
Terminologies and classifications: SNOMED CT-AU and ICD-10-AM use in Australia



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Learning objectives

Give examples of different code sets used in health



Describe the purpose of a health classification



Be informed about the ICD revision, and maps between SNOMED CT and ICD-10



Describe the purpose of a clinical terminology



Compare the features of SNOMED CT-AU and ICD-10-AM



Why record clinical data electronically?

Changes in the delivery of clinical practice

Clinical experience

- Individual clinician experience
- No real data requirements

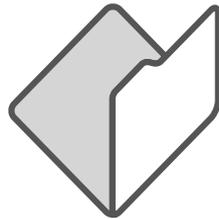


Evidence-based medicine

- Identifying best practice and gold standards for treatment
- Requires detailed audit and definition of treatment guidelines

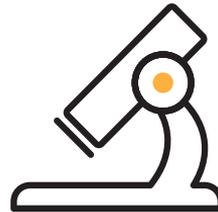


DATA



Predictive medicine

- Accessing other clinicians knowledge
- Requires access to published papers, supported by simple audit

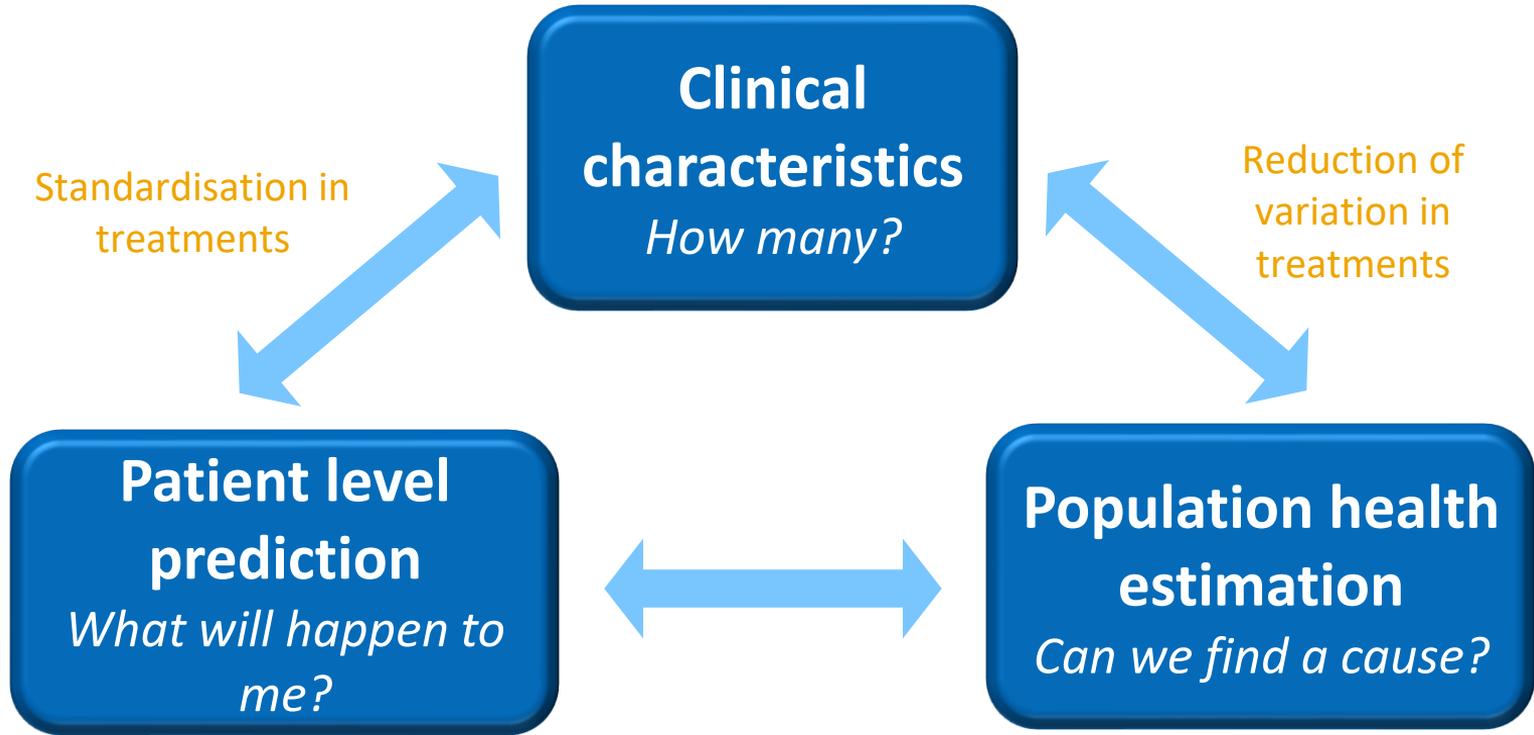


Personalised medicine

- Identifying optimal treatment for the individual patient
- Requires high levels of data collection and analysis to support automated processes and decision support



Use of standard vocabularies leads to actionable insights



Overview of code sets used in health

Some of the most commonly used code sets in health



SNOMED CT-AU
(includes the AMT)

Terminology

Set of concepts about a domain that shows properties and relationships between them, and organised by meaning.

Classification

Organises concepts into categories or groups based on common characteristics, enabling consistent statistical data analysis.



ICD-10-AM
ACHI



ICPC2
ICNP



ATC

Many other types of code sets, that enable:

- Standardisation and interoperability between systems
- A listing (or schedule) of subsidised healthcare services and medications



