessible data on Australian hospital activity. As the software for the cubes is designed for hierarchical exploration of data, the structuring of the data in the cubes using ICD-10-AM ensures that users can access and manipulate the data in a meaningful, yet simple-to-use manner.