

# Singapore's migration to a new classification system

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The World Health Organisation's (WHO) International Statistical Classification of Diseases and Related health Problems (ICD) has been used in Singapore since the 1970s as a basis for planning health programs, clinical specialty development, clinical research and healthcare costs control measures. Healthcare providers (hospitals and clinics) have been using a combination of ICD ninth revision (ICD-9) and its Australian clinical modification (ICD-9-CM) codes to generate Australian National Diagnosis Related Groups (AN-DRGs) v3.1 for casemix-based funding. Following a Readiness Assessment project, which was conducted in mid 2009, the Ministry of Health (MOH) Singapore, made the decision to adopt the Australian Classification System, which includes the Australian Refined DRGs (AR-DRGs) v6.0 grouper system along with its building blocks, the ICD tenth revision, Australian Modification (ICD-10-AM) Sixth Edition, the Australian Classification of Health Interventions (ACHI) and the Australian Coding Standards (ACS) as the next coding and classification system for Singapore. The project, conducted in collaboration with the University of Sydney, was completed on 30 September 2012 and this report discusses the processes involved in all of the phases. It was determined that the improved specificity and revised terminology of ICD-10-AM/ACHI Sixth Edition would equate more closely with the vocabulary and application of current medical practice in Singapore. The use of these classifications would therefore enable more detailed and accurate classification of diseases and interventions; leading to more efficient and effective data retrieval and more appropriate AR-DRG allocation. Implementation of this new system occurred on 1 January 2012 for morbidity coding. The move from ICD-9 to ICD-10 for mortality coding also took place at the same time.

## Migration strategy. Engaging a migration partner

The Singapore MOH in conjunction with the Ministry of Health Holdings (MOHH) undertook a competitive tendering process to determine their migration partner. The process commenced in the first half of 2010 and after a request for proposal process was completed, the University of Sydney (UOS) was awarded the role of Singapore's migration partner in July 2011. During June 2011, members of the UOS project team travelled to Singapore and met with representatives from MOH and MOHH as well as members of the Coding Expert Panel (CEP). These initial discussions assisted the UOS in conjunction with MOH/MOHH to solidify the project plan. Key deliverables were identified and an initial timeline for delivery was developed. The tight timeframe for migration

to ICD-10-AM/ACHI/ACS Sixth Edition and AR-DRG v6.0 was taken into account in these discussions. The project plan included a number of phases: pre-implementation, transition and implementation and post-implementation.

## Pre-implementation – July to December 2011

### Health Institution visits

In order to understand the current governance model in place within the Singapore health system, representatives from the UOS Project Team in conjunction with MOH/MOHH representatives visited specific sites to discuss clinical coding and mediclaim coding and submission processes (for health insurance claims).

### Review of Singapore Coding Directives (SCDs)

The Singapore CEP undertook an extensive review of the then existing Singapore local rules in comparison with the new Sixth Edition ACS to determine those directives which could be deleted or amended and maintained in light of the adoption of ICD-10-AM/ACHI Sixth Edition. A further review of these selected SCDs was undertaken in discussion with the UOS Project Team leading to further refinement as per their recommendations. The new system is underpinned by comprehensive coding guidelines within the ACS which are to be used in conjunction with the system. The implementation of AR-DRG v6.0 based on ICD-10-AM/ACHI codes addressed many of the SCDs created for use with ICD-9-CM and v3.1 of the AN-DRGs. Those SCDs that would be maintained were highlighted in the migration kit.

## Stakeholder forum – Be progressive. Embrace clarity. Achieve meaningful outcomes (21 July 2011)

The stakeholder forum was held at the MOH to launch the migration project. After introduction of the project by MOH, the UOS representatives outlined the:

- Background and benefits of the national program of migration
- Classification expertise of the UOS
- Key milestones and expected outcomes over the next year
- Change process and education strategy to be put in place.

The presentations were followed by active audience participation, which led to the introduction of additional elements into the migration training strategy.