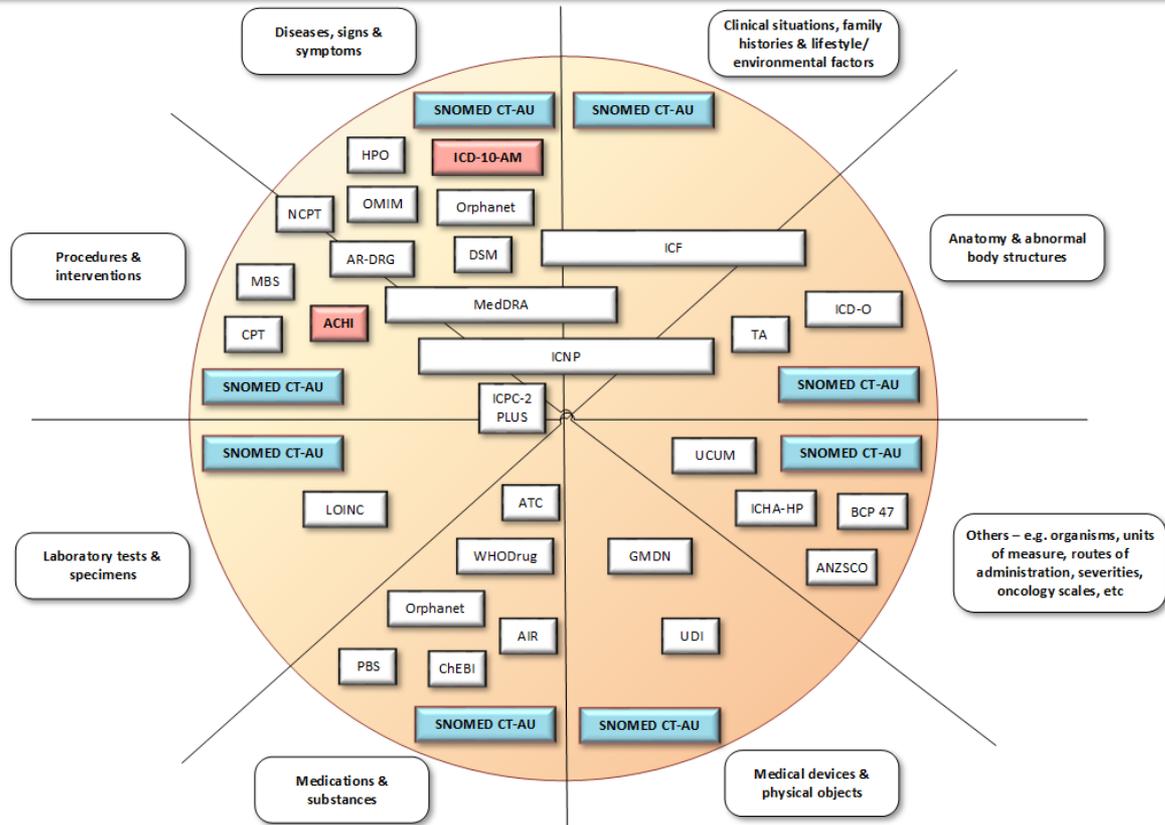
LOINC
ARTG



MBS
PBS

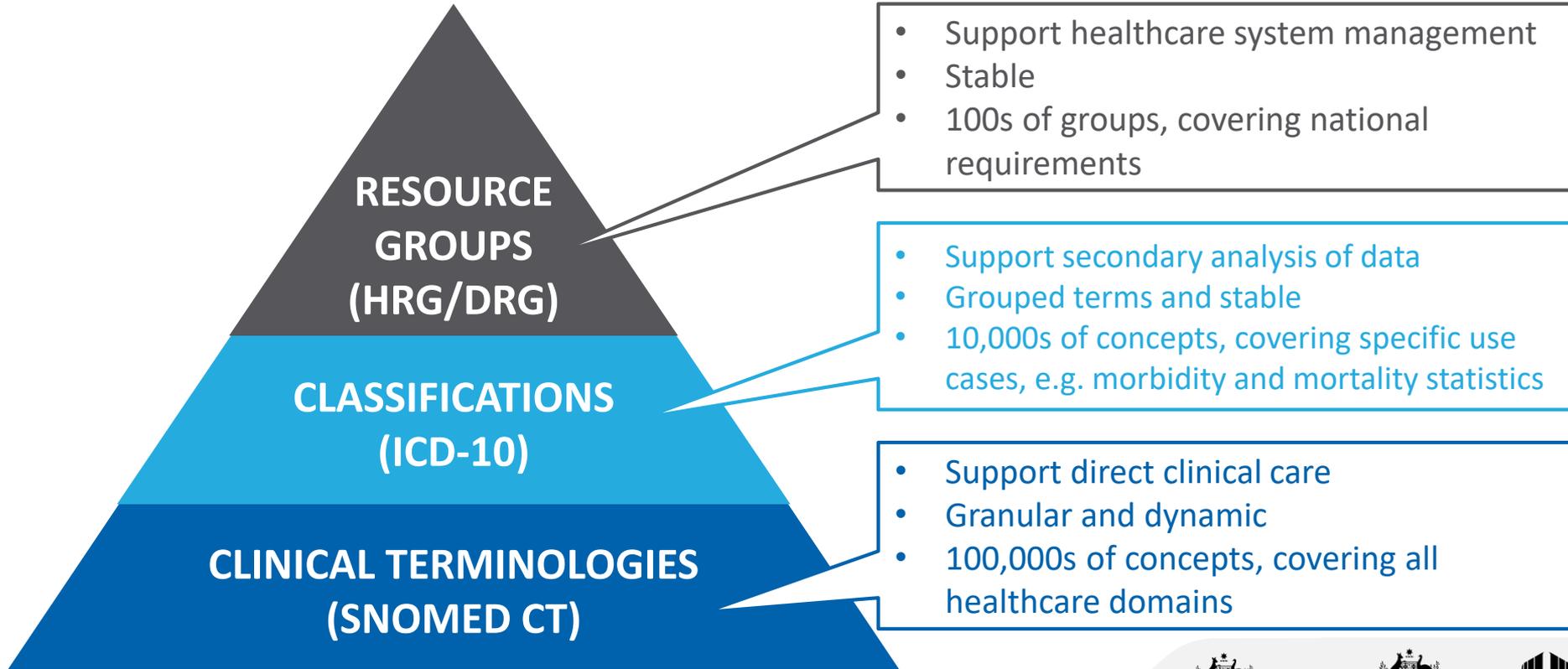


ICD-10-AM, SNOMED CT-AU and common clinical classifications, ontologies & code sets used in health



Definitions and links to these code sets are provided at the end of this slide deck.

Different levels of granularity and content to support specific use cases



Clinical terminology overview

What are clinical terminologies?

- A structured vocabulary of terms and concepts used in clinical practice, implemented in software applications e.g. electronic health records (EHRs).
- Standardised naming and identification of those concepts relevant to the patient and the healthcare that is delivered to them.
- Concepts are defined by machine-readable relationships to other concepts (i.e. they hold *clinical meaning*).

Clinical terminologies enable



Structured recording of statements about the health and health care of an individual patient



Communication of information without loss of detail or change to meaning (*semantic interoperability*)



Various levels of data abstraction for clinicians, patients, researchers or organisations



A consistent way of indexing, storing, retrieving and aggregating clinical data from structured, computerised clinical records



Why use a clinical terminology?

To best utilise clinical systems, computing tools and apps used in healthcare we need computable data – this means coded and structured data.

Terminology is coded, structured data

- It provides a foundation for successful delivery and realisation of the benefits of many of the national digital health strategic priorities.¹

¹ Australian Digital Health Agency. Australia's National Digital Health Strategy: Australian Digital Health Agency; 2017
[Available from: <https://conversation.digitalhealth.gov.au/australias-national-digital-health-strategy>]

Clinical terminologies support



Health information that is available whenever and wherever it is needed



Health information that can be exchanged securely



Continuous improvement of data quality, leading to high-quality data with a commonly understood meaning that can be used with confidence



Better availability and access to prescriptions and medicines information



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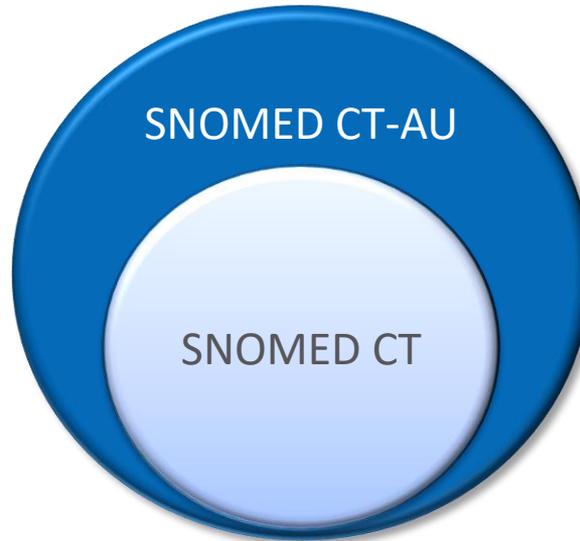


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SNOMED CT is the preferred national solution for clinical terminology, endorsed by the Australian Health Ministers' Advisory Council (AHMAC)

SNOMED CT

- A large 'dictionary' of clinical terms with a unique code that are machine-readable
- Designed to capture clinical data within electronic records
- Covers content areas of:
 - diseases, procedures, clinical findings and therapeutic products, organisms, substances, events
 - plus additional content that helps define the meaning of these major content areas
- A logical model that supports inferencing because identifiers do not carry meaning
 - Cimino, JJ *Methods Inf Med.* 1998 Nov;37(4-5):394-403. Desiderata for controlled medical vocabularies in the twenty-first century.

