CASEMIX CLASSIFICATION ISSUES AND CHANGE FROM ICD-9-CM TO ICD-10-AM CODING

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ABSTRACT

Australia is in the throes of changing from ICD-9-CM to the Australian Modification of ICD-10 (ICD-10-AM) for coding of morbidity and interventions in Australian acute care hospitals. The change is of great relevance to countries using casemix groupers based on ICD-9-CM. This paper describes the Australian experience of change from ICD-9-CM to the Australian Modification of ICD-10 (ICD-10-AM) and its influence on the Australian Diagnosis Related Groups. The benefits of the change for currency of coding concepts, and some of our experiences with the use of mapping between the new and old classifications for grouping purposes is also described. The ongoing implementation strategies, future development and research are also briefly discussed.

KEYWORDS: Classification, casemix, Diagnosis Related Groups, Data collection, Concordance

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INTRODUCTION

Classification and casemix in Australia
The Australian Health Ministers’ Advisory Council recommended ICD-10-AM as the Australian standard by July 1999, and gave the National Centre for Classification in Health (NCCH) responsibility for developing and maintaining the classification. The First Edition of ICD-10-AM was developed with major clinical input and published early in 1998 under licence from WHO.

The completed work includes an Australian Modification of ICD-10 diseases (tabular list and index) and an Australian procedure classification, based on the Commonwealth Medicare Benefits Schedule (a fee schedule comprising attendance, therapeutic and diagnostic items), known as MBS-Extended or MBS-E. Also included is a volume of Australian Coding Standards. The total set of classifications is known as ICD-10-AM (Australian Modification).

Most Australian states are using casemix systems for funding hospitals or area health services and for management and monitoring purposes within hospitals. Public hospitals notify coded data for all separations to the eight state and territory health authorities which contribute to the national morbidity collection. In the private sector, casemix data for private patients is collected nationally using a Hospital Casemix Protocol.

**Coding and casemix in Australian hospitals**

Four states and territories chose to introduce the new system in July 1998 and ICD-10-AM was then used in both public and private hospitals. The remaining states will begin using the new classification in July 1999. One of the states that implemented the new classification system in 1998 (Victoria) funds its hospital using a casemix formula.

Australia has over 1,000 coders in its acute care hospitals. Coders are either graduates in Health Information Management or clinical coders. Health Information Management programs are offered at the University of Sydney, Queensland University of Technology, La Trobe University in Melbourne and Curtin University, Western Australia. Clinical coders are educated through distance education programs offered by the Health Information Management Association of Australia (HIMAA) and the Open Training and Education Network in the Technical and Further Education sector.

These personnel use either hard copy publications of classification systems published by NCCH, or computerised encoder systems, produced by various software development companies. The most widely used encoder (produced by the 3M company) also incorporates an automated grouping function which allows coders to
interactively assign codes and group at the hospital level. This means that the casemix implication of the coding is immediately apparent, and permits hospitals to manage their casemix and to streamline notification of data for the state morbidity collections.

ICD-10-AM

The basis for the disease classification is ICD-10, so that Australian data can be compared with that from other countries. Also, ICD-10 will be used in Australia for classifying causes of death from January 1999.

The procedure classification, based as it is on the MBS, will bring closer together the procedure classification systems used for private inpatients and ambulatory patients (MBS) with the system used for procedures performed on hospital inpatients (MBS-E).

Both classifications have been developed by staff of the NCCH in consultation with clinicians and coders from 19 specialty groups, professional associations and from state health authorities. New code construction has taken into account specificity in ICD-9-CM. Forward and backward mappings between ICD-10-AM and ICD-9-CM have been created. These mappings were used to build the fourth version of the Australian Diagnosis Related Groups (DRGs). A version of Australian DRGs based on data coded in ICD-10-AM will not be possible until data coded in ICD-10-AM is available, probably by 2000.

The NCCH has also prepared a set of Australian Coding Standards for ICD-10-AM to ensure that coders are aware of the way in which codes should be interpreted, sequenced and assigned.

DISEASE CLASSIFICATION

The guiding principles of the ICD-10-AM diseases project followed the licence conditions between the Commonwealth Department of Health and Aged Care and WHO for development of an Australian version of ICD-10. They were that modifications should follow the format of ICD-10, content of three and four character codes should not be changed, modifications should be consistent with existing codes and the ability to compare data over time should not be compromised.

