Diagnosis cluster identifier pilot

Final report

Version 1.1
September 2024

IHACPA

Diagnosis cluster identifier (DCID) pilot final report — September 2024

Source: IHACPA (The Independent Health and Aged Care Pricing Authority) (2024) *Diagnosis cluster identifier (DCID) pilot final report version 1.1*, IHACPA

Version history

Version	Date	
1.0	June 2024	Distributed to ICD Technical Group (ITG) and National Health Data and Information Standards Committee (NHDISC)
1.1	September 2024	Amendment to sections ‘Reflection questions’ and ‘Participant feedback’ on the topic of double coding.

Contents

Introduction

The Independent Health and Aged Care Pricing Authority (IHACPA) refines and maintains the clinical classifications and coding standards that are used to classify admitted care activity in public and private hospitals in Australia:

- International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) – used to classify diseases, injuries and related health problems
- Australian Classification of Health Interventions (ACHI) – used to classify surgeries, therapies and health interventions
- Australian Coding Standards (ACS) – guidelines designed for nationally consistent application of ICD-10-AM and ACHI; collectively ICD-10-AM/ACHI/ACS
- Australian Refined Diagnosis Related Groups (AR-DRGs).

To enhance admitted patient care data collections IHACPA is proposing the introduction of cluster coding – a method that links related classification codes into 'clusters' – by implementation of a diagnosis cluster identifier (DCID). Codes are considered 'related' when they connect the circumstances of an event together. For example, a fractured radius (injury/condition), of a pedestrian struck by motor vehicle (external cause), on the pedestrian crossing (place of occurrence), while walking their dog (activity). Collectively these codes explain the circumstances behind an event, but individually their value is reduced.

At the point of classifying admitted episodes of care, clinical coders apply sequencing to group related concepts together, based on documentation in the health care record. However, this relationship is not explicit, and the sequencing is not always maintained due to data validation, quality processes and limitations of storage. This lack of relationship between the codes in the national data inhibits the ability to provide meaningful interpretation.

The implementation of a diagnosis cluster identifier (DCID) assigned to each ICD-10-AM code will provide an opportunity to link related conditions and enhance the power of the information available for users of the data, such as researchers, hospital administrators and government agencies including IHACPA, the Australian Institute of Health and Welfare and the Australian Commission on Safety and Quality in Health Care. When combined with the future potential of data linkage of episodes of care, this would provide additional information regarding the burden of disease and tertiary care resources across the Australian population.

In 2022, the World Health Organization (WHO) implemented the new standard for reporting morbidity data internationally – the International Statistical Classification of Diseases and Related Health Problems, Eleventh Revision (ICD-11). A structural feature introduced in ICD-11 is the linkage of two or more codes to describe a clinical concept. The linked codes are kept together in a cluster when submitted for reporting. While mapping between ICD-10-AM and ICD-11 is useful for analysis and planning purposes, it will not fully enable the reporting of Australian hospital morbidity data in ICD-11. Therefore, while government agencies continue to review ICD-11 for implementation

in Australia, there is a need to prepare system infrastructure for the existing data collections to be compatible for reporting information in line with international requirements.

The DCID has been designed to align with ICD-11 reporting requirements, therefore establishment of cluster coding in ICD-10-AM/ACHI/ACS Thirteenth Edition will support interoperability between ICD-10-AM and ICD-11.

Benefits of cluster coding

While the ability to cluster codes will be necessary in an implementation of ICD-11, the more important immediate benefits will be realised through increased understanding and utility of activity data that clustering of ICD-10-AM codes will provide, such as:

- identifying relationships between ICD-10-AM codes in an admitted episode. Currently, where episodes have multiple injury or poisoning events, it is not possible to determine which diagnosis codes belong to which external cause codes. A DCID value will preserve the link between related codes as the data moves through systems.
- enhancing precision of safety and quality reporting including hospital acquired complications (HACs). The ability to accurately identify relationships between specific conditions and external causes will eliminate false HACs. Currently some conditions may be flagged as a HAC due to the coincidence of their code assignment in a single episode of care.
- preparing for enhanced reporting of chronic conditions. Partitioning chronic conditions into a separate cluster will enable collection of all chronic conditions by the assignment of chapter codes (regardless of whether they meet ACS 0002 *Additional diagnoses*). Their separation will maintain the current exclusion from episode complexity models in casemix classifications such as the AR-DRGs whilst collecting important information on the health status of the population.
- reducing reliance on assumptions in data interpretation. The DCID links related codes to a single cluster, and the linkage is maintained as the data is validated, processed and analysed. Without the DCID, the relationship between most codes can only be determined through manual review.
- supporting future funding models through enhanced visibility of the patient and their complexity. For example chronic conditions that may not be considered in casemix classifications currently.

Further benefits of implementing the DCID will be realised over time, as the scope of conditions eligible for clustering is explored in future editions of ICD-10-AM and then ICD-11. Hospitals and jurisdictions that implement the DCID with ICD-10-AM/ACHI/ACS Thirteenth Edition will realise those benefits sooner.

Notably, Canada has utilised a diagnosis cluster for more than 10 years with many benefits to data reporting. For example the enhancement of safety and quality research and reporting of hospital acquired complications, as evidenced by the Hospital Harm Improvement Resources produced by Healthcare Excellence Canada[1].

Allocation of the DCID

The DCID is allocated to each ICD-10-AM code reported in an episode of admitted patient care. The DCID value will indicate relationships between codes. The DCID will be allocated during the clinical coding process.

IHACPA is proposing to implement cluster coding from 1 July 2025, for use with ICD-10-AM Thirteenth Edition. The initial implementation will be limited to clustering select codes, shown on the grey lines in **Table 1**. All other codes will be allocated a DCID value of 8 as they will not be included in a diagnosis cluster or chronic condition cluster.

Table 1: DCID allocation

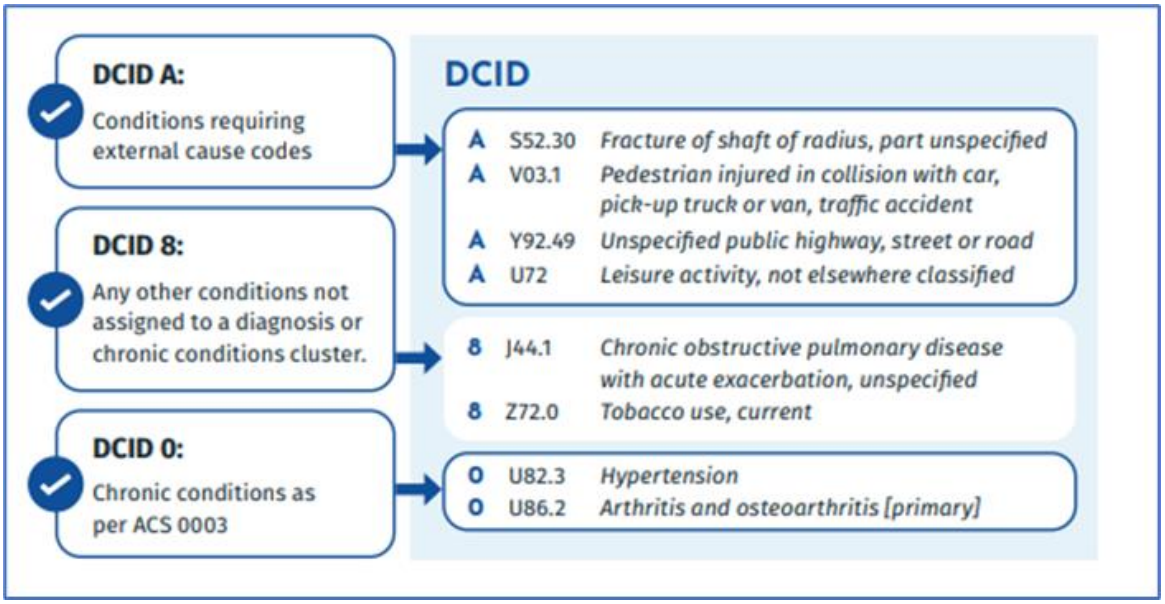
Clustering in Thirteenth Edition:	DCID value allocated
ICD-10-AM codes for conditions assigned together with external cause codes	A – ZZ
Supplementary codes for chronic conditions (assigned in accordance with ACS 0003 *Supplementary codes for chronic conditions*).	0
Not clustered – all other ICD-10-AM codes	8

IHACPA may consider expanding the conditions eligible for cluster coding in future editions of ICD-10-AM.