### **Preparation of migration kit**

An extensive education program for the implementation of ICD-10-AM/ACHI/ACS Sixth Edition in Singapore was established. The migration kit was the first product of the education program and was designed to act as a major resource of information regarding ICD-10-AM/ACHI/ACS Sixth Edition, and AR-DRGs. It was envisaged that this resource would be heavily relied upon by all stakeholders and their institutions throughout all phases of implementation. The migration kit provided users with an introduction to the classification and highlighted some of the changes between ICD-9-CM and ICD-10-AM/ACHI/ACS Sixth Edition. There was a generic section for distribution to clinicians, mediclaim coders and other data users. The migration kit for clinical coders included both the generic section as well as a set of exercises (with answers) to help clinical coders become familiar with the new classification. The exercises were completed prior to attendance at workshops held for stakeholders, as they provided a good introduction to ICD-10-AM/ACHI/ACS Sixth Edition. The migration kit was finalised for distribution in mid October 2011, following review by a Singapore clinician and the CEP (See points 9 and 10 below).

### **Preparation of education material for clinical coders, clinicians, mediclaim coders and other data users**

MOH/MOHH identified the following groups of stakeholders targeted for education workshops: clinical and mortality coders; clinicians; mediclaim coders; and other data users (e.g. policy makers, administration and finance staff). The education workshops were designed by the UOS to cater for the differing needs of the various groups.

### **Review and input to the generic section of the migration kit and clinician workshop by Singapore clinician**

The generic section of the migration kit and the clinician workshop training material covering both the planned half day and one hour clinician workshops held in November 2011 were reviewed by an eminent Singapore clinician. Any relevant input was incorporated into these documents prior to the distribution of the Migration kit in mid October 2011. The clinician workshop slides were also made available to all clinicians as a soft copy after the workshops were completed.

### **Pilot training workshop with representatives from the CEP**

A draft of the full migration kit was distributed to the CEP in early September 2011 for their review and preparation for a pilot workshop. Workshop material (slides) were also provided during the pilot training for their review. The pilot workshop provided an avenue for CEP representatives to have input into both the migration kit and clinical coder workshop material. This pilot was a trial run of the three day clinical coder workshop but expanded to be held over four days to allow for discussion between CEP representatives and UOS Educators.

Immediately following the workshop, relevant input from the CEP representatives was incorporated into the migration kit and clinical coder workshop material. The finalised migration kit was distributed to all stakeholders by mid October 2011. The workbook and answers that formed the clinical coder workshop material was provided to all clinical coders during the clinical coder workshops. The mediclaim and other data users' workshop slides were also made available to stakeholders in soft copy once workshops were completed.

### **Pre-implementation Training Workshops (November 10 to December 2 2011)**

The pre-implementation training workshops covering the identified relevant stakeholders took place in November/December 2011. The advantage of having the workshops in November/December 2011 was that the participants were able to retain the information gained, ready for transition and implementation from January 1 2012. The following workshops were undertaken:

- One half-day mortality coder workshop
- Three by three-day clinical coder workshops
- Two by half-day clinician workshops (designed specifically for clinicians closely involved in casemix coding)
- Ten by one-hour clinician workshops (at various hospital sites)
- Three by half-day mediclaim coder workshops
- Two by half-day other data users workshops.

Nurses and allied health professionals were also encouraged to attend either the short (one hour) clinician workshops or one of the workshops designed for other data users.

### **Transition and implementation – December 2011 to February 2012**

#### **Finalising ICD-9-CM coding**

It was essential that health institutions worked to reduce coding backlogs during the latter half of 2011. It was expected that there would be discharges from the latter half of December 2011 that would require coding using ICD-9-CM during January 2012. Eliminating these backlogs minimised the amount of discharges that would require coding in ICD-9-CM after implementation of ICD-10-AM/ACHI/ACS and AR-DRGs v6.0 on 1 January 2012. Health institutions were advised to allocate specific clinical coding staff to finalise the coding of December discharges as soon as possible after January 1 2012. Other clinical coders available could then commence coding discharges from 1 January 2012 using the new system.

