# Implementing ICD cluster coding in Australia: Laying the groundwork for ICD-11 with data standards

Authors: Anne Elsworthy, James Katte, Susan Claessen, Renée Porter | Independent Health and Aged Care Pricing Authority

**Abstract**

Cluster coding in morbidity is conceptually practiced in Australian hospitals through sequencing of related classification codes. This sequencing may be disrupted in transmission, by data quality processes, or coding standards that do not allow using the same code twice. Australia is using new data standards to introduce cluster coding to clarify the relationship between ICD-10-AM codes and prepare the systems and workforce for cluster coding with ICD-11 MMS codes.

## Australian morbidity data

Australia collects morbidity data from admitted hospital episodes using the International Classification of Diseases (ICD). Australian data standards only allow ICD morbidity data to be categorised as one of two types: a principal diagnosis or an additional diagnosis. This binary distinction is important as it enables data users to understand the principal diagnosis as the condition chiefly responsible for an episode of care but limits the ability to understand if additional diagnoses are related to each other or to the principal diagnosis.

An added limitation in Australian reporting is that the order of ICD codes input by clinical coders is not necessarily the same order received by the jurisdictional health departments or national health agencies.

## Relationships between ICD codes

Multiple ICD codes may be required to describe a condition or event. With simple episodes of care, it may be easy to infer the relationship with multiple ICD codes.

For example, if N39.0 *Urinary tract infection*, site not specified and B96.2 *Escherichia coli [E. coli]* as the cause of diseases classified to other chapters are the only codes reported for an episode of care it is easily understood as "*E. Coli* causing a urinary tract infection". With more complex or longer episodes of care, there may be relationships between multiple ICD codes. It is not clear for governments, researchers and the other users of ICD coded data whether two or more codes are related or unrelated, and instead assumptions are needed for interpreting data.

Some examples where ICD requires multiple codes to describe a condition or event:

**Injuries**
**+**
**External causes**

**Poisoning**
**+**
**Drug, medication or substance**

**Manifestation**
**+**
**Underlying cause**

**Site of neoplasm**
**+**
**Morphology**

## Cluster coding with ICD-10-AM codes

Australia has implemented funding adjustments for public hospitals based on poor safety and quality measures using ICD-10-AM codes (the Australian Modification of ICD-10) and a data element that identifies the onset of a condition called the Condition Onset Flag (COF).

An example is drug-related respiratory complications such as respiratory failure (J96.99) from opioid drugs (Y45.0), where these arise during an admission the episode qualifies for a funding adjustment. However opioid drugs can cause many adverse effects such as dizziness or constipation, and with longer or complex episodes of care the Y45.0 code might be related to any number of conditions that should not qualify for a funding adjustment.

Australia uses metadata standards to define how data from episodes of care are reported to jurisdictional health departments and national health agencies such as the Independent Health and Aged Care Pricing Authority (IHACPA). IHACPA has begun to explore metadata standards to include a new data element in national morbidity reporting called the "diagnosis cluster identifier" (or DCID) to clarify the relationships between ICD-10-AM codes.

**Scenario:** A patient was admitted for hip replacements from osteoarthritic pain following a car crash 10 years ago. After surgery, the patient had significant constipation from opioids, requiring aperients and a change in pain medication. On day 5 the patient developed respiratory failure which was treated.

| DCID | COF | ICD-10-AM | Type of diagnosis |
|---|---|---|---|
| A | 2 | M16.4 *Post traumatic coxarthrosis, bilateral* | Principal diagnosis |
| A | 2 | T93.1 *Sequelae of fracture of femur* | Additional diagnosis |
| A | 2 | Y85.0 *Sequelae of motor-vehicle accident* | Additional diagnosis |
| B | 1 | K59.0 *Constipation* | Additional diagnosis |
| B | 1 | Y45.0 *Opioids and related analgesics causing adverse effects in therapeutic use* | Additional diagnosis |
| B | 1 | Y92.24 *Place of occurrence, health service area, this facility* | Additional diagnosis |
| 8 | 1 | J96.99 *Respiratory failure unspecified, type unspecified* | Additional diagnosis |

The alpha values of the DCID (e.g. A, B, C .. ZX, ZY, ZZ) indicate that a code is in a cluster with other codes with the same value. Numeric values are used for special reasons, 8 is used to indicate the ICD-10-AM code is not related to other codes.

In the scenario above, the DCID now tells us that Y45.0 and J96.99 are not in the same cluster and identifies that this episode of care would not qualify for a funding adjustment. Without the DCID the above scenario would incorrectly qualify for a funding adjustment.

## Preparation for post-coordination with ICD-11 MMS codes

The implementation of new data elements and reporting requirements may take several years to improve in quality. Building familiarity with cluster coding before ICD-11 implementation starts the data quality improvement clock earlier, and supports the workforce to develop this new skill with their familiarity of the ICD-10-AM codes and conventions.

Australia already uses attributes from the ICD to support displaying coded data in a different way to how it is stored.

| Stored as | Attributes | Displayed as |
|---|---|---|
| A390 | Dagger code | A39.0† |
| G01 | Asterisk code | G01* |
| M81203 | ICD-O code | M8120/3 |

**Scenario:** a chronic smoker admitted with left diabetic foot from type 2 diabetes.

| DCID | Stored as (URI) | Attributes | Displayed as | Reporting syntax |
|---|---|---|---|---|
| A | 74527684 | Part of cluster A, stem code | BD54 | BD54&XK8G/5A11 |
| A | 271422288 | Part of cluster A, extension code | &XK8G | |
| A | 119724091 | Part of cluster A, stem code | /5A11 | |
| 8 | 457960184 | Part of no cluster, a stem code | QE13 | |

The structural design of the DCID, along with attributes from ICD-11 MMS, may be used to report the stored ICD data as per the syntax requirements outlined in the ICD-11 Reference Guide. Storing data in this way may support the implementation of data validations that enhance data quality for the multiple uses of clinically coded data in Australia.

Further information on cluster coding in Australia can be found on IHACPA's website: **ihacpa.gov.au**