Figure 1 outlines an example of how an episode of admitted patient care may be clustered. In the example a patient has a fractured radius after being struck by a vehicle whilst walking their dog. The condition (fracture), external cause (struck by vehicle), place of occurrence (street/road/highway) and activity (walking the dog) codes are all allocated a DCID value of A to indicate they belong in the same cluster.

[1] Healthcare Excellence Canada, *Hospital Harm Improvement Resource*, HEC, 2023, accessed 6 March 2024.

Figure 1: Example of DCID allocation



In the example, the injury and external cause, place of occurrence and activity codes are allocated to a diagnosis cluster and allocated a DCID value of A. The chronic conditions hypertension and arthritis are allocated to the chronic condition cluster and allocated a DCID value of 0 and all remaining codes are allocated a DCID value of 8.

To implement cluster coding, the following changes have been made for ICD-10-AM/ACHI/ACS Thirteenth Edition:

- A new standard ACS 0004 *Diagnosis cluster identifier (DCID)* to provide guidelines on the allocation of DCID values.
- Amendments to rules for double coding allowing codes from Chapter 19 *Injury, poisoning and certain other consequences of external causes* and Chapter 20 *External causes of morbidity and mortality* to be assigned more than once in an episode of care where they are allocated to separate diagnosis clusters. This will enable the capture of more than one event if it occurs.

For example, if a patient falls from their hospital bed and fractures their radius, and several days later during the admission they fall again from their hospital bed and acquire a laceration to their forearm, both falls can be captured as 2 separate events. This is not possible without the implementation of cluster coding.

To enable data collection and reporting of the DCID and the associated classification changes, metadata been developed in collaboration with the National Health Data Information Standards Committee (NHDISC). Health information systems will require significant amendments to accommodate the DCID field in software used for clinical coding and grouping, patient administration systems and data warehouses.

Methodology

Pilot aims

IHACPA designed the pilot to test the proposed ACS 0004 *Diagnosis cluster identifier (DCID)* and associated classification changes.

Specifically, the pilot tested:

- ACS 0004 guidelines including Directives, Notes and Examples.
- the applicability of ACS 0004 to a variety of casemix.

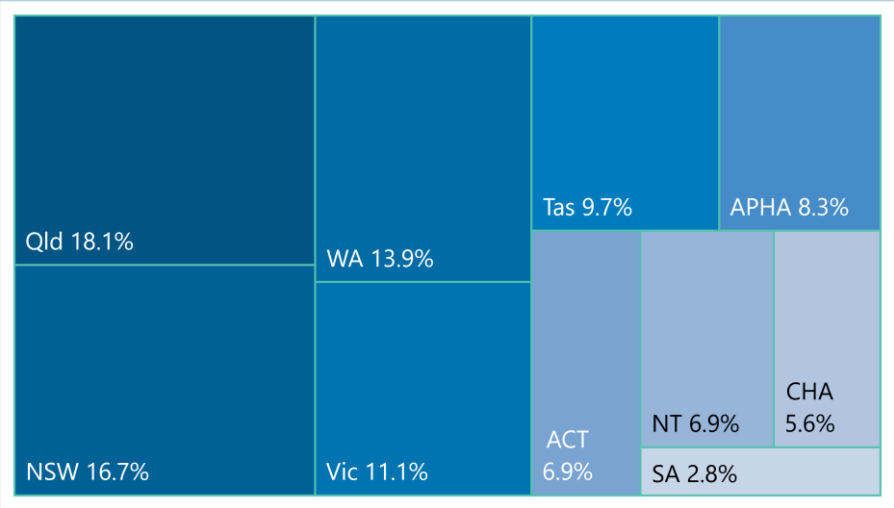
The pilot aimed to identify:

- areas of ACS 0004 that required revision
- areas for education to be provided with the release of ICD-10-AM/ACHI/ACS Thirteenth Edition
- inconsistency in jurisdictional coding practices that may impact DCID allocation
- additional feedback, collected through a range of survey questions.

Participants

A total of 72 volunteer participants, representing all jurisdictions across Australia, were sourced through members of IHACPA's ICD Technical Group (ITG). Participants were required to be actively working in a clinical coding role. **Figure 2** illustrates the breakdown of participants nominated by ITG Members.

Figure 2: Breakdown of participants nominated by ITG Members



Legend

Qld – Queensland, NSW – New South Wales, WA – Western Australia, Vic – Victoria, Tas – Tasmania, APHA – Australian Private Hospitals Association, ACT – Australian Capital Territory, NT – Northern Territory, CHA – Catholic Health Australia, SA – South Australia

Materials

The pilot activity was hosted on IHACPA's learning management system, IHACPA Learn. A customised exam with fields for the DCID, ICD-10-AM code and COF were created. The exam design allowed participants to focus on DCID allocation, rather than ICD-10-AM code assignment.

Participants were provided with the following documents:

- ACS 0004 *Diagnosis cluster identifier (DCID)* – Pilot version
- Diagnosis cluster identifier pilot scenarios
- Navigation tool, to assist with navigation of the IHACPA Learn site.

An education module was developed which stepped participants through the purpose, process and timelines for completing the pilot. This module included education on ACS 0004 and the allocation of the DCID.

An Exemplar answer for each scenario was provided to participants once they had submitted their answer to prompt reflection and feedback.

Pilot version of ACS 0004 *Diagnosis cluster identifier (DCID)*

For Thirteenth Edition, ACS 0004 was developed iteratively in consultation with ITG Members. The pilot version had undergone three revisions prior to being tested in the pilot. These revisions had systematically developed and clarified the description, directives, and examples, including the rationale for DCID allocation in each example.

Pilot limitations

The pilot did not test ICD-10-AM code assignment or allocation of the COF. The pilot module provided participants with ICD-10-AM codes from a drop down list, allowing participants to focus on DCID allocation.

The data collection screen was designed to provide the correct number of fields to meet the exemplar answer. As a result, where a participant nominated to double code something other than the content in the exemplar answer, this resulted in other codes not having space to be assigned.

The additional time taken to allocate the DCID could not be determined, however qualitative feedback was provided by some participants.

Scenario selection

IHACPA sought input from ITG Members for scenarios suitable to be tested in the cluster coding pilot. Feedback was received from:

- New South Wales
- Queensland
- Western Australia
- Clinical Coders' Society of Australia

In addition, IHACPA interrogated ITG Member feedback received over the course of the development cycle to contribute to the production of suitable scenarios.