The disease classification has been extended to include more specificity, especially in those areas where specificity is available in ICD-9-CM. For example:

| ICD-9-CM | ICD-10 | ICD-10-AM |
Acute lymphoblastic leukaemia:

<table>
<thead>
<tr>
<th>In remission</th>
<th>204.01</th>
<th>C91.0</th>
<th>C91.01</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without mention of remission</td>
<td>204.00</td>
<td>C91.0</td>
<td>C91.00</td>
</tr>
</tbody>
</table>

This increase in specificity has resulted in the introduction of 1,100 new codes at the fifth character level in ICD-10-AM. Approximately 20 changes have been made at the third and fourth character levels and these changes have been included in the Australian recommendations to the World Health Organization for inclusion in the international update to ICD-10. In total, there are 36,942 codes in ICD-10-AM disease classification, 33,751 of which are valid codes. Extensive changes have also been made to the Disease Index.

PROCEDURE CLASSIFICATION

The ICD-10-AM procedure classification (MBS-E) is based on the Australian Commonwealth Medicare Benefits Schedule of fee items. This fee schedule has been restructured to form a classification of procedures based on procedure site, type and approach. MBS-E has 21 chapters predominantly based on site and a seven digit code incorporating a two digit extension to the five digit MBS item number. The MBS-E contains 6,500 codes, including a new section for imaging services, dental and allied health interventions.

Each item in the therapeutic section of the MBS, as well as dental and diagnostic procedures, has been analysed and specific codes allocated to separate parts of the bundled item where necessary (on advice from clinical consultants and coders and sometimes to reflect specificity in ICD-9-CM procedures). The guiding principles were that the procedure code structure be multi-axial, hierarchical, expandable, comprehensive, that the codes for concepts be non-overlapping, easy to use, setting and provider neutral, limited to procedures (not diseases), clinically relevant and adaptable to electronic format.

In constructing the procedure classification, the following definition of procedure was used: a procedure may include invasive, non-invasive or cognitive interventions:

**Invasive**

a. Therapeutic interventions where there is a disruption of the epithelial lining generally, but not exclusively, with an implied closure of an incision (e.g. "operations" such as a cholecystectomy or administration of a chemotherapeutic drug through a vascular access device)

b. Diagnostic interventions where an incision is required and/or a body cavity is entered (e.g. endoscopy with/out biopsy, bone marrow aspiration)

**Non-invasive**

Therapeutic or diagnostic interventions without disruption of an epithelial lining (e.g. lithotripsy, hyperbaric oxygenation, manipulation of a fracture, allied health
interventions such as hydrotherapy, diagnostic interventions not requiring an incision or entry to a body part such as pelvic ultrasound, diagnostic imaging)

**Cognitive**

An intervention which requires cognitive skills such as evaluating, advising, planning (e.g. dietary education, physiotherapy assessment, crisis intervention, bereavement counselling)

The principal axis of MBS-E is the first level of categorisation within each chapter. The principal axis is defined by anatomical site and is structured with a superior to inferior or head to toe approach. For example, gynaecology procedures are sequenced: ovary, fallopian tubes, uterus, cervix, vagina and vulva.

The secondary axis is procedure type. Procedures are listed under the anatomical site from least invasive procedures through to the most invasive. The general categories of the secondary axis are:

- examination
- application, insertion, removal
- incision
- destruction
- excision
- reduction
- repair
- reconstruction
- revision
- reoperation
- other procedures

The tertiary axis of MBS-E includes details of the specific site, the specific procedure, the technology and techniques used. There may be more than one tertiary axis listed under any particular secondary axis. The tertiary axis is the lowest level of section categorisation to which actual codes are assigned.

Procedures not represented in the MBS (cosmetic surgery, allied health procedures and other items not covered by Medicare) were created and allocated seven digit numbers. The MBS (the original fee schedule) is organised according to clinical specialty or craft group. This meant that a considerable amount of restructuring had to be carried out in order to fulfil the basic requirements of a classification, and to have a framework which was organised by system, site and procedure type. Block numbers were allocated to allow this framework to be introduced into a system where the actual procedure code numbers had lost their sequential order due to the restructuring from specialty to body system and site. The block numbers, which are sequentially ordered, enable coders to locate the codes from the index as well as providing a tool for users of coded data to aggregate codes into relevant groups for reporting purposes.
A completely new index for the procedure classification was created, as the index to the MBS did not meet the index construction principles familiar to Australian coders.