#### **Mentoring**

During January and the first week of February 2012, the UOS project team provided three to four mentors who were available to health institutions for the first five weeks of the transition and implementation phase in January 2012. MOH/MOHH developed an itinerary for the UOS project team for January 2012. Institutions were advised to have processes in place for escalating issues that may be deemed appropriate

for discussion with the mentors in order to make best use of their availability for each of their visits. Organised meetings with coding or casemix representatives proved to be useful during the mentors' visits to individual institutions. During the mentors' visits in January 2012 weekly CEP meetings were also organised involving all the mentors to discuss coding issues that had been escalated to the CEP level.

### **Help Desk (February to 30 September 2012)**

There is a process already in place in Singapore with regard to escalating coding issues from the institution to the CEP where appropriate. This process will continue. The UOS project team was contacted through MOH to advise on issues that could not be solved within the CEP until 30 September 2012.

### **Post-implementation – February 2012 to September 30 2012**

#### **Post-implementation workshops (16–20 April 2012)**

Three by one-day post-implementation clinical coder training workshops were delivered during April 2012. These workshops were developed for continuing education and covered complex coding areas that had been identified in the three months post-implementation via the CEP. These workshops not only addressed complex coding areas of concern but also helped to consolidate coding skills using ICD-10-AM/ACHI/ACS.

#### **Post-implementation coding audit (July – August 2012)**

The Singapore Hospital Education Audit was undertaken to build on the training elements and practice changes implemented across the Singapore health system. The audit was appropriately timed to acknowledge the transition period associated with the implementation of the new coding system and the need to provide an accurate picture of coding accuracy to inform the development of sound recommendations. In line with this, the Singapore Hospital Education Audit involved a random sample of approximately three thousand coded separations no earlier than four months post migration. The scope of the audit included 18 hospitals from both the public and private sector.

The objectives of the Singapore Hospital Education Audit were to:

- Review and evaluate the quality of code assignments for inpatient records using ICD-10-AM/ACHI/ACS Sixth Edition and AR-DRG v6.0
- Assess the compliance of ICD-10-AM and ACHI codes with the Australian Coding Standards (ACS) Sixth Edition and SCDs
- Assess the strengths and weaknesses of each institution's internal coding audit systems
- Develop recommendations regarding future ICD-10-AM/ACHI/ACS Sixth Edition education needs for Singapore hospital system Clinical Coders.

The Singapore Hospital Education Audit had an educational, rather than a compliance focus, with a view to

improving coding quality across the Singapore health system. The result of the audit provided a baseline measure for the Singapore MOH for ongoing efforts to improve coding quality. At the conclusion of the project, The UOS Project team made the following recommendations:

### **ICD and Grouping Systems Steering Committee and work groups**

The longer-term governance required for the classification and casemix system in Singapore could be addressed by a committee, perhaps named the 'ICD and Grouping Systems Steering Committee'. This committee could take on a continuing oversight role in light of the importance of the system to health finance in Singapore. Membership could include senior representative(s) from the following areas and organisations: MOH; MOHH; CEP; mortality coding; Central Providence Fund Board (CPFB); public hospital sector; private hospital sector; and clinician(s) co-opted as required. It was recommended that a technical working group be formed under the leadership of the ICD and Grouping Systems Steering Committee to assist it with decisions regarding maintenance and update of the classification systems used and AR-DRG Singapore cost weight development. After discussion of issues, relevant recommendations could be made to the ICD and Grouping Systems Steering Committee. The following is a summary of issues to be addressed at the working group level:

- ICD-10-AM/ACHI/ACS Sixth Edition maintenance (SCD and classification query processes) and update (investigate new versions of ICD for morbidity to keep abreast of international trends)
- National continuing coder education strategies
- National clinical coding audit strategies
- AR-DRG v6.0 maintenance (grouping query process) and update (investigate new versions of DRGs to keep abreast of international trends)
- Development of Singapore cost weights
- The technical working group proposed may not be adequate for mortality coding queries. The possibility of a separate group could be considered in the light of experience.