From the available materials, 20 clinical scenarios were developed that targeted areas of concern highlighted by ITG Member feedback and ACS testing criteria (**Attachment A**). These factors included:

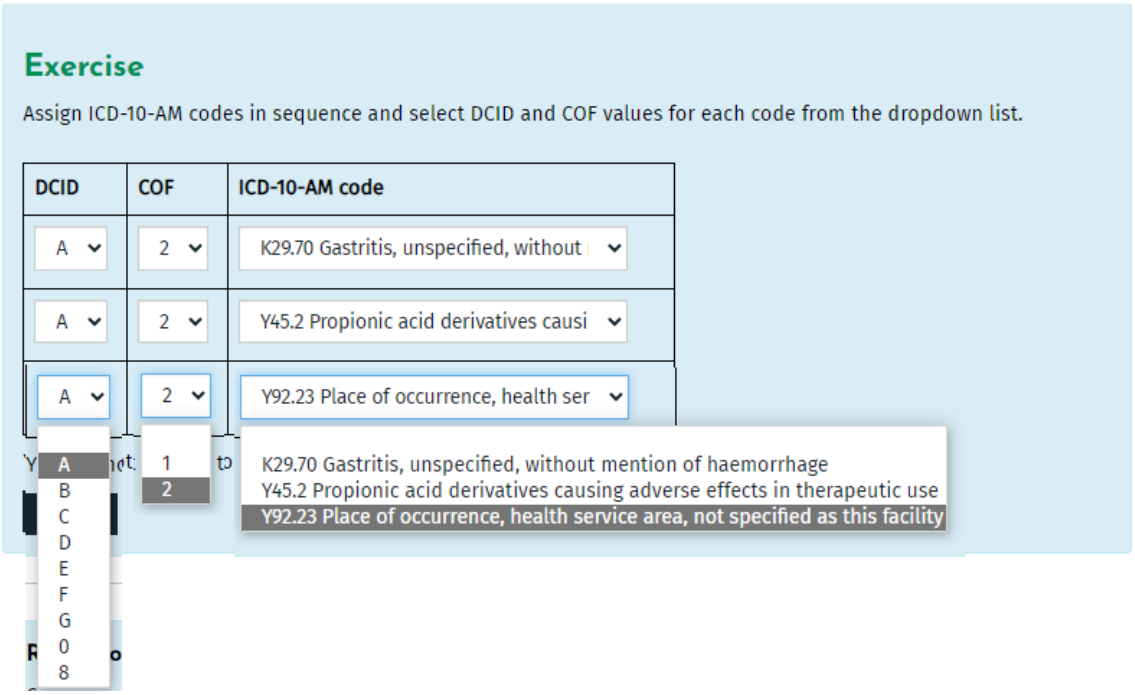
- diagnosis clusters (DCID A–ZZ) (including/excluding principal diagnosis)
- chronic condition cluster (DCID 0)
- codes not clustered (DCID 8)
- multiple diagnosis clusters allocated in the same episode
- double coding of chapter codes and/or external cause codes
- scenarios with relationships to administrative codes (eg cancelled procedure, transfer for suspected condition, presence of hip implant)
- scenario with contributing factors (eg alcohol intoxication)
- scenarios to test and demonstrate application to a wide variety of casemix:
  - adverse effects
  - burns
  - dagger/asterisk
  - infection and drug resistance
  - multi trauma episodes
  - neoplasm/morphology
  - noncompliance with medical care
  - obstetrics
  - procedural complications
  - rehabilitation.

Coding scenarios

Given the feedback from ITG Members concerned about the interrelationship of the DCID with the COF, COF values were included in the pilot scenarios.

Each of the 20 scenarios included dropdown lists of possible DCID values, COF values, and the ICD-10-AM codes were provided. This was intended to allow participants to focus on DCID allocation, without the need to look up diagnosis codes. **Figure 3** is a snipped image of the exercise template and dropdown options for scenario A.

Figure 3 Exercise template for scenario A.



After submitting their answers, participants were provided an exemplar answer. This allowed participants to compare the exemplar against their own answer and provide feedback in the reflection questions.

Feedback was sought on whether or not participants agreed with the exemplar answer, or whether there was ambiguity in the proposed ACS.

The steps to code an episode were summarised as:

- review clinical scenario to abstract concepts for code assignment
- assign principal diagnosis as per ACS 0001 *Principal diagnosis* (Twelfth Edition)
- assign additional diagnoses in accordance with the guidelines and conventions of ICD-10-AM/ACHI/ACS Twelfth Edition
- allocate condition onset flag as per ACS 0003 *Condition onset flag* (Twelfth Edition)
- allocate diagnosis cluster identifier as per ACS 0004 *Diagnosis cluster identifier (DCID)* (Pilot version)
- submit answer and review Exemplar answer
- complete the reflection questions in applying the pilot version of ACS 0004.

To ensure the Pilot focused on DCID allocation and to reduce the burden on participants, assignment of intervention codes were not required.

Results

The majority of participants (67 of 71) completed all 20 scenarios.

Table 2 provides a summary of these coded scenarios and identifies the most frequent source of error. In most cases, individuals indicated they understood their error and could correctly allocate the DCID upon seeing the Exemplar answer.

Table 2: Summary of scenarios coded.

Scenario	Trends identified in participant responses	How IHACPA will address
A	No error trends were identified across participants	-
B	Incorrect DCID allocation for diagnosis codes K66.8 *Other specified disorders of peritoneum* and K66.0 *Peritoneal adhesions*	Education
C	Incorrect DCID allocation for Z92.22 *Personal history of long-term [current] use of insulin*	Add clarification to rationale in ACS examples, and add specific Z code examples in education resources
D	Incorrect DCID allocation for Z96.64 *Presence of hip implant*	Add clarification to rationale in ACS examples, and specific Z code examples in education resources
E	Incorrect application of double coding for adverse effect of anticoagulants (D68.3 *Haemorrhagic disorder due to circulating anticoagulants* and R04.0 *Epistaxis*)	Amendment of ACS directives Education
F	Incorrect DCID allocation for Z53.3 *Procedure abandoned after initiation*	Add clarification to rationale in ACS examples, and specific Z code examples in education resources
G	Incorrect DCID allocation, however no trends were identified across participants	Education
H	Incorrect DCID allocation for U80.4 *Cerebral palsy*	Education
I	Incorrect DCID allocation for obstetrics wound infection	Education, and add specific obstetrics examples in education resources
J	Incorrect DCID allocation for Z53.0 *Procedure not carried out because of contraindication*	Add clarification to rationale in ACS examples, and specific Z code examples in education resources

Scenario	Trends identified in participant responses	How IHACPA will address
K	Incorrect DCID allocation for Z72.0 *Tobacco use, current*	Add clarification to rationale in ACS examples, and specific Z code examples in education resources
L	Incorrect DCID allocation for Z50.9 *Care involving use of rehabilitation procedure, unspecified*	Add clarification to rationale in ACS examples, and specific Z code examples in education resources
M	Incorrect DCID allocation for Z86.43 *Personal history of tobacco use disorder*	Add clarification to rationale in ACS examples, and specific Z code examples in education resources
N	Incorrect application of double coding for adverse effect of anticoagulants (R79.83 *Abnormal coagulation profile* and Y44.2 *Anticoagulants causing adverse effects in therapeutic use*)	Amendment of ACS directives Education
O	Incorrect DCID allocation for contributing factors (F10.0 *Mental and behavioural disorders due to use of alcohol, acute intoxication*) Difference in selection of external cause and activity code for procedural complications from Exemplar answer	Amend ACS example and add clarification to rationale Education module for procedural complications planned for ICD-10-AM/ACHI/ACS Thirteenth Edition education
P	Incorrect application of double coding (Z04.3 *Examination and observation following other accident*)	Amendment of ACS directives Education
Q	Incorrect application of double coding (I95.19 *Other specified orthostatic hypotension*)	Amendment of ACS directives Education
R	Incorrect application of DCID allocation for post traumatic wound infection (T79.3 *Post traumatic wound infection, not elsewhere classified* and B95.0 *Streptococcus, group A, as the cause of diseases classified to other chapters*)	Add clarification to rationale in ACS examples, and specific examples in education resources
S	Incorrect DCID allocation for contributing factors (U07.12 *Coronavirus disease 2019 [COVID-19], virus identified, symptomatic*)	Amend ACS example and add clarification to rationale Education on COVID-19 planned for ICD-10-AM/ACHI/ACS Thirteenth Edition education
T	Incorrect DCID allocation, however no trends were identified across participants	Education

Participant confidence

After completing the introductory module, IHACPA sought feedback from participants on their confidence in applying ACS 0004 *Diagnosis cluster identifier (DCID)* both before and after the scenario exercise as shown in **Table 3**.