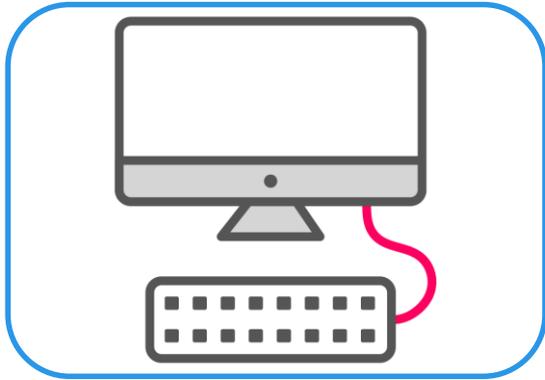


SNOMED CT-AU

- Australian extension of SNOMED CT
- Contains SNOMED CT core files plus Australian developed content, including:
 - Australian Medicines Terminology (AMT), a standard terminology for commonly used medicines in Australia.
 - Australian dialect reference set.
 - Over 90 reference sets based around common clinical use cases.
 - Emerging FHIR ValueSets
- Used across all healthcare sectors (GP, Community, Allied Health, Child Health, ED, inpatient)
- Clinician medical record documentation
- Released monthly to licence holders



When should we use a clinical terminology?



A) Structured and coded clinical data capture at the point of care



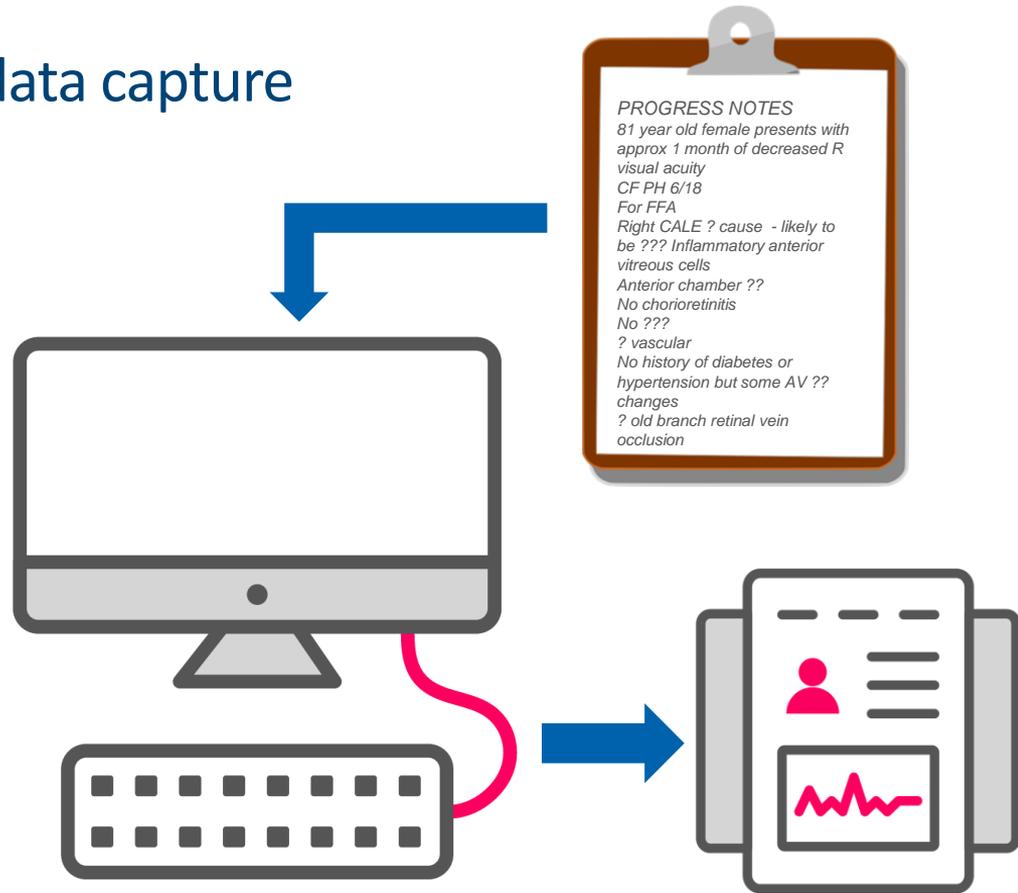
B) Sharing of clinical information between systems



C) Meaning-based retrieval and analytics

Structured and coded clinical data capture

- Record information about a patient healthcare encounter at the point of care, in a clinical information system.
- Allows clinicians to record what they need:
 - Content coverage
 - Specificity
 - One concept can be found using multiple descriptions (synonyms)



A simple patient record with SNOMED CT-AU coding

Patient summary	 TEST, Patient - 24962 Male DOB: 6/9/1984		Last visit: 24/7/2018																		
Demographics																					
Examination	Problem list + <table border="1" style="width: 100%;"> <thead> <tr> <th>Date</th> <th>Name</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>11/1/2017</td> <td>Chronic otitis media</td> <td>Active</td> </tr> <tr> <td>18/3/1996</td> <td>Asthma</td> <td>Active</td> </tr> </tbody> </table>		Date	Name	Status	11/1/2017	Chronic otitis media	Active	18/3/1996	Asthma	Active	Allergy + <table border="1" style="width: 100%;"> <thead> <tr> <th>Date</th> <th>Name</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>3/12/1992</td> <td>Shellfish</td> <td>Active</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Date	Name	Status	3/12/1992	Shellfish	Active			
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Date	Name	Status																			
3/12/1992	Shellfish	Active																			
History																					
Family history																					
Medication history	Test request + <table border="1" style="width: 100%;"> <thead> <tr> <th>Date</th> <th>Name</th> </tr> </thead> <tbody> <tr> <td>11/1/2017</td> <td>Lipid panel</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Date	Name	11/1/2017	Lipid panel			Current medications + <table border="1" style="width: 100%;"> <thead> <tr> <th>Date</th> <th>Name</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>11/1/2017</td> <td>Kenacomb Otic ointment, 5 g</td> <td>Active</td> </tr> <tr> <td>18/3/1996</td> <td>Ventolin 200 microgram powder for inhalation, 120 unit doses</td> <td>Active</td> </tr> </tbody> </table>	Date	Name	Status	11/1/2017	Kenacomb Otic ointment, 5 g	Active	18/3/1996	Ventolin 200 microgram powder for inhalation, 120 unit doses	Active			
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18/3/1996	Ventolin 200 microgram powder for inhalation, 120 unit doses	Active																			
Immunisations																					
Obstetrics																					
Implantable devices																					
Referrals																					
Patient portal																					

In this example:

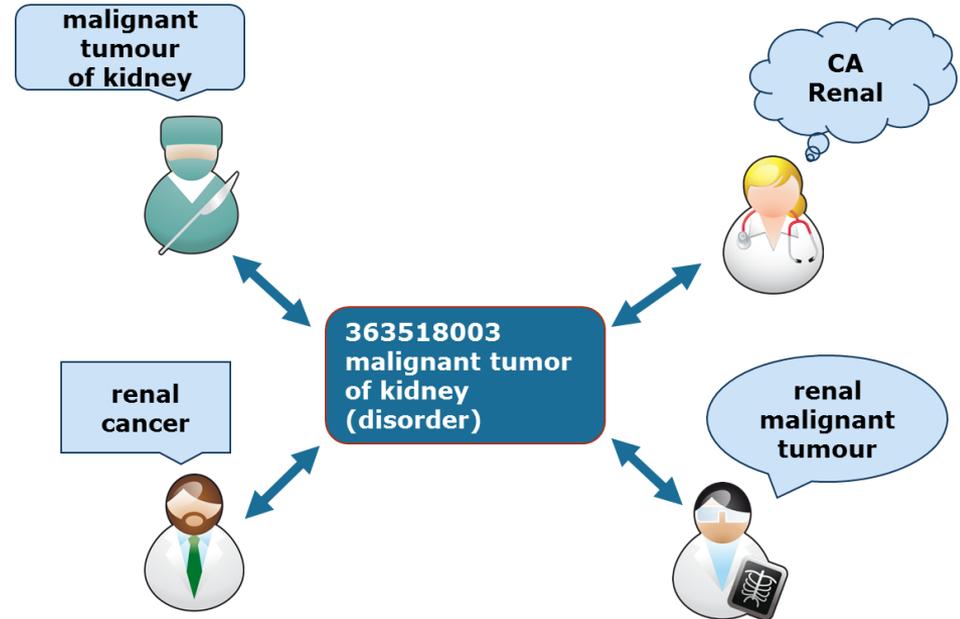
- SNOMED CT-AU *terms* are displayed to users
- SNOMED CT-AU *concept identifiers* are in the backend