Figure 1 shows the proposed organisational structure of the ICD and Grouping Systems Steering Committee with the Technical Work Group. Communication would be two way from top to bottom and from bottom to top.

### **Access, transparency and communication**

It was recommended that the MOH create a web page to communicate vital information regarding ICD and Grouping issues. The type of information that could be displayed includes:

- Answers to the frequently asked questions (FAQs) from the pre-implementation workshops
- Answers to the FAQs from the post-implementation workshops
- Maintained SCDs and new SCD's developed since 1 January 2012
- Coding Queries Database (to include answers to coding queries received from 1 January 2012)

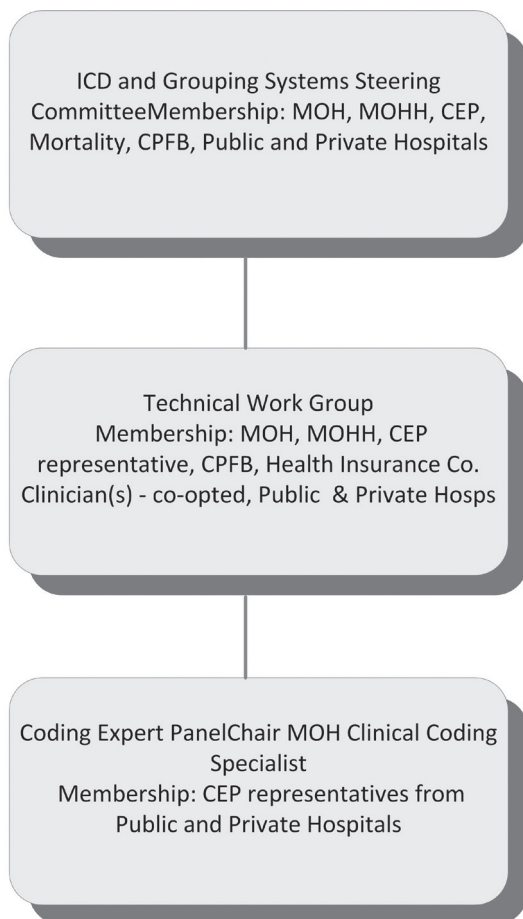


Figure 1: Proposed organisational structure of the ICD and Grouping Systems Steering Committee with the Technical Work Group

- Results from post-implementation coding audit
- Answers to AR-DRG v6.0 grouping issues
- Codefinder (an electronic coding and grouping tool) pathway issues (when required)
- Mortality coding queries and answers (if required)
- Notification in relation to continuing education updates, seminars, workshops

### Morbidity coding queries and communication process

MOH should formalise the governance of the coding queries process to ensure standardised answers to coding queries by implementing:

- A hierarchical queries answering process, where the hospital deals with coding queries in the first instance through their CEP representative or senior clinical coder and clinicians. If the query cannot be answered at that level it is then escalated to be discussed at a quarterly CEP meeting. The Technical Working Group would deal with queries which remain unsolved at the CEP level. All SCDs should be ratified by the Technical Work Group.
- An historical queries database (from 1 January 2012), where all answers to coding queries should be available via a queries database to be linked into the MOH website.

Figure 2 should be read from the bottom up and shows the recommended process for escalation of morbidity coding queries (post-migration) from 1 January 2012.

### Continuing morbidity coder education

It was recommended that a system of continuing coder education be implemented at least on an annual basis. The areas of continuing coder education will be informed by the queries received at the CEP level. Continuing coder education should also include regular clinical updates in specific areas of medicine/surgery so that coders remain abreast of changes in diagnosis and treatment.