Participants rated themselves from a choice of options:

- Not confident at all
- Hesitant
- Fairly confident
- Totally confident

Table 3: Measure of participant confidence.

Participants	Total no. Participants	Not confident at all	Hesitant	Fairly confident	Totally confident
Pre-survey results	72	0	4 (6%)	54 (75%)	14 (19%)
Post-survey results	64	0	2 (3%)	44 (69%)	18 (28%)
Change	**-8**	**0**	**-3%**	**-6%**	**+9%**

Of note, 94% (n.68) participants in the pre-survey responded as either fairly confident or totally confident after completing the introductory module alone. This suggests that the proposed ACS 0004 was clear and directives were easy to follow. Although fewer participants completed the post-survey, the results demonstrate a shift towards increasing confidence, with 96% (n.62) responding either fairly confident or totally confident.

Reflection questions

At the end of each clinical scenario, participants were asked to complete a series of questions that reflected on their experience in applying the pilot version of ACS 0004. The questions included:

- Did you allocate the same codes to a cluster? If not, why?
- Did you have any difficulty determining which DCID value to allocate? If yes, why?
- Were you confident in your decisions as to which codes should be assigned more than once? *(restricted to scenarios requiring duplicate codes)*
- Do you have any suggestions on how to make the ACS clearer that specifically relate to this scenario?

The results of the Pilot indicated that the draft guidelines were mostly well understood, but highlighted the need to clarify:

- assignment of additional codes, in particular codes from Chapter 21 *Factors influencing health status and contact with health services* (Z00–Z99). Members queried the application of codes from Chapter 21, which appeared inconsistent.

- requirements for double coding. Participants queried the value of assigning duplicate external cause codes without the addition of chapter codes. This limitation was imposed by IHACPA to minimise the impact for stage one.
- sequencing of DCID values. Participants were unsure whether DCID values were required to stay in strict alphabetical order and were concerned about the impact on long stay episodes of care which had the potential for many clusters.

There were also requests for additional complexity in examples in the ACS and some participants noted the potential clinical coder burden.

Participants also noted a desire for additional complexity in examples new edition education, citing simple cases did not elicit any challenges.

Participant feedback

Participants were asked to complete a survey that reflected on their experience in applying the Pilot Version of ACS 0002. In addition to measuring their confidence, the survey asked what concerns or suggestions do you have for the introduction of ACS 0004?

Feedback was received from 65 participants, with the issues summarised in **Table 4**.

Table 4: Summary of feedback issues received from pilot participants

Feedback received from pilot participants	IHACPA response
Clarification of Z codes (n.14)	
'Mainly determining which Z codes get included in cluster and when they don't.'	IHACPA will amend the ACS directives to clarify allocation of codes from Chapter 21 (Z00–Z99) in diagnosis clusters, and add specific Z code examples in education resources.
Clarification of additional codes (n.9)	
'At first I was confused by 1.1.1 b – Additional codes "As directed by an ACS or Instructional note". Unsure if this can be explained more in detail. What exactly is meant by "additional codes" only. I interpreted it in different ways i.e. clustering a code where it has a code also etc.'	IHACPA will amend the ACS directives to clarify allocation of additional codes in diagnosis clusters.
'My initial mistake was allocating the underlying cause eg, F11.2 DCID value to the same DCID value of the adverse effect. Example 8 helped to clarify however it would help if this point was highlighted better in the explanation of the directives.'	IHACPA will amend an ACS example to demonstrate that contributing factors are not allocated to a diagnosis cluster.

Feedback received from pilot participants	IHACPA response
Clarification of double coding (n.15)	
'I think there will be confusion as to applying double codes for the external causes but not another code for an observation or injury (if previously coded) if a second, third event of the same nature occurs during an admission. It doesn't feel consistent.'	IHACPA will amend the ACS directives and expand the rationale in ACS examples.
'Will we be able to expand the new ACS to duplication of other chapter codes that are associated with ECC's - e.g. repeat aspiration pneumonia events, D68.3.'	Only codes in Chapter 19 and Chapter 20 are allowed to be double coded in the first stage of cluster coding. However, an expansion beyond Chapters 19 and 20 may be considered in the future.
Education (n.21)	
'The ACS directive requires supporting education to understand fully. The directive and examples on their own are a complex concept to understand.'	The pilot content will be amended and repurposed for education. This will be available for Thirteenth Edition and after to support the implementation and possible expansion of cluster coding in the future.
'A large and varied sample of examples would be beneficial, particularly for double coding scenarios and for those with complication codes with further specifying codes in the same combination.'	Additional examples based on feedback from participants will be included in education, particularly DCID allocation for Z codes and application of double coding.
Complexity and coder burden (n.12)	
'I would recommend some more examples in the 0004 Diagnosis Cluster Identifier Guidance Sheets. For example an admission where all the DCID codes are an 8. I realise examples cannot be given for every scenario but the one in the Pilot Test where there were no DCID As, B's or C's would be a great example to use. It clarifies what comes under the DCID 8 more definitively whereas the other examples incorporate everything. That question once I had completed it made a huge difference to me with my understanding or the different Cluster Identifier's. It made it crystal clear :-)'	IHACPA will add a new example to the ACS (based on Pilot Scenario K) to demonstrate where only DCID 8 is relevant. This will also be highlighted during education.

Feedback received from pilot participants	IHACPA response
‘Added time/coder burden for assigning DCID to all diagnoses.’ ‘Hopefully U codes can be automated.’ ‘Feel it would be easier to just assign DCID to codes that require clustering (ie dont assign 0 and 8 clusters)’	IHACPA held an industry briefing on 17 April 2024, for software vendors of coding tools and software vendors that jurisdictions and private hospitals use for their patient administration systems or data repositories, on the introduction of the DCID. Industry briefing participants were informed of the new field in the Electronic Code List (ECL) called *Cluster allocation required* which will provide an opportunity to identify suitable areas for automation of DCID assignment or edits to enhance the quality and application of the DCID and to support the clinical coding workforce. Vendors were also made aware of the directives within ACS 0004 allowing duplicate code assignment of the codes from Chapter 19 *Injury, poisoning and certain other consequences of external causes* and Chapter 20 *External causes of morbidity and mortality* where codes from these chapters are allocated to different clusters in an episode of care.
‘My only concern is in regard to long, extremely complex admissions that have many complications. The clustering could become confusing and difficult when coding these sorts of records (which there are a lot of at my place of work). I guess that with practice the skill will become easier. I am certainly more confident with how the cluster coding works now, compared to when I started the pilot. The standard's directives make sense and I was able to refer back to the examples in the ACS and apply the knowledge to the scenarios.’	IHACPA acknowledges allocating the DCID will be more challenging in complex episodes of care. For stage one, IHACPA has limited codes eligible for a diagnosis cluster. Feedback from the pilot has informed revisions to *Directives* in ACS 0004 to further clarify application of the standard. Industry briefing participants were informed of opportunities to identify suitable areas for automation of DCID assignment or edits through ECLs to enhance the quality and application of the DCID and to support the clinical coding workforce.