Note: terminologies work together with an information model in a well-designed EHR



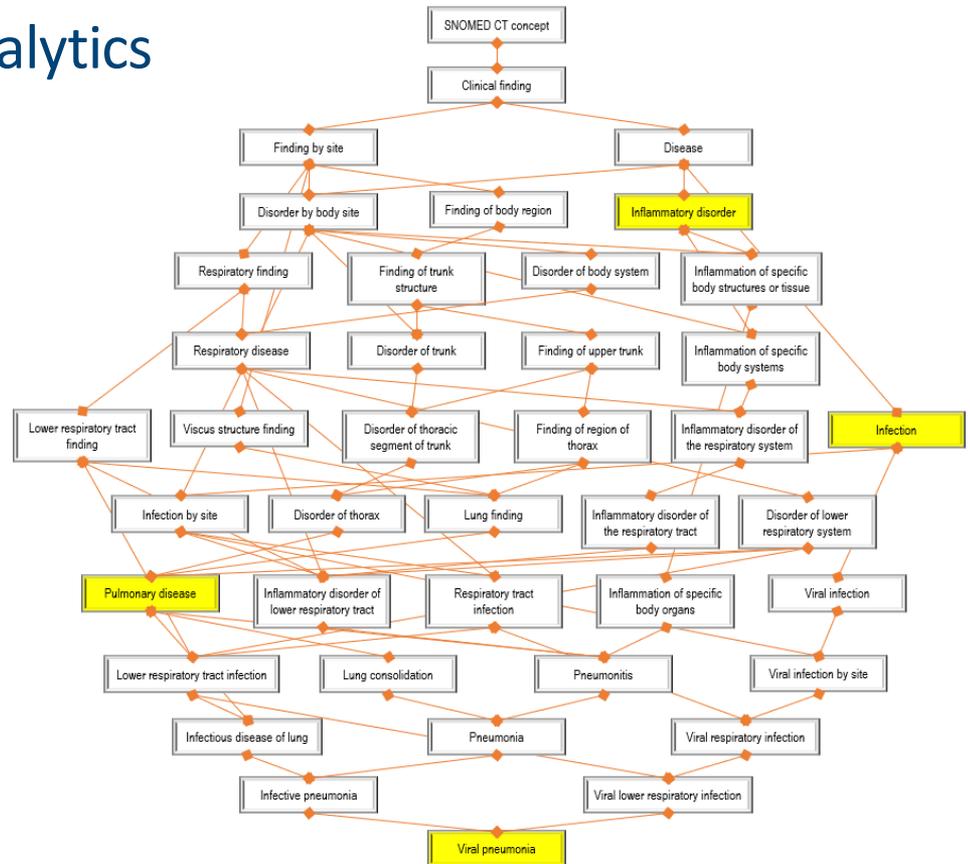
Sharing of clinical information

- Standard terminology across the system
- Unambiguous concept identification
- Different systems can share information that has a commonly understood meaning
- Synonyms (as depicted in the speech bubbles) cater for local language preferences and enable flexible term searching



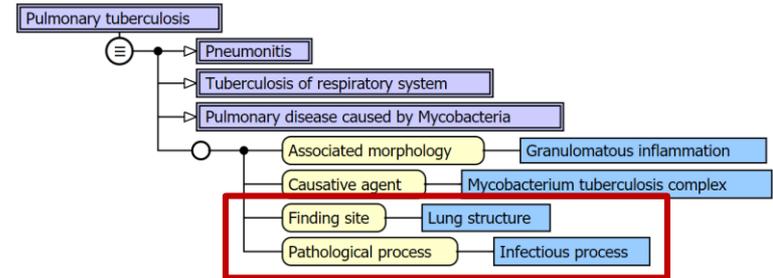
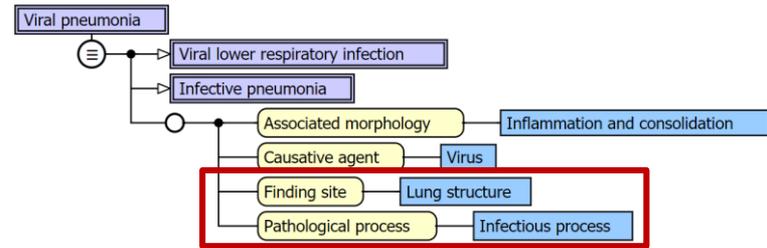
Meaning-based retrieval and analytics

- The structure of SNOMED CT supports flexible retrieval of clinical information for analytics and reporting.
- A subject can be retrieved via many pathways or properties (polyhierarchy)
- In this example, records encoded with “Viral pneumonia” can be retrieved when starting from any of the higher-level concepts, such as
 - Pulmonary disease
 - Infection
 - Inflammatory disorder



Meaning-based retrieval and analytics

- Concepts are represented by precise, unambiguous and machine-readable definitions, enabling a rich clinical dataset for analysis
- Subjects can be found based on common defining attributes
- In this example, querying for infectious processes in the lung will return records containing (amongst others)
 - Viral pneumonia
 - Pulmonary tuberculosis



Meaning-based retrieval and analytics

- Clinical information can be retrieved easily using Expression Constraint Language (ECL)
 - ECL is a computer processable language that allows searching for SNOMED CT concepts using their structure and attributes.
- Static and dynamic on-the-fly queries can be formulated for data retrieval
- An ECL tool is available in the CSIRO Shrimp terminology browser <https://ontoserver.csiro.au/shrimp/ecf>

SNOMED ECL Builder: Concepts grouped under opioid dependence

Terminology Refsets ValueSets ECL Ontoserver

Use the button to the left to create new ECL queries. Use the menu in the query builder below to add new parts to your query.
Note, a free-text node allows you to enter arbitrary ECL.

Name:

INCLUDE

EXCLUDE

Total matches: 14

CODE	DISPLAY
191869005	Combined opioid with other drug dependence in remission
231478008	Metadone dependence
724653003	Opioid dependence with current use
231477003	Heroin dependence
231479000	Morphine dependence
191868002	Combined opioid with other drug dependence, episodic
1081000110105	Opioid dependence, on opioid therapy

```
graph TD; HeroinDependence[Heroin dependence] --- OpioidDependence[Opioid dependence]; OpioidDependence --- CausativeAgent[Causative agent]; CausativeAgent --- Heroin[Heroin];
```

Health classification overview

What are health classifications?

- A classification is a structured way of organising information into standard groupings for statistical reporting.
- Rules for collecting and coding clinical information are standardised nationally and internationally, to ensure patient data are grouped consistently and accurately.
- For example, after a patient is discharged, diagnoses and interventions are translated from the health care record of a patient into alphanumeric codes within a classification such as ICD-10-AM and ACHI.

Classifications enable



Health Information Managers (HIMs) and others to use aggregated data to support their decisions and policies



Epidemiological research, large dataset analysis, patient registry data collections and public health performance/trends



Casemix and Activity Based Funding



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Why use a health classification?

Placing data into meaningful, distinct and stable groups makes it easier to identify patterns and trends, enabling better decision-making and management of the healthcare system.

Classifications are output tools for statistical reporting

- Consistent and comparable method of reporting on conditions, treatment and associated cost.
- Improve management, measurement and funding of services.

Classifications support



Easy storage, retrieval and analysis of health information for evidenced-based decision-making



Sharing and comparing health information between hospitals, regions, settings and countries



Data comparisons in the same location across different time periods



Measurement of hospital and health service provider output



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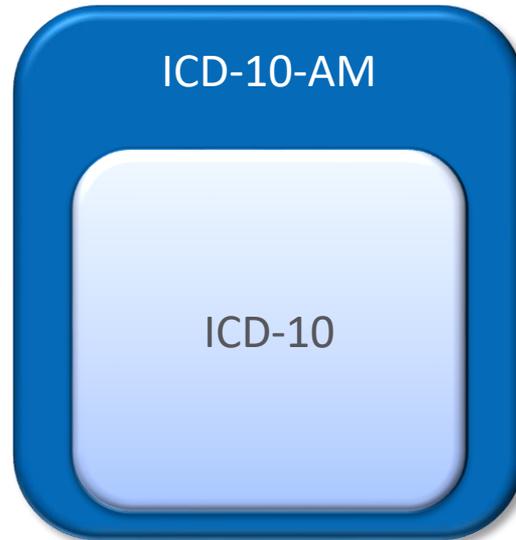


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Coded data using ICD-10-AM/ACHI/ACS underpins the Australian Refined Diagnosis Related Groups classification (AR-DRGs)

ICD-10

- The International Statistical Classification of Diseases and Related Health Problems, Tenth Revision
- Foundation of health statistics
- An alphanumeric classification
 - Contains codes for diseases, signs and symptoms, abnormal findings, social factors and external causes of mortality or morbidity.
 - Mono-hierarchical, enumerated, codes carry meaning
- In Australia, ICD-10 is used to classify causes of death



ICD-10-AM

- Australian modification of ICD-10
 - An expanded version of the World Health Organization's ICD-10
- Consists of a tabular list of diseases and an accompanying index and coding rules (ACS)
- Companion Px classification (ACHI)
- Used in public and private hospitals in Australia to classify episodes of admitted patient care only
- Information is abstracted and assigned by trained clinical coders
- Released every 2 years+



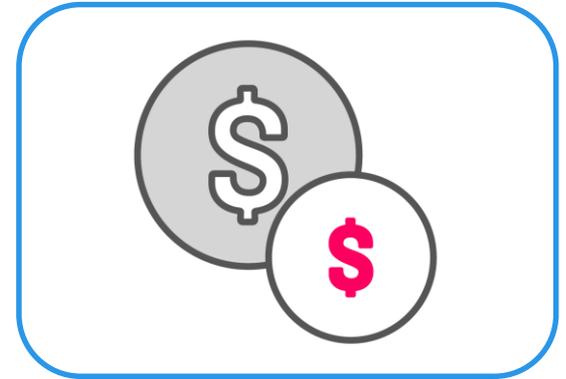
When should we use a health classification?



A) Immediate and longitudinal data management and retrieval across a number of different groups



B) Statistical reporting of clinical activity and other health information (disease and interventions)

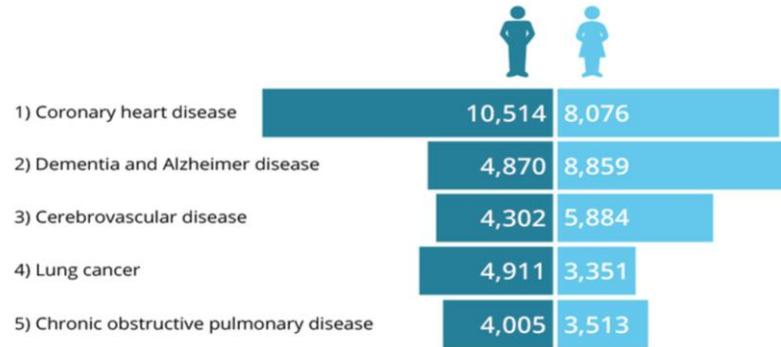


C) Casemix and Activity Based Funding (measuring service provision/use)

ICD codes and leading causes of death

- In Australia, ICD codes are used when analysing deaths and their causes, enabling statistics to be compared over time and between countries
- This approach contributes to policy development and planning related to health strategies and interventions

Figure 3.1: Leading underlying causes of death by sex, 2017



Note: Leading causes of death are based on underlying causes of death and classified using an AIHW-modified version of Becker et al. 2006.

Source: AIHW National Mortality Database (Table S3.1).

<https://www.aihw.gov.au/reports/life-expectancy-death/deaths-in-australia/contents/leading-causes-of-death>



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Indicator progress measure: potentially preventable hospitalisations

- Number of potentially preventable hospitalisations, divided into three groups and total, as defined by ICD-10-AM 9th edition:
 - vaccine-preventable conditions (e.g. tetanus, measles, mumps, rubella).
 - acute conditions (e.g. ear, nose and throat infections, perforated/bleeding ulcer, pelvic inflammatory disease).
 - chronic conditions (e.g. diabetes complications, asthma, angina, hypertension, congestive heart failure and chronic obstructive pulmonary disease).
- all potentially preventable hospitalisations
- <https://meteor.aihw.gov.au/content/index.phtml/itemId/698904>
- Examples include:

Vaccine-preventable

Pneumonia and influenza
(vaccine-preventable)
Codes: J10.-, J11.-, J13, J14

Chronic

Asthma
Codes: J45.-, J46

Acute

Pneumonia (not vaccine-
preventable)
Codes: J15.3, J15.4, J15.7,
J16.0



Optimal management of healthcare services

Patient casemix and volume

Patient complexity and trends

Measuring success of clinical models of care

Additions or modifications to health care services

Supporting managerial decision making to ensure provision of high-quality health care

Quality and safety of health care services and policy development

Business analysis for KPI monitoring and health system improvements

Accurate allocation of Activity Based Funding



Australian Activity-Based Funding classifications

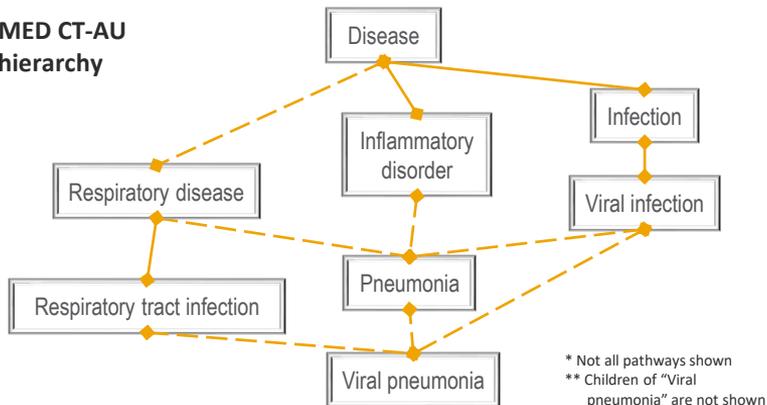
	Admitted acute	Subacute & Non-acute	Mental Health	Emergency	Non-admitted	Teaching, Training & Research
Classification	<ul style="list-style-type: none"> Disease and Intervention Classifications: ICD-10-AM and ACHI Australian Refined Diagnosis Related Groups (AR-DRG) 	<ul style="list-style-type: none"> Disease and Intervention Classifications: ICD-10-AM and ACHI Australian National Subacute and Non-acute (AN-SNAP) 	<ul style="list-style-type: none"> Australian Mental Health Care Classification (AMHCC) 	<ul style="list-style-type: none"> Urgency Related Groups (URGs) Urgency Disposition Groups (UDGs) ED ICD-10-AM Principal Diagnosis Short List Australian Emergency Care Classification (AECC) 	<ul style="list-style-type: none"> Tier 2 Non-Admitted Care Services Classification Categories include: procedures, medical consultation services, diagnostic services, and allied health and/or clinical nurse specialist intervention services 	<ul style="list-style-type: none"> Australian Teaching and Training Classification (ATTC)
Patients are classified according to relevant measures including:	<ul style="list-style-type: none"> Diagnosis Interventions Length of stay Age Sex Mode of separation Newborn admission weight Mechanical ventilation hours 	<ul style="list-style-type: none"> Setting Care type Phase of care, Assessment of function Age 	<ul style="list-style-type: none"> Setting Phase of care Symptom/ functioning (Health of Nation Outcome and Scales HoNOS)/ Life Skills Profile (LSP-16) Age Complexity 	<ul style="list-style-type: none"> Visit type Discharge disposition Treatment urgency Diagnosis 	<ul style="list-style-type: none"> Service type Clinician type Patient condition 	<ul style="list-style-type: none"> This is not a patient classification This classification is health professional trainee oriented and key concepts include profession and training stage



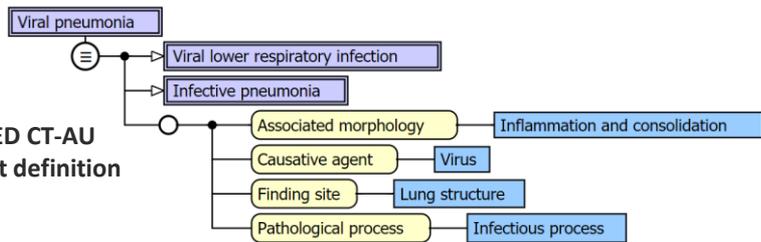
How SNOMED CT-AU and ICD-10-AM
support specific use cases

SNOMED CT and ICD-10 were designed for their intended primary use case

SNOMED CT-AU polyhierarchy



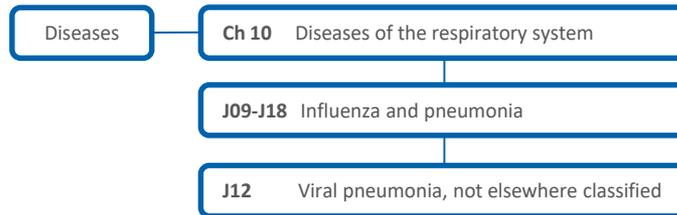
SNOMED CT-AU concept definition



SNOMED CT-AU for clinical data capture and retrieval

- Items defined according to meaning (polyhierarchical)
- A subject can be retrieved via many pathways or properties
- Precise and unambiguous definitions that are machine-readable

ICD-10-AM monohierarchy



ICD-10-AM for statistical aggregation and reporting

- Items organised into non-overlapping categories based on their properties (monohierarchical)
- No subject belongs to multiple classes
- Complete and includes a category for everything

J12 Viral pneumonia, not elsewhere classified

Includes: bronchopneumonia due to viruses other than influenza viruses

Excludes: congenital rubella pneumonitis (P35.0) pneumonia:

- aspiration (due to):
- neonatal (P24.9)
- NOS (J69.0)
- solids and liquids (J69.-)
- in influenza (J09, J10.0, J11.0)
- interstitial NOS (J84.9)
- lipid (J69.1)
- viral, congenital (P23.0)

- J12.0 Adenoviral pneumonia
- J12.1 Respiratory syncytial virus pneumonia
- J12.2 Parainfluenza virus pneumonia
- J12.3 Human metapneumovirus pneumonia
- J12.8 Other viral pneumonia
- J12.9 Viral pneumonia, unspecified

Supporting data capture and clinical communication

Specificity and content coverage are important considerations when selecting a standard code system for data capture that can also communicate with other electronic systems.

Select diagnosis using SNOMED CT-AU

Q vascular myelopathy

Vascular myelopathy

More detailed concepts are available:

Encephalomyelitis co-occurrent and due to rubella

Infarction of spinal cord

Myelopathy due to acute infarction of spinal cord

Myelopathy due to arterial thrombosis of spinal cord

Myelopathy due to haematomyelia

Save

Cancel

SNOMED CT-AU is designed for primary data capture in a clinical information system

- Contains sufficient detail to allow clinicians to record the information they need
- Meaning is retained when transferred between systems

Select diagnosis using ICD-10-AM

Q G95.1

G95.1 Vascular myelopathies

Includes:

- Acute infarction of spinal cord
- Haematomyelia
- Oedema of spinal cord
- Subacute necrotic myelopathy

Save

Cancel

ICD-10-AM has limited values to capture specific clinical detail in individual health records

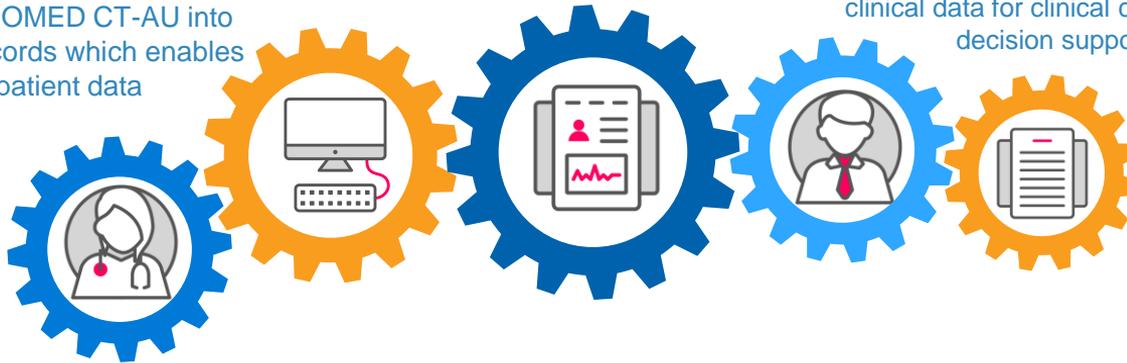
- Broad groupings represent one dimension of meaning
- A single code groups multiple clinical meanings

Supporting clinical data analytics

- Once data has been captured in a structured way, it can then be meaningfully analysed
- The types of questions that can be asked of the data and how easily relevant results are returned will depend on the codes you are working with
- Terminologies and classifications support clinical analytics at different levels of specificity

Primary collection of data

Clinicians input SNOMED CT-AU into individual health records which enables analysis of patient data



Secondary use of data

SNOMED CT-AU coded health records are a rich source of clinical data for clinical cohort analyses, prognoses, outcomes, decision support and patient care exchange

Health information managers use the health care records to code episodes into ICD-10-AM andACHI codes which enables analysis of aggregated data in predefined categories



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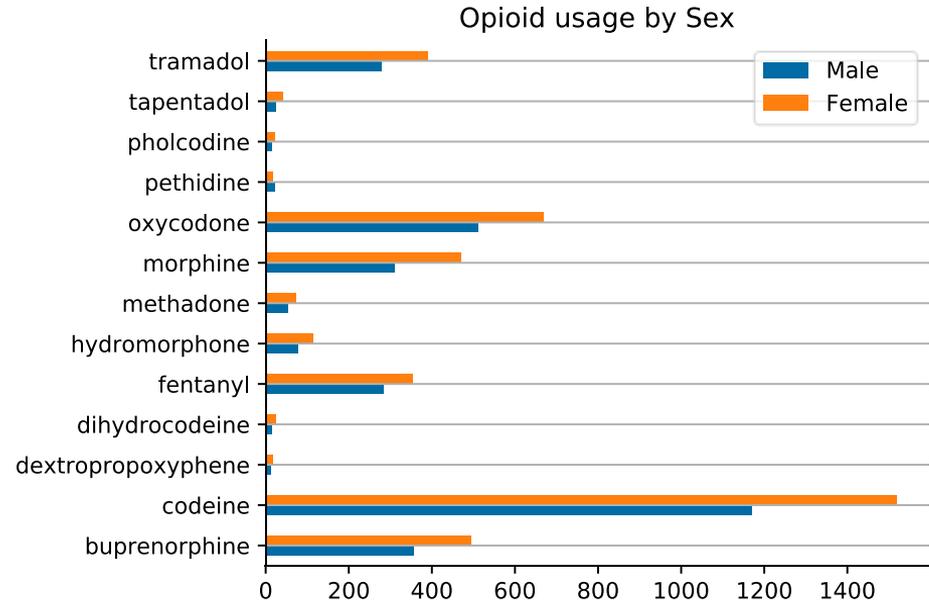


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Supporting clinical data analytics

- Define categories using ECL, identify records with SNOMED CT codes matching the criteria, and use these codes to filter the clinical dataset, for example determining opioid usage by sex

```
opioids= [('<34841011000036108','dihydrocodeine'),  
( '<21821011000036104','codeine'),  
( '<21705011000036108','pholcodine'),  
( '<21232011000036101','buprenorphine'),  
( '<21357011000036109','methadone'),  
( '<135971000036102','tapentadol'),  
( '<21258011000036102','fentanyl'),  
( '<21259011000036105','oxycodone'),  
...  
( '<21252011000036100','morphine'),  
( '<21486011000036105','tramadol'),  
( '<21901011000036101','dextropropoxyphene'),  
( '<34839011000036106','pethidine'),  
( '<1247191000168104','sufentanil')]  
  
for opioid in opioids:  
    OpioidSet = PopulateSetWithECL(opioid[0])  
    filter = codeSet["Medication"].isin(OpioidSet)  
    codeSet.loc[filter,"Opioid"]= opioid[1]
```



Supporting statistical reporting and aggregation

ICD-10-AM categories are broad and distinct, allowing single counting of an instance and meaningful population health analysis.

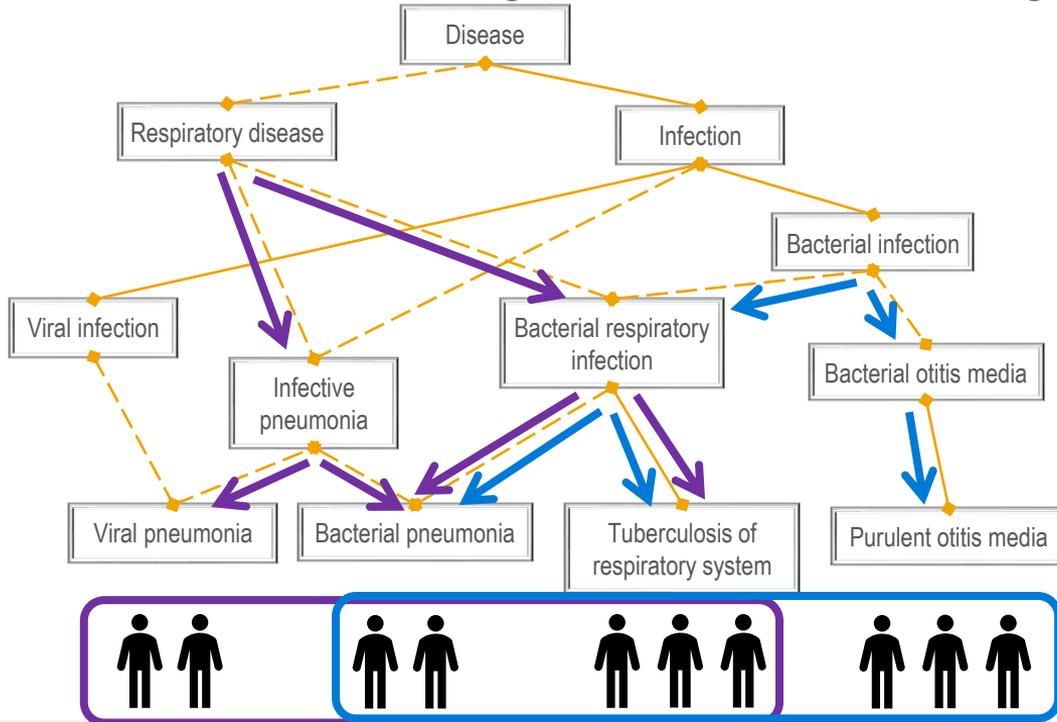
Chapter	Code categories	Counts
1 Certain infectious and parasitic diseases	A15 Respiratory tuberculosis, bacteriologically and histologically confirmed	
10 Diseases of the respiratory system	J12 Viral pneumonia, not elsewhere classified	
	J15 Bacterial pneumonia, not elsewhere classified	
8 Diseases of the ear and mastoid process	H66 Suppurative and unspecified otitis media	

Category	Count
Total patients	10
Identify people with influenza and pneumonia (J09-J18)	4
Identify people with respiratory tuberculosis (A15.-)	3
Double counting	0



Supporting statistical reporting and aggregation

SNOMED CT is not as straightforward as ICD-10-AM for statistical uses in which we need strategies in place to avoid the same disease being counted in more than one category.



Category	Count
Total patients	10
Identify people with respiratory diseases	7
Identify people with bacterial infections	8
Double counting	5

International Classification of Diseases revision

ICD-11 overview

The 11th Revision of the International Classification of Diseases (ICD-11) was released by World Health Organization in 2018.

In May 2019, it was adopted by the World Health Assembly for implementation by member states from 1 January 2022

No decision has been made in Australia (as of February 2020) as to whether, when or how ICD-11 may be implemented to replace ICD-10 and ICD-10-AM for statistical or Activity Based Funding purposes.

Comparatively, ICD-11 offers a wider scope of services, a new digital format, improved clinical relevance and an opportunity for expanded international comparison.

SNOMED International are collaborating with the World Health Organization to align SNOMED CT with ICD-11-MMS
<https://www.snomed.org/news-and-events/articles/position-statement-snomed-ct-icd-11-mms-map>



Features of ICD-11

Characteristic	ICD-11
Size	55 000 coded entities, supported by more entities in the Foundation
Scope	Diseases, related health problems, external causes, functioning
Used in	All health settings
Use cases	Patient episodes of care, death records
Primary purpose	Statistical reporting on mortality and morbidity, Activity Based Funding
Deployed in	Not yet deployed in Australia
Applied by	-
Enables	-
Structure	Multi-parented, mutually exclusive
Logic	Statistical, categorical (counting)
Granularity	Sensitive
Update cycle	Every year (index entries) to five years (code structure changes)



ICD-11 review: towards implementation planning in Australia

- The Australian Institute of Health and Welfare (AIHW) undertook a review of the ICD-11 and its potential implementation in Australian health information systems (the Review project).
- The Review project aimed to provide evidence to support decision-making and implementation planning.
- The first phase of the Review project was a stakeholder consultation overseen by the AIHW's Australian Health Classifications Advisory Committee (AHCAC). The complete *ICD-11 Review Stakeholder Consultation Report* will be published by the AIHW on 12th March 2020.
- The Review showed that Australian stakeholders had limited knowledge of ICD-11, and that concerns related to threats and weaknesses of ICD-11 would need to be addressed ahead of implementation. The AIHW developed a proposed work program based on the findings of the Review with input and advice from AHCAC, NHDISC and SCNHI in mid 2019.
- This program of work was endorsed for further prioritisation and work planning by the Australian Health Ministers' Advisory Council (AHMAC) in October 2019.



Proposed work program for prioritisation

The AIHW proposed four broad areas of work:

1. A comprehensive review of how ICD-10(-AM) is, and ICD-11 could be, used in health information systems, including digital settings, including issues associated with ICD-10(-AM) and the way ICD-11 can address these.
2. Development of a national roadmap for classifications and terminologies and how they will be used together within health information arrangements. This would ensure that classifications and terminologies are used appropriately with consideration of their varied use cases.
3. Strategic communications activities to ensure that decision-makers and their advisors can contribute to further work and decision-making over the next year about whether, when and how to implement ICD-11.
4. Continued planning for implementation in mortality data systems to maintain and advance Australia's current involvement in this international process.



What is ICHI?

- ICHI is the International Classification of Health Interventions developed by the World Health Organization (WHO) and the WHO Family of International Classifications (WHO-FIC).
- The aim is to meet a number of use cases such as:
 - International comparison,
 - National uses,
 - Patient safety and quality, and
 - Health system performance measurement (incl. financing).



ICHI Beta-2 – Australian Field Testing

- 50 Australian coders recently participated in global field testing of the Beta-2 version of ICHI.
- The assessment was undertaken in terms of content coverage and coding feasibility and utility, focussing on comparing country-specific interventions (ACHI) with an ICHI tabular list to identify possible gaps and structural issues.
- Assessing the coding feasibility and utility was done through:
 - line coding of intervention terms representing four different settings i.e. medical-surgical interventions, primary care interventions, functioning interventions and public health interventions
 - case coding of intervention scenarios in medical-surgical and functioning settings.
- WHO will compile the results from all countries and provide the following analysis:
 - Percentage distribution of coders agreement with the gold standard of the ICHI code assignment for each intervention term and case.
 - Basic descriptive statistics including frequency distribution, measures of central tendency (mean and median) of encountered coding time, accuracy and usability disaggregated by appropriate covariates (e.g. age, background etc.).



Maps between SNOMED CT and ICD-10

SNOMED CT and ICD-10 have complementary strengths

Situations may benefit from use of both code systems

SNOMED CT for the capture of clinical information, decision support, communication, analysis and clinical research

ICD-10 for statistical analysis, administrative data and billing

Different maps for different purposes

Any general map needs to be carefully applied per use case

A complex map from SNOMED CT to ICD-10 is available with the International Edition of SNOMED CT

Technical guide available from <http://snomed.org/icd10map>



“ Mapping is a process of defining a **relationship** between concepts in one coding system ('source') to concepts in another coding system ('target') in accordance with a **documented rationale** for a **given purpose** [ISO/TC 215]. ”



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IHPA

Local standard published maps between code sets are not readily available



snoMAP: enables diagnoses recorded using SNOMED CT-AU in Emergency Department to be converted to ICD-10-AM codes for non-admitted patient reporting



Mapping tables exist between

- editions of ICD-10-AM
- editions of ACHI
- ICD-10-AM to ICD-10



Mapping tools are available
e.g. Snapper:Map



Mapping is **NOT** a simple task, a one-off exercise, or a low risk and low cost approach



Not all maps are equal, need careful assessment of use case and directionality



Consult ISO standards for **Principles of mapping between terminological systems** and **Terminology resource map quality measures**



Summary

SNOMED CT-AU and ICD-10-AM/ACHI at a glance

Characteristic	SNOMED CT-AU	ICD-10-AM / ACHI
Size	480 000	20 000 / 7 000
Scope	Anatomy, substances, organisms, diagnoses, procedures, medications	Diseases, related health problems, external causes, interventions
Used in	All health settings	Admitted inpatient
Use cases	Individual longitudinal health records	Patient episodes and populations
Primary purpose	Clinical data entry in a patient record	Statistical reporting on hospital morbidity, casemix, Activity Based Funding
Deployed in	Clinical information systems (CIS), Electronic health records (eHR)	Patient administration systems (PAS), National Minimum Data Set (NMDS), clinical registries
Applied by	Clinicians	Health information workforce
Enables	Communication, messaging, decision support	Health trends, national statistical reporting
Structure	Poly-hierarchical, multi-parented	Mono-hierarchical, mutually exclusive
Logic	Definitional, description logic (knowledge)	Statistical, categorical (counting)
Granularity	Specific	Sensitive
Update cycle	Monthly	Every two years

Highlights

Terminologies

e.g. SNOMED CT-AU

- Support the primary collection (input) of clinical information
- Enable patient care management through decision support and patient care exchange
- Enable effective retrieval and reuse of clinical information for clinical cohort analyses, prognoses, outcomes, and more

Classifications

e.g. ICD-10-AM

- Support the statistical reporting of clinical activity and other health information
- Enable use in applications such as Activity Based Funding

Specific use cases

- The broad classification groupings limits communication between clinicians for patient care purposes
- Clinical terminology reporting outputs as a secondary use is currently not well known or utilised in Australia
- Increased integration and interoperability between digital health and health information environments

Using clinical terminologies and statistical classifications **together** for their **intended primary purposes** (clinical inputs and communication, and statistical outputs and reporting, respectively), **enhances and strengthens clinical and patient information use, decision-making and outcomes.**



Australian Government
Australian Digital Health Agency



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Useful links and supplementary information

For further information

Topic	Contact	Details
SNOMED CT-AU and the AMT	National Clinical Terminology Service (NCTS) at the Australian Digital Health Agency	Help Centre: 1300 901 001 Email: help@digitalhealth.gov.au Website: https://www.healthterminologies.gov.au
Health classifications	Independent Hospital Pricing Authority (IHPA)	Email: enquiries.iHPA@health.gov.au Website: https://www.iHPA.gov.au
ICD-11	Australian Collaborating Centre for the World Health Organization Family of International Classifications, at the Australian Institute of Health and Welfare	Email: who-fic-acc@aihw.gov.au
Statistical and epidemiological uses of health classifications: <ul style="list-style-type: none">• data requests, general inquiries• specific advice on coding	Australian Institute of Health and Welfare	Email: info@aihw.gov.au who-fic-acc@aihw.gov.au

Acronyms

Acronym	Full name and hyperlink
ACHI	Australian Classification of Health Interventions
AIR	Australian Immunisation Register
ANZCO	Australian and New Zealand Standard Classification of Occupations
AR-DRG	Australian Refined Diagnosis-Related Groups
ATC	The Anatomical, Therapeutic, Chemical (ATC) classification system
BCP 47	Tags for Identifying Languages
ChEBI	Chemical Entities of Biological Interest
CPT	Current Procedural Terminology
DSM	Diagnostic and Statistical Manual of Mental Disorders
GMDN	Global Medical Device Nomenclature
HPO	Human Phenotype Ontology
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification
ICD-O	International Classification of Diseases for Oncology
ICF	International Classification of Functioning, Disability and Health

Acronym	Full name and hyperlink
ICHA-HP	Classification of Health Care Providers
ICNP	International Classification for Nursing Practice
ICPC2+	International Classification of Primary Care, Version 2 PLUS
LOINC	Logical Observation Identifiers Names and Codes
MBS	Medicare Benefits Schedule
MedDRA	Medical Dictionary for Regulatory Activities
NCPT	Nutrition Care Process Terminology
OMIM	Online Mendelian Inheritance in Man
Orphanet	Orphanet
PBS	Pharmaceutical Benefits Schedule
SNOMED CT-AU	Systematized Nomenclature of Medicine - Clinical Terms, Australian extension
TA	Terminologia Anatomica
UCUM	Unified Code for Units of Measure
UDI	Unique Device Identification
WHODrug	WHODrug Global

Acknowledgements

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Stronger evidence, better decisions, improved health and wellbeing for all Australians

The Australian Institute of Health and Welfare (AIHW) is an independent statutory agency.

We produce authoritative and accessible information and statistics to inform and support better policy and service delivery decisions, leading to better health and wellbeing for all Australians.

We are focused on turning data into useful information and telling the broader story.



180+ customised data extracts annually for researchers, consumers, service providers, and organisations



Controlled access to Australia's most comprehensive collection of health and welfare data



200+ publicly available reports and data releases annually covering over 75 health and welfare topics