For new clinical coders, it is recommended that they undertake a medical terminology/medical science course (unless they already have a background in medicine or nursing) and then complete the migration kit exercises. Once this is done a system of mentoring should be put into place where the new clinical coder's work is gradually increased in complexity from simple day surgery cases to complex cases (e.g. diabetes, circulatory, sepsis, obstetrics). The mentoring process will require the mentor to continually audit the new coder's work until such time as the mentor feels that the new coder has gained the skills necessary to be left unattended and audited along with other coders during an internal formalised coding quality assurance program.

There are other alternatives that can be considered for continuing and new clinical coder education including the negotiation of a contract with an organisation that regularly conducts such training; or, the undertaking of distance medical terminology and coder education programs conducted by, for example, the Health Information Management Association of Australia.

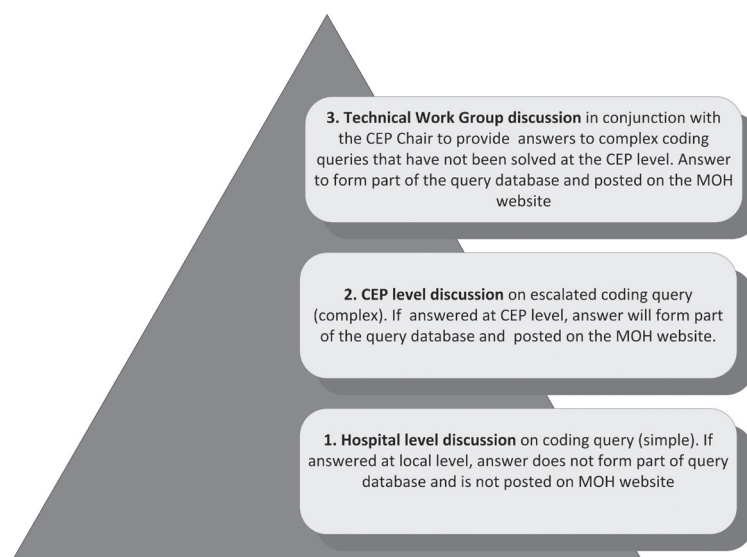


Figure 2: Recommended process for escalation of morbidity coding queries (post-migration) from 1 January 2012

## ***Clinician education regarding documentation and the impact on coding quality***

As well as coder education, it is imperative that hospitals implement regular internal clinician education sessions regarding the importance of good clinical documentation and the impact that it has on coding quality and appropriate AR-DRG allocation.

## ***Continuing national coding audits***

As well as formal internal coding quality assurance programs within hospitals, it was recommended that this be followed up with national coding audits on an annual basis. A DRG compliance audit should be undertaken once the Singapore cost weights have been developed and the coders have been coding using the new system for at least one year. This type of audit should be undertaken every two years with an educational audit undertaken in alternate years. It is important that any recommendations from these audits, including the educational post-implementation audit performed in July/August 2012, be followed up with the objective of achieving improvements in coding quality and appropriate AR-DRG allocation.

## ***ICD-11***

The WHO launched the Development of ICD-11 in 2007. A beta version of the revised classification was released in May 2012. Singapore should stay abreast of the developments so that it can consider, along with other countries, the implications for national statistical and financing systems in coming years. More active participation in the WHO Family of International Classifications (WHO-FIC) network would be one way to achieve this goal.

## **Conclusion**

Casemix is not new to Singapore; however, the skill base has been in ICD-9-CM and AN-DRG v3.1. Internationally, the area of classification and casemix has been dynamic, with many countries moving to their own adaptations of the WHO's ICD-10; and have moved forward with regard to more recent versions of DRGs. MOH/MOHH recognised that in order for Singapore to successfully migrate from ICD-9-CM to ICD-10-AM it would be necessary to secure the services of a migration partner with the latest classification expertise. The University of Sydney as the migration partner, in conjunction with MOH and MOHH has now successfully introduced a new classification system. Processes have been put into place that will allow Singapore to move forward and tailor the system to their needs; specifically in relation to cost weights (as done in the past with AN-DRG v3.1).

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