Feedback received from pilot participants	IHACPA response
‘Defaulting chronic condition U codes to 0 would be helpful but manually adding DCID's and the correct COF to all other codes sounds labour intensive. Hoping the impact of this standard will be minimised to allow for the proposed data quality improvement.’	IHACPA highlighted this opportunity at the industry briefing.
Sequencing of codes and DCID (n.4)	
‘I'm not clear on sequencing clusters in the string of codes for an episode.’	IHACPA will amend the ACS directives to clarify DCID sequencing and demonstrate this in an example. IHACPA also highlighted this requirement at the industry briefing.
‘in complex records, if we were to miss coding for one cluster its going to affect the rest of the clusters as well.’	Industry briefing participants were informed of the DCID sequencing requirements. IHACPA also highlighted opportunities to identify suitable areas for automation of DCID assignment or edits through ECLs to enhance the quality and application of the DCID and to support the clinical coding workforce.
Other comments	
‘Can a definition please be added for single event and separate events?’	It is not possible to provide this definition, however explanatory text for 'single event' will be included in the ACS directives.
‘My initial mistake was allocating the underlying cause eg, F11.2 DCID value to the same DCID value of the adverse effect. Example 8 helped to clarify however it would help if this point was highlighted better in the explanation of the directives.’	Example 3 has been amended to include a condition which may have been a contributing factor to an injury event.

Feedback received from pilot participants	IHACPA response
‘The only real concern is with edits. … If there aren't DRG implications, then they will less likely be the target for DRG audits - which may also see conservative practice.’	There will be no impact on AR-DRG assignment. ACS 0004 *Diagnosis cluster identifier (DCID)* allows double coding of codes from Chapter 19 and Chapter 20 only where the same code is allocated in separate diagnosis clusters in an episode of care. Codes from Chapter 20 (external cause codes) are not considered in AR-DRG grouping and the AR-DRG grouper also eliminates duplicated diagnosis codes, so clustering will have no impact on AR-DRG grouping.
No concerns (n.13)	
‘No Concerns - just followed ACS 0004, confidence increased once I understood the standard fully. A couple of entry mistakes but understood the concept.’	IHACPA appreciates the feedback received from all participants, which has been overwhelmingly constructive and useful.
‘I think it's great you've included so many examples for coders to practice with. It's a different way of thinking/coding so will be hard to get in the groove so to speak. I feel confident in using DCID after the pilot but in practice I can see I'll need to work slowly until I get the hang of it, like with anything new! Thank you for the opportunity to participate.’	IHACPA appreciates the feedback received from all participants, which has been overwhelmingly constructive and useful.

Outcomes

Analysis of the results will be used to inform changes to the proposed ACS 0004 including:

- clarification on the inclusion of codes from Chapter 21 (Z00–Z99) in diagnosis clusters
- expanded rationale in Examples, with particular attention on explanations for double coding and contributing factors
- clarification of requirements for sequencing of DCIDs in clusters
- inclusion of a simple Example where only DCID 8 is relevant.

The pilot exercises will also be used for the implementation of cluster coding in ICD-10-AM/ACHI/ACS Thirteenth Edition education.

Amendments have been made in response to feedback from both ITG Members and comments raised through the pilot, as outlined above.

IHACPA held an industry briefing on 17 April 2024, for software vendors of coding tools and software vendors that jurisdictions and private hospitals use for their patient administration systems or data repositories, on the introduction of the DCID.

Attendees were informed of the new field in the Electronic Code List (ECL) called *Cluster allocation required* which will provide an opportunity to identify suitable areas for automation of DCID assignment or edits to enhance the quality and application of the DCID and to support the clinical coding workforce.

Vendors were also made aware of the directives within ACS 0004 allowing duplicate code assignment of the codes from Chapter 19 *Injury, poisoning and certain other consequences of external causes* and Chapter 20 *External causes of morbidity and mortality* where codes from these chapters are allocated to different clusters in an episode of care.

Based on feedback received from multiple sources including ITG Members, pilot participants, and industry briefing attendees, IHACPA has published a list of FAQs on IHACPA's Cluster coding webpage.

Conclusion

The pilot exercise was well received by participants who expressed their appreciation in being involved.

Feedback indicated that the classification *Directives* in ACS 0004 *Diagnosis cluster identifier (DCID)* were generally well understood, however issues of uncertainty primarily revolved around the assignment of additional codes within a diagnosis cluster.

As a result, IHACPA have amended the *Directives* to limit assignment of additional codes within diagnosis clusters, to reduce ambiguity in decision making.

IHACPA will continue to refine the proposed ACS 0004 in consultation with ITG Members.

When measuring the impact of the pilot exercise, participants self-reported an increased level of confidence in applying cluster coding after completion of the exercise.

IHACPA is therefore, confident that the proposed Thirteenth Edition ACS 0004 will provide classification directives that are clear and understandable to the clinical coding workforce and when supported by education will enable the application of cluster coding in ICD-10-AM Thirteenth Edition for it to be progressively implemented in the future as required.

The Pilot has proven to be a valuable exercise in classification development and in preparing for new edition implementation.

Appendix A: Pilot feedback materials

Pre-pilot qualifying questions

The following questions were asked after completion of the Introductory module to assess participants understanding before commencement of the pilot scenarios.

1. **Current role**

   Please indicate which of the following options most closely reflects your current workplace role (select one)

   - Clinical coder/health information manager
   - Trainee clinical coder
   - Auditor
   - Educator
   - Other/ please specify <<Add free text with this option>>

2. **Years of experience**

   Please indicate your years of clinical coding experience (select one)

   - Less than one year
   - More than one year and less than 3 years
   - More than 3 years

3. **Workplace**

   Please indicate which of the following best characterises your workplace. If you work across multiple health services, select the one where you spend the most time working (select one)

   - Public hospital
   - Private hospital

4. **Confidence**

   After completing the introduction module, how confident do you feel applying ACS 0004 *Diagnosis cluster identifier (DCID).*

   Select one

   - Not confident at all
   - Hesitant
   - Fairly confident
   - Totally confident

Reflection questions

The following questions were asked at the end of each scenario to assess participant's understanding after the exercise, and provide an avenue for feedback directly related to the scenario.

> *Compare your response to the exemplar answer. Did you allocate the same codes to a cluster? If not, why?*
>
> *Did you have any difficulty determining which DCID value to allocate? If yes, why?*
>
> *Were you confident in your decisions as to which codes should be assigned more than once?* (only asked at scenarios that included double coding)
>
> *Do you have any suggestions on how to make the ACS clearer that specifically relate to this scenario?*

Final qualifying questions

The following questions were asked after completion of the pilot scenarios to assess participants understanding after the exercise, and provide an opportunity for any further feedback.

5. Confidence

After completing the pilot exercise, how confident do you feel in being able to apply ACS 0004 *Diagnosis cluster identifier (DCID)* in your clinical coding practice?

Select one

- Not confident at all
- Hesitant
- Fairly confident
- Totally confident

6. *After completing the pilot, what concerns or suggestions do you have for the introduction of ACS 0004

   (free text) _____

Appendix B: Pilot scenarios

Scenario A

A patient presented to the emergency department with nausea and abdominal pain, with a history of dysmenorrhoea on naproxen. A diagnosis of gastritis due to naproxen, taken as prescribed, was made. The patient was admitted, observed and treated for gastritis. After two days, the patient was discharged without further complication.

Code list in alphanumeric order

K29.70	*Gastritis, unspecified, without mention of haemorrhage*
Y45.2	*Propionic acid derivatives causing adverse effects in therapeutic use*
Y92.23	*Place of occurrence, health service area, not specified as this facility*

Scenario B

A patient was admitted for mesh repair of a recurrent hiatus hernia. The hernia was dissected and repaired under general anaesthesia. During the procedure, adhesions from a previous surgery were divided. The surgeon identified a large central mesenteric cyst with its base attached to the superior mesenteric artery and superior mesenteric vein. The cyst was dissected and drained.