To date, the differences between MBS and ICD-9-CM in use in public and private sectors respectively have hampered comparison of surgical utilisation rates and outcomes. Under the new system, mappings will be available between MBS-E and MBS, so that a common understanding will be possible between the two systems. Updating of the MBS-E procedure classification will proceed in tandem with MBS. Although international comparisons of procedures will be possible only through mapping, this process should be made easier due to the Australian procedure classification structure following principles included in the European pre-standard\textsuperscript{4}. This pre-standard is designed to support the exchange of surgical procedure information between different national classifications and languages within Europe.

CASEMIX GROUPING

Most Australian hospitals currently use Version 3.1 of the AN-DRGs which contains codes from the 1996 Australian ICD-9-CM. Version 4.0, to be called Australian Refined Diagnosis Related Groups (AR-DRG), is also built from these codes. Australian mappings from ICD-9-CM to ICD-10-AM relate to AR-DRG v4. A grouper for Version 4.0 which accepts ICD-9-CM codes was released in May 1998. AR-DRG v4.1, released in December 1998, will accept ICD-10-AM codes and its Manual describes the AR-DRGs in terms of ICD-10-AM. It was created using code maps between ICD-9-CM and ICD-10-AM.

Not until Australia has data coded in ICD-10-AM will it be able to further refine the AR-DRGs for the new coding system. This means a period of at least two years where we will rely on code mappings for grouping purposes.

MAPPING

Forward and backward mappings between ICD-9-CM and ICD-10-AM were constructed. These mappings include "historical" and "logical" maps. Historical mapping refers to the selection of a code map which achieves the most appropriate coding and clinical meaning. Logical mapping refers to the selection of a code map which achieves the appropriate AN-DRG assignment\textsuperscript{5}. Examples of the difference between historical and logical mapping are shown in Table 1.

<table>
<thead>
<tr>
<th>ICD-9-CM Code</th>
<th>Code Title</th>
<th>ICD-10-AM Code</th>
<th>MDC for Logical Map</th>
</tr>
</thead>
</table>

Table 1. Disease Code Mapping
<table>
<thead>
<tr>
<th>Historical Map</th>
<th>Logical Map</th>
<th>MDC</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>003.21</td>
<td>Salmonella meningitis</td>
<td>A02.2† G.01*</td>
<td>01</td>
</tr>
<tr>
<td>003.22</td>
<td>Salmonella pneumonia</td>
<td>A02.2† J17.0*</td>
<td>04</td>
</tr>
<tr>
<td>003.23</td>
<td>Salmonella arthritis</td>
<td>A02.2† M01.39*</td>
<td>08</td>
</tr>
<tr>
<td>003.29</td>
<td>Other salmonella infections</td>
<td>A02.2† A02.2†</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: The MDC for the logical map must correspond with the MDC for the original ICD-9-CM code

Mappings were exhaustively reviewed. This process involved ‘round and round’ mapping which checked and rechecked backward maps against forward maps to ensure consistency at the DRG level (but not within DRGs). Principal diagnoses and procedures were checked in this process.

The logical mappings were done using AR-DRG v4.0 of the AR-DRG grouper. Although the grouper specifications for AR-DRG v4.0 were available before the change to ICD-10-AM, the grouper itself had not been constructed and was released in December 1998. Most states are using AN-DRG v3.1 of the Australian National Diagnosis Related Groups (AN-DRG), although some are planning to move to AR-DRG v4.1 in July 1999. Cost weights for AR-DRG v4.1 will be available in April 1999.

DUAL CODING STUDY

During the second half of 1997, a Dual Coding Study was undertaken to assess and predict the likely impact of introducing the new coding system on the clinical coder workforce, and to provide information on the effect mapping might have on casemix grouping and funding. A stratified national sample of 9,638 records covering 651 DRGs originally coded in ICD-9-CM were recoded using the new ICD-10-AM classification. The ICD-10-AM records were then mapped back to ICD-9-CM for grouping purposes and assigned to DRGs based on AN-DRG v3.1. The final report of the Dual Coding Study\(^6\) showed:
• An increase of 1min:49sec in average time to code a record in ICD-10-AM (2:21 to 4:10)
• Average number of codes per record in ICD-9-CM was 5 and in ICD-10-AM 4.9
• 17.5% non-matches of DRGs when comparing grouping results of cases coded in ICD-9-CM with those coded in ICD-10-AM mapped back to ICD-9-CM
• Decrease in casemix index of approximately 3.4% for the public sector and 2.1% for the private sector
• Estimated total cost of implementation of $AUD16,492,800, including costs for more coders, changing IT, recalibration of cost weights, education and other issues such as associated coding systems.

IMPLEMENTATION

Although originally set at July 1998, a national ICD classification changeover date could not be agreed between all states and territories. Four states and territories began using ICD-10-AM on 1 July 1998 and the remaining four states will implement the new classification on 1 July 1999.

Issues resulting from this staggered start are:

• Maintenance of two classification systems
• Education of clinical coding workforce, clinicians and users of coded data
• Combination of direct and mapped data in national collections
• Problems for private hospitals and insurers bridging states converting in 1998 and 1999
• Complex relationship between codes and casemix versions

Overseeing the introduction of the new Australian classification systems is the National Committee for Implementation of ICD-10 in Australian Hospitals. This includes representation from all state and territory health authorities, the private sector (hospitals and insurers), relevant organisations such as the Health Information Management Association of Australia, Australian Institute of Health and Welfare, Australian Bureau of Statistics, Department of Veterans Affairs, Department of Health and Aged Care and the NCCH.

EDUCATION/TRAINING

A major education program was provided to train Australian trainers, coders and users of coded data as well as to inform system developers of the change from ICD-9-CM to ICD-10-AM.

The education program included two train-the-trainer sessions and a workshop for Information Technology and Systems Professionals; face to face workshops for coders and users of coded data; provision of educational packages outlining differences in key areas of the classification, and an intensive conversion workshop.
An implementation kit in hardcopy and electronic format was prepared and distributed and a program for clinicians and data users placed on the NCCH website (http://www.echs.usyd.edu.au/ncch/). For the first four states and territories implementing ICD-10-AM, further post-implementation training has been provided.

Between April 1998 and March 1999, NCCH has educated >1000 clinical coders and approximately 100 IT professionals and users of coded data. The NCCH internet website, specifically the education homepage for clinicians has been read by 774 users.

Education programs will be repeated for the remaining Australian states introducing ICD-10-AM in July 1999.

ACTUAL EXPERIENCE

Mapping for AN-DRG v3.1

Following release of the mappings between ICD-9-CM and ICD-10-AM for AR-DRG v4.0, it was found that additional mappings had to be done for use with AN-DRG v3.1 Particular mapping problems were found with:

- Obstetric fifth digits
- Acute myocardial infarction
- Head injuries
- Tendon injuries
- Social induction
- Osteoporotic fractures
- Pacemakers

Example 1 Obstetrics

The obstetric DRGs in AN-DRG v3.1 are based on the fifth digit of the ICD-9-CM code which indicates the episode of care (antepartum, delivery, postpartum). The fifth digit does not exist in ICD-10-AM so this information is not captured as part of the diagnosis code. In the mapping of ICD-10-AM obstetric codes to ICD-9-CM, the most common/logical fifth digit is chosen. As this may not be the correct 5th digit, using the mapping tables may lead to delivery episodes being grouped to non-delivery DRGs.

The solution was to use the Z codes which distinguish between delivery, postpartum and antepartum episodes. The process involves mapping the ICD-10-AM code to ICD-9-CM using the national mapping tables, searching the code string for the presence of the delivery Z code (Z37.x), and, if present, assigning the fifth digit of 1 (delivered) to the mapped code. If the delivery Z code is not present, the code string is searched for the postpartum Z code (Z39.x) and if present, a fifth digit of 4 (postpartum condition) is assigned to the mapped code. If the postpartum code is not present, a fifth digit of 3 (antepartum) is allocated to the mapped code.
Example 2 Acute Myocardial Infarction

ICD-9-CM Acute Myocardial Infarction code 410 has fifth digits indicating initial and subsequent episode of care. Cases are grouped to DRGs based on this fifth digit. The ICD-10-AM Acute Myocardial Infarction code does not have a fifth digit, the mapping of these codes to ICD-9-CM defaults to 0 (episode of care unspecified). This has the effect of removing all cases from the Acute Myocardial Infarction DRGs and placing them in Atherosclerosis and Circulatory Disorder DRGs.

In this case, the solution was to change the default mapping to 1 (initial episode of care) as over 90% of Acute Myocardial Infarctions fall into this category. Cases then group to the Acute Myocardial Infarction DRGs.

Since July 1998, the state ICD-10-AM Implementation Coordinators have been meeting to discuss implementation issues, including the impact of mapping on casemix grouping in those states and territories adopting ICD-10-AM in 1998. Refinements have been made to the mappings so that mapping from ICD-10-AM codes to ICD-9-CM for grouping has as little impact as possible on grouping and funding. To date, the consistency of grouping has reached 98.5%.

Mapping for AR-DRG v4

The AR-DRG grouper was converted from ICD-9-CM to ICD-10-AM using the backward maps, with subsequent assessment using the forward maps to identify problem ICD-10-AM codes. As well, changes to DRG definitions, grouper logic and complications and co-morbidities (CCs) were needed due to the differences between ICD-9-CM and ICD-10-AM. As far as possible, the two versions of the grouper have been kept similar, with the aim that a patient’s record would be grouped to the same DRG irrespective of the coding system used on that record.

Logic changes to the AR-DRG grouper were necessary in the areas listed above and in several other areas such as HIV, multiple trauma and microvascular tissue transfer. Seven hundred and fifty-two diagnosis codes were moved between DRGs.

Many-to-one ICD-9-CM to ICD-10-AM maps of procedure codes decreased the specificity of the codes used in the grouper and resulted in 709 additions or deletions of procedure codes following mapping to ICD-10-AM. An example of this is shown in Table Two. Another example for diagnoses is shown in Table 3.

Many-to-one ICD-10-AM to ICD-9-CM maps of procedure codes increased specificity of the codes used in the grouper. An example of this is shown in Table 4. A total of 2,915 such additions and deletions of procedure codes resulted from mapping to ICD-10-AM.

Table 2. Many-to-one ICD-9-CM to ICD-10-AM procedure code mapping

<table>
<thead>
<tr>
<th>ICD-9-CM Code</th>
<th>Code Title</th>
<th>MDC</th>
<th>Number of Records</th>
</tr>
</thead>
</table>
### Table 3. Many-to-one ICD-9-CM to ICD-10-AM diagnosis code mapping

<table>
<thead>
<tr>
<th>ICD-9-CM Code</th>
<th>Code Title</th>
<th>MDC</th>
<th>Number of Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>883.0</td>
<td>Open wound of finger w/o complication</td>
<td>21</td>
<td>3.606</td>
</tr>
<tr>
<td>883.1</td>
<td>Open wound of finger w/ complication</td>
<td>21</td>
<td>1.550</td>
</tr>
<tr>
<td>ICD-10-AM Code</td>
<td>Open wound of finger w tendon involvement</td>
<td>8</td>
<td>4.168</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------------</td>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td>S61.0</td>
<td>Open wound Finger(s)</td>
<td>21</td>
<td></td>
</tr>
</tbody>
</table>

Note: Data from 1994-94 national hospital morbidity database. MDC 8 relates to the Musculoskeletal and connective tissue disorders and MDC 21 relates to Injuries.

Table 4. Many-to-one ICD-10-AM to ICD-9-CM procedure code mapping

<table>
<thead>
<tr>
<th>ICD-9-CM Code</th>
<th>Code Title</th>
<th>MDC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08.61</td>
<td>Lid reconst w skin graft</td>
<td>2, 8, 9,10, 21, 22</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICD-10-AM Code</th>
<th>Code Title</th>
<th>MDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>45206-00</td>
<td>Simple and small local skin flap of eyelid</td>
<td>Not 22</td>
</tr>
<tr>
<td>45421-00</td>
<td>Split skin graft to burn of eyelid</td>
<td>22 only</td>
</tr>
<tr>
<td>45448-00</td>
<td>Small split skin graft of eyelid</td>
<td>Not 22</td>
</tr>
<tr>
<td>45451-00</td>
<td>Full thickness skin graft of eyelid</td>
<td>Not 22</td>
</tr>
</tbody>
</table>

Converting the AR-DRG grouper to ICD-10-AM also required a review of the CC codes defining severity splits. As an example of the type of problem resulting from many-to-one maps, A02.2 Salmonella enteritis backward maps to both 003.0 Salmonella enteritis (a CC) and 008.1 Arizona enteritis (not a CC). A process of statistical and clinical review resolved these difficulties, which in this example resulted in A02.0 becoming a CC as most of the records on the hospital morbidity database used 003.0 rather than 008.1.

One problem occurred that was not identified in time for AR-DRG v4.1 and will be corrected in AR-DRG v4.2. This is where an ICD-10-AM procedure code contains two concepts that were two separate codes in ICD-9-CM, and the DRG logic uses
the two ICD-9-CM codes in different ways. Since both ICD-9-CM codes mapped to the same ICD-10-AM code, the problems could not be identified until coding in ICD-10-AM commenced.

INFORMATION SUPPORT

The NCCH has continued to provide information support for coders during the changeover between classifications. A Coding Query service (by fax/e-mail) provides coding advice to coders who need clarification or further information about coding diagnoses and procedures, and to date over 900 enquires have been answered. Some of the questions from professional health information managers and practising coders have highlighted anomalies in the classification, and consequently there have been some changes to the disease and procedure classifications and the issue of additional coding standards.

ERRATA AND THE ICD-10-AM 2\textsuperscript{nd} EDITION

Our experience with the maintenance of the ICD-9-CM classification showed that errata were seldom required and then only for typographical errors. By contrast, our experience during the first year of ICD-10-AM has been that it is necessary to issue errata more frequently.

Due to the two year period between the first and second editions there has been a need to include updates from MBS and other "clinical" corrections making the errata more like "supplements" to the classification.

All the errata (6 in total) will be incorporated into the 2\textsuperscript{nd} edition of ICD-10-AM, due to be released in January 2000, and implemented in July 2000. Australian government agencies and NCCH are currently considering the subsequent frequency of updating the classification. There has been an indication that some stability is favoured following so much change and the major costs involved in the changeover.

FUTURE RESEARCH

One of the outstanding issues that will be addressed over the next year or two is the concordance between ICD-9-CM and ICD-10-AM morbidity data collections.

Although mapping provides the best historical or logical code matches between the two classification, an empirical measure of concordance has not yet been possible. A concordance study, using a dual-coding or recoding approach, is planned for later in 1999. This concordance study will not only provide a standard for comparing the efficacy of the existing classification maps, but will provide a genuine measure of the occurrences of diseases and procedures within the national morbidity database across time, despite changes in the classification system in use at any one period in time.
DISCUSSION

The cycle of coding system introduction (or change), casemix grouper construction, cost weight development and grouper introduction is difficult to establish and stabilise so that it is efficient and standardised across hospitals and states. The change to ICD-10-AM is a major one, but must be confronted if the coding system and resultant casemix classification is to be credible with clinicians.

In Australia, it will be some years before enough data is available in ICD-10-AM to construct a grouper based directly on these codes. Thus, at least for a time, we are dependent on groupers developed in ICD-9-CM forward mapped to ICD-10-AM for purposes of describing what is in each group. The grouper manual for AN-DRG v3.1 is based on ICD-9-CM code. This version requires use of backward maps to allow entry of codes in ICD-10-AM and grouping in ICD-9-CM. AR-DRG v4.0, released in May 1998, is still based on ICD-9-CM but incorporates clinical recommendations for refinement following experience with AN-DRG v3.1. It has revised CC codes and logic and introduces a new DRG numbering system. AR-DRG v4.1, available in November 1998, describes the groups in the mapped ICD-10-AM code and has the same logic as AR-DRG v4.0.

There is potential loss of meaning and accuracy with mapping between coding systems. This is further compounded by grouping the mapped codes in a system developed for clinical meaning and resource use homogeneity using an outdated classification such as ICD-9-CM.

The staggered implementation of ICD-10-AM in Australia has added further complexity to the coding/grouping cycle. Two classification systems must be maintained, mappings are crucial for comparison of interstate data and for grouping, education of the clinical coder workforce has been piecemeal and national collections contain data coded directly as well as data from mapped codes which may not have exact equivalents. There are particular problems for private hospitals and insurers where there is often a national or interstate focus. The NCCH has a national program for educating clinicians about coding and classification systems and supporting documentation. The protracted transition to ICD-10-AM has complicated these efforts, although there have been some benefits in putting the spotlight on coding and classification and including clinicians in refinement of the casemix classification and coding system.

CONCLUSION

Although the introduction of a new classification system is a major change for the health system, particularly one funded using casemix, the benefits of moving to a clinically credible coding system as the foundation of the casemix system are enormous. In Australia, a great deal of attention has been focussed on the coding and grouping process as a result of the adoption of the new system. Hospitals are realising the extent of their clinical coder workforce and their reliance on accurate coding for a proper translation of their caseload into casemix groups, weights and
If casemix is a language, the new coding system has enabled a more sophisticated and informed conversation between clinicians, clinical coders, administrators and founders about utilisation of health services, allocation of resources, and resulting health and budgetary outcomes.

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7. Solutions to both examples developed jointly by DHFS, NCCH and state ICD-10-AM Implementation Coordinators