Code list in alphanumeric order

K44.9	*Diaphragmatic hernia without obstruction or gangrene*
K66.0	*Peritoneal adhesions*
K66.8	*Other specified disorders of peritoneum*
K91.89	*Other intraoperative and postprocedural disorders of digestive system, not elsewhere classified*
Y83.9	*Surgical procedure, unspecified*
Y92.23	*Place of occurrence, health service area, not specified as this facility*

Scenario C

A patient was admitted with ketoacidosis due to a broken insulin pump. The patient has type 2 diabetes mellitus. During the episode, the patient was also treated for acute exacerbation of chronic obstructive pulmonary disease.

Code list in alphanumeric order

E11.11	*Type 2 diabetes mellitus with ketoacidosis, without coma*
J44.1	*Chronic obstructive pulmonary disease with acute exacerbation,* unspecified
T85.69	*Mechanical complication of internal prosthetic devices, implants and grafts, not elsewhere classified*
Y82.1	*Other and unspecified medical devices associated with unintentional events, therapeutic (nonsurgical) and rehabilitative devices*

Y92.23 *Place of occurrence, health service area, not specified as this facility*
Z92.22 *Personal history of long-term [current] use of insulin*

Scenario D

A patient was admitted for management of acute exacerbation of chronic obstructive pulmonary disease. During the episode, the patient had a fall (slipping) causing an anterior dislocation of their hip prosthesis.

Code list in alphanumeric order

J44.1 *Chronic obstructive pulmonary disease with acute exacerbation, unspecified*
S73.02 *Anterior dislocation of hip*
U73.8 *Other specified activity*
W01.0 *Fall on same level from slipping*
Y92.24 *Place of occurrence, health service area, this facility*
Z96.64 *Presence of hip implant*

Scenario E

A patient was admitted for treatment of epistaxis due to long term warfarin use. On day two the patient experienced an intraocular bleed also resulting from the long term warfarin use.

Code list in alphanumeric order

D68.3 *Haemorrhagic disorder due to circulating anticoagulants*
H44.8 *Other disorders of globe*
R04.0 *Epistaxis*
Y44.2 *Anticoagulants causing adverse effects in therapeutic use*
Y92.23 *Place of occurrence, health service area, not specified as this facility*
Y92.24 *Place of occurrence, health service area, this facility*

Scenario F

A patient was admitted with native coronary artery disease for a planned coronary artery bypass graft (CABG) to the left anterior descending artery under general anaesthesia. After commencement of the procedure, the patient became hypotensive due to the anaesthesia. The patient could not be stabilised, and the operation was abandoned. The patient was discharged three days later to recover, prior to re-booking of the CABG.

Code list in alphanumeric order

I25.11 *Atherosclerotic heart disease of native coronary artery*
I95.8 *Other hypotension*
T88.59 *Complications of anaesthesia, not elsewhere classified*
Y48.2 *Other and unspecified general anaesthetics* causing adverse effects in therapeutic use
Y92.24 *Place of occurrence, health service area, this facility*
Z53.3 *Procedure abandoned after initiation*

Scenario G

A patient was admitted for treatment of infected internal fixation screws in their left middle finger. The screws were removed in the operating theatre and the Infectious Diseases team was consulted. A decision was made to treat the infection as osteomyelitis, and the patient was given three days of intravenous antibiotics (flucloxacillin). During the admitted episode of care the patient developed a rash on their skin that was treated as an allergic reaction to flucloxacillin. The antibiotics were changed to Cephazolin and Keflex and were well tolerated. The patient was a type 2 diabetic with non-alcoholic fatty liver, nephropathy (chronic kidney disease stage 4), retinopathy and currently on insulin. They had a background of ischaemic heart disease, with a history of coronary artery bypass graft performed five years previously, hypertension and rheumatoid arthritis of the fingers.

Code list in alphanumeric order

E11.22	*Type 2 diabetes mellitus with established diabetic nephropathy*
E11.31	*Type 2 diabetes mellitus with background retinopathy*
E11.71	*Type 2 diabetes mellitus with multiple microvascular and other specified nonvascular complications*
E11.72	*Type 2 diabetes mellitus with features of insulin resistance*
L27.1	*Localised skin eruption due to drugs and medicaments*
M86.94	*Osteomyelitis unspecified, hand*
T84.6	*Infection and inflammatory reaction due to internal fixation device [any site]*
U82.1	*Ischaemic heart disease*
U82.3	*Hypertension*
U86.1	*Rheumatoid arthritis*
U87.1	*Chronic kidney disease, stage 3–5*
Y40.0	*Penicillins causing adverse effects in therapeutic use*
Y83.1	*Surgical operation with implant of artificial internal device*
Y92.23	*Place of occurrence, health service area, not specified as this facility*
Y92.24	*Place of occurrence, health service area, this facility*
Z92.22	*Personal history of long term [current] use of insulin*

Scenario H

A patient was admitted following a motor vehicle accident. The patient was driving the car for leisure and collided at high speed with another car on a motorway. Computerised tomography scans and x-rays showed fractures involving the third to seventh ribs and the tenth rib, sternal body fracture and vertebral fractures at thoracic vertebrae four, five and seven. Free fluid in the abdomen was noted and an exploratory laparotomy was performed to identify injuries. Laparotomy findings included severe injury of the transverse colon, tears of the descending colon, ascending colon, jejunum and mesentery, and laceration of the uncinate process over the pancreas.

Under general anaesthesia, the transverse colon was resected and anastomosed, and tears were repaired (descending colon, ascending colon, jejunum and mesentery). A drain was placed anterior to the pancreas. The patient was reviewed by neurosurgery, who noted that vertebral fractures were stable and spinal precautions were required. The patient continued to improve and the drain was removed prior to discharge.

The patient had cerebral palsy not impacting the episode of care.

Code list in alphanumeric order

S22.02 *Fracture of thoracic vertebra, T3 and T4 level*
S22.03 *Fracture of thoracic vertebra, T5 and T6 level*
S22.04 *Fracture of thoracic vertebra, T7 and T8 level*
S22.2 *Fracture of sternum*
S22.44 *Multiple rib fractures, involving four or more ribs*
S36.29 *Injury of other and multiple parts of pancreas*
S36.49 *Injury of other and multiple parts of small intestine*
S36.51 *Injury of ascending [right] colon*
S36.52 *Injury of transverse colon*
S36.53 *Injury of descending [left] colon*
S36.82 *Injury of mesentery*
U72 *Leisure activity, not elsewhere classified*
U80.4 *Cerebral palsy*
V43.59 *Car occupant injured in collision with car, pick-up truck or van,* driver, traffic accident, unspecified car [automobile]
Y92.49 *Place of occurrence, unspecified public highway, street or road*

Scenario I

A patient was admitted for a lower segment caesarean section due to a previous caesarean section three years prior. A single liveborn was safely delivered. During the caesarean section, the initial incision extended into the upper cervix resulting in a cervical laceration requiring suture. On day four, the caesarean section wound was noted to be infected with *Streptococcus pyogenes*, resistant to ceftriaxone and the patient was commenced on flucloxacillin. The cervical laceration remained infection free. On day five, the patient was vomiting resulting in dehydration. The treating doctor reviewed the patient who was then commenced intravenous fluids.

Code list in alphanumeric order

B95.0 *Streptococcus, group A, as the cause of diseases classified to other chapters*
E86 *Volume depletion*
O34.2 *Maternal care due to uterine scar from previous surgery*
O71.3 *Obstetric laceration of cervix*
O82 *Single delivery by caesarean section*
O86.0 *Infection of obstetric surgical wound*
O99.2 *Endocrine, nutritional and metabolic diseases in pregnancy, childbirth and the puerperium*
Y60.0 *Unintentional cut, puncture, perforation or haemorrhage during surgical operation*
Y92.24 *Place of occurrence, health service area, this facility*
Z14.23 *Resistance to third generation cephalosporins*
Z37.0 *Single live birth*

Scenario J

A patient was admitted with bilateral radial fractures after falling from a skateboard on the footpath. An open reduction with internal fixation of both fracture sites was planned later for the same day. The patient noted they were experiencing palpitations and they were reviewed by the cardiologist. A new diagnosis of atrial fibrillation was made and the procedure was cancelled. The patient's underlying asthma was exacerbated requiring review by the respiratory team and an adjustment to their Ventolin dosage was made. The patient had epilepsy not impacting the episode of care.

Code list in alphanumeric order

I48.9	*Atrial fibrillation and atrial flutter, unspecified*
J45.9	*Asthma, unspecified*
S52.30	*Fracture of shaft of radius, part unspecified*
U66.3	*Activity, skate boarding*
U80.3	*Epilepsy*
W02.1	*Fall involving skateboard*
Y92.41	*Place of occurrence, sidewalk*
Z53.0	*Procedure not carried out because of contraindication*

Scenario K

A patient was admitted for removal of a right occipital lipoma, left occipital lipoma and a mid-scapular lipoma, under general anaesthesia. The morning after surgery, the patient complained of severe abdominal pain that had been present for three days prior to admission. A computerised tomography scan showed acute pancreatitis secondary to cholelithiasis with obstruction, requiring emergency laparoscopic cholecystectomy. On day five the patient was unable to void and a bladder scan was performed, which showed urinary retention. An indwelling catheter was inserted. The patient also had neck pain due to known spinal canal stenosis at cervical vertebrae five to seven, for which physiotherapy was given. The patient was a current smoker.

Code list in alphanumeric order

D17.0	*Benign lipomatous neoplasm of skin and subcutaneous tissue of head, face and neck*
D17.1	*Benign lipomatous neoplasm of skin and subcutaneous tissue of trunk*
G55.3*	*Nerve root and plexus compressions in other dorsopathies (M45–M46†, M48.-†, M53–M54†)*
K80.21	*Calculus of gallbladder without cholecystitis, with obstruction*
K85.1	*Biliary acute pancreatitis*
M48.02†	*Spinal stenosis, cervical region*
M54.2	*Cervicalgia*
M8850/0	*Lipoma NOS*
R33	*Retention of urine*
Z72.0	*Tobacco use, current*

Scenario L

A patient was admitted with bacterial pneumonia two months post lung transplant for cystic fibrosis (CF). The patient was also treated for vitamin D deficiency related to their CF, thrombophlebitis of the femoral vein and pneumothorax. There was significant wasting of multiple sites due to long term illness. The treating doctor consulted with a physiotherapist, and rehabilitation care was commenced. Mild malnutrition was confirmed by the dietitian on admission and a high energy diet was commenced. On day 10 of admission, the patient was diagnosed with lung rejection identified after an endoscopic bronco-alveolar lavage and needle biopsy of the lung. Azithromycin therapy was commenced for the lung rejection.

Code list in alphanumeric order

E44.1	*Mild protein-energy malnutrition*
E55.9	*Vitamin D deficiency, unspecified*
E84	*Cystic fibrosis*
I80.1	*Phlebitis and thrombophlebitis of femoral vein*
J15.8	*Other bacterial pneumonia*
J93.9	*Pneumothorax, unspecified*
M62.50	*Muscle wasting and atrophy, not elsewhere classified, multiple sites*
T86.81	*Lung transplant failure and rejection*
Y83.04	*Surgical operation with lung transplant*
Y92.23	Place of occurrence, health service area, not specified as this facility
Z50.9	*Care involving use of rehabilitation procedure, unspecified*

Scenario M

A patient was admitted for treatment of upper eyelid cellulitis. The eyelid was swabbed and *Staphylococcus aureus* was confirmed as the causative organism. The patient was commenced on intravenous (IV) antibiotics. During the episode of care, the patient developed cellulitis of the upper arm secondary to the IV catheter requiring treatment. The patient was an ex-smoker and had hypertension and depression not impacting the episode of care.

Code list in alphanumeric order

B95.6	*Staphylococcus aureus as the cause of diseases classified to other chapters*
H00.0	*Hordeolum and other deep inflammation of eyelid*
L03.12	*Cellulitis of upper limb*
T82.75	*Infection and inflammatory reaction due to peripheral vascular catheter*
U79.3	*Depression*
U82.3	*Hypertension*
Y84.8	*Other medical procedures as the cause of abnormal reaction, or of later complication, without mention of unintentional events at the time of the procedure*
Y92.24	*Place of occurrence, health service area, this facility*
Z86.43	*Personal history of tobacco use disorder*

Scenario N

A patient on long term warfarin was advised by their general practitioner to present to hospital as their anticoagulant level was below therapeutic level. The patient was admitted with a subtherapeutic international normalised ratio (INR) level, requiring an increase in the dosage of their long term warfarin. During the episode, the INR level became supratherapeutic and required further titration of warfarin. The patient also developed acute renal failure due to dehydration requiring saline infusion. The patient had type 2 diabetes mellitus, depression and Parkinson's disease not impacting the episode of care.

Code list in alphanumeric order

E11.29	*Type 2 diabetes mellitus with other specified kidney complication*
E86	*Volume depletion*
N17.9	*Acute kidney failure, unspecified*
R79.83	*Abnormal coagulation profile*
U79.3	*Depression*
U80.1	*Parkinson's disease*
Y44.2	*Anticoagulants causing adverse effects in therapeutic use*
Y92.23	*Place of occurrence, health service area, not specified as this facility*
Y92.24	*Place of occurrence, health service area, this facility*

Scenario O

A patient was admitted with a fracture of the lateral malleolus from a fall while intoxicated with alcohol. An open reduction with internal fixation (ORIF) was performed under general anaesthesia. During the procedure, the patient aspirated gastric contents. The day after surgery the patient was transferred to the intensive care unit with aspiration pneumonia. The patient had tingling in the lower leg and foot and the orthopaedic surgeon diagnosed neuropraxia of the left common peroneal nerve due to the ORIF. On day 15 of the admission the patient developed a urinary tract infection. Cultures confirmed extended spectrum beta-lactamase producing *Escherichia coli* (resistant to cephalexin) as the causative organism.

Code list in alphanumeric order

B96.2	*Escherichia coli [E. coli] as the cause of diseases classified to other chapters*
F10.0	*Mental and behavioural disorders due to use of alcohol, acute intoxication*
G57.3	*Lesion of lateral popliteal nerve*
G97.8	*Other intraoperative and postprocedural disorders of nervous system*
J69.0	*Pneumonitis due to food and vomit*
N39.0	*Urinary tract infection, site not specified*
S82.6	*Fracture of lateral malleolus*
U73.9	*Unspecified activity*
U93	*Extended spectrum beta-lactamase [ESBL] producing organism*
W19	*Unspecified fall*
W78	*Inhalation of gastric contents*
Y83.1	*Surgical operation with implant of artificial internal device*
Y92.24	*Place of occurrence, health service area, this facility*

Y92.9 *Unspecified place of occurrence*
Z14.21 *Resistance to first generation cephalosporins*

Scenario P

Patient was admitted to the mental health unit with schizophrenia and noncompliance with medications. The patient had an extended length of stay on the unit (almost 5 months). During the episode of care the patient had two falls.

Fall 1: Patient stumbled and fell on the ward, witnessed by another patient. Review by the treating doctor noted there was no evidence of head injury. A care plan was established to monitor for any neurological symptoms or pain, and for physiotherapy and occupational therapy review.

Fall 2: When walking from the ward into the lounge area, the patient stumbled and fell again on a carpeted area. This time most of the landing force was on the buttock and lower back. The patient was unable to confirm if they had a head strike. The treating doctor examined the patient and no neurological issues or injuries were noted. The care plan was updated to include hourly neurological observations.

The patient had chronic liver failure and asthma not impacting the episode of care.

Code list in alphanumeric order

F20.9 *Schizophrenia, unspecified*
U73.9 *Unspecified activity*
U83.3 *Asthma, without mention of chronic obstructive pulmonary disease*
U84.3 *Chronic liver failure*
W01.2 *Fall on same level from stumbling*
Y92.24 *Place of occurrence, health service area, this facility*
Z04.3 *Examination and observation following other accident*
Z91.1 *Personal history of noncompliance with medical treatment and regimen*

Scenario Q

A patient was admitted for treatment of schizophrenia. During the admitted episode of care, the patient developed orthostatic hypotension due to clozapine. The clozapine dose was adjusted and the patient's blood pressure normalised. On day 14 of the episode of care, the patient again developed orthostatic hypotension and clozapine was changed to intravenous haloperidol. Two days later, the patient developed left forearm cellulitis at the intravenous catheter site. The patient had a background of obesity (body mass index of 44) and hypertension not impacting the episode of care.

Code list in alphanumeric order

F20.9 *Schizophrenia unspecified*
I95.19 *Other specified orthostatic hypotension*
L03.12 *Cellulitis of upper limb*
T82.75 *Infection and inflammatory reaction due to peripheral vascular catheter*
U78.1 *Obesity*
U82.3 *Hypertension*

Y47.1 *Benzodiazepines causing adverse effects in therapeutic use*
Y84.8 *Other medical procedures as the cause of abnormal reaction, or of later complication, without mention of unintentional events at the time of the procedure*
Y92.23 *Place of occurrence, health service area, not specified as this facility*
Y92.24 *Place of occurrence, health service area, this facility*

Scenario R

A patient was admitted with partial thickness burns to the abdominal wall and right thigh, with a total body surface area of six per cent. The burns were sustained when the patient spilled hot oil while cooking dinner for family. Clinical staff provided routine burn care and daily dressings. A swab was taken from the burns site, which identified *Streptococcus (group A)* and the patient was commenced on intravenous antibiotics. The patient had type 2 diabetes mellitus, and chronic kidney disease (stage 3) and obesity (body mass index of 51) not impacting the episode of care.

Code list in alphanumeric order

B95.0 *Streptococcus, group A, as the cause of diseases classified to other chapters*
E11.22 *Type 2 diabetes mellitus with established diabetic nephropathy*
E11.72 *Type 2 diabetes mellitus with features of insulin resistance*
T21.23 *Partial thickness [blisters, epidermal loss] burn of abdominal wall*
T24.2 *Partial thickness [blisters, epidermal loss] burn of hip and lower limb, except ankle and foot*
T31.00 *Burns involving less than 10 per cent of body surface, less than 10 per cent or unspecified full thickness burns*
T79.3 *Post traumatic wound infection, not elsewhere classified*
U73.1 *Activity, while engaged in other types of work*
U78.1 *Obesity*
U87.1 *Chronic kidney disease, stage 3–5*
X10.2 *Contact with hot fat and cooking oil*
Y92.04 *Place of occurrence, home, kitchen*

Scenario S

A patient was brought into the emergency department by ambulance with a head strike following a fall at home. The patient had a history of hypertension and had been unwell with a cough for two days. A polymerase chain reaction (PCR) test was performed, to test for coronavirus disease 2019 (COVID-19), which was positive.

The patient reported they had tripped in their bedroom and hit their head when they fell. Clinical examination noted a closed head injury, bruised shoulder with limited range of movement, tender knee, and bruises on the forearm, upper arm and both legs.

Computerised tomography (CT) scans of the brain and cervical spine showed no acute intracranial haemorrhage or cervical spine fracture. X-rays of the chest, left shoulder, left elbow, right knee and pelvis showed no acute fractures.

The patient was isolated due to COVID-19 and started on Paxlovid (five day course). It was noted that the fall was likely related to the COVID-19 infection.

During the episode of care, the patient had a mechanical fall (tripped) with no neurological deficits. A brain CT showed no acute intracranial haemorrhage, however a right parietal subgaleal haematoma was noted. The finding was discussed with the neurosurgery team, and nil further intervention was required from a neurosurgical perspective. The patient remained well and was cleared by the allied health teams (physiotherapy, occupational therapy and social work).

On day eight, the patient noted that they were straining to pass urine. An ultrasound revealed hyperplasia of the prostate requiring a transurethral resection of the prostate (TURP). On day 10 the patient developed urinary retention due to clot retention from the TURP.

Code list in alphanumeric order

N40	*Hyperplasia of prostate*
N99.89	*Other intraoperative and postprocedural disorder of genitourinary system*
R33	*Retention of urine*
S00.05	*Superficial injury of scalp, contusion*
S09.9	*Unspecified injury of head*
S40.0	*Contusion of shoulder and upper arm*
S50.1	*Contusion of other and unspecified parts of forearm*
S80.1	*Contusion of other and unspecified parts of lower leg*
U07.12	*Coronavirus disease 2019 [COVID-19], virus identified, symptomatic*
U73.9	*Unspecified activity*
U82.3	*Hypertension*
W01.1	*Fall on same level from tripping*
Y83.6	*Removal of other organ (partial) (total)*
Y92.05	P*lace of occurrence, bedroom*
Y92.24	*Place of occurrence, health service area, this facility*
Z29.0	*Isolation*

Scenario T

A patient was admitted for a total hip replacement (THR) due to osteoarthritis. The procedure was performed under general anaesthesia.

Following transfer to recovery, the patient was noted to be hypotensive. Nursing staff sought a review from the anaesthetist, who ordered an albumin transfusion to be administered.

A further anaesthetic review noted that the patient remained hypotensive. An electrocardiography and full blood count (FBC) were ordered. The patient was reviewed by intensive care clinicians who diagnosed anaesthetic related hypotension and recommended continuing the albumin transfusion. The FBC showed low haemoglobin. A diagnosis of anaemia was made, and packed cells were ordered and transfused.

Post operative X-rays were ordered to confirm correct placement of prosthesis. On review by the orthopaedic team an acetabular fracture was noted. The team confirmed the fracture was due to the insertion of the prosthesis. A revision of the THR was scheduled prior to discharge.

A clinical review was requested as the patient had ongoing agitation and an altered mental state. The medical team diagnosed delirium associated with age and being in a different setting. The patient continued to be confused, so a computerised tomography (CT) scan of the brain, and blood and urine cultures were ordered. The brain CT showed no abnormal findings and the cultures were negative.

On day four, the patient noted an ongoing increase in pain since surgery (attributed to insertion of the prosthesis) and was referred to the Acute Pain Service (APS). The APS team increased the dosage of patient controlled analgesia and prescribed Endone for better pain management and ongoing review.

The revision THR was cancelled due to ongoing medical issues and the patient was transferred to a tertiary level hospital for ongoing care.

The patient had chronic respiratory failure and bronchiectasis not impacting the episode of care.

Code list in alphanumeric order

D64.9	*Anaemia, unspecified*
F05.9	*Delirium, unspecified*
I95.8	*Other hypotension*
M16.1	*Other primary coxarthrosis*
M96.6	*Fracture of bone following insertion of orthopaedic implant, joint prosthesis, or bone plate*
T85.85	*Pain following insertion of other prosthetic devices, implants and grafts*
T88.59	*Complications of anaesthesia, not elsewhere classified*
U83.4	*Bronchiectasis, without mention of cystic fibrosis*
U83.5	*Chronic respiratory failure*
Y48.2	Other and unspecified general anaesthetics causing adverse effects in therapeutic use
Y83.1	*Surgical operation with implant of artificial internal device*
Y92.24	*Place of occurrence, health service area, this facility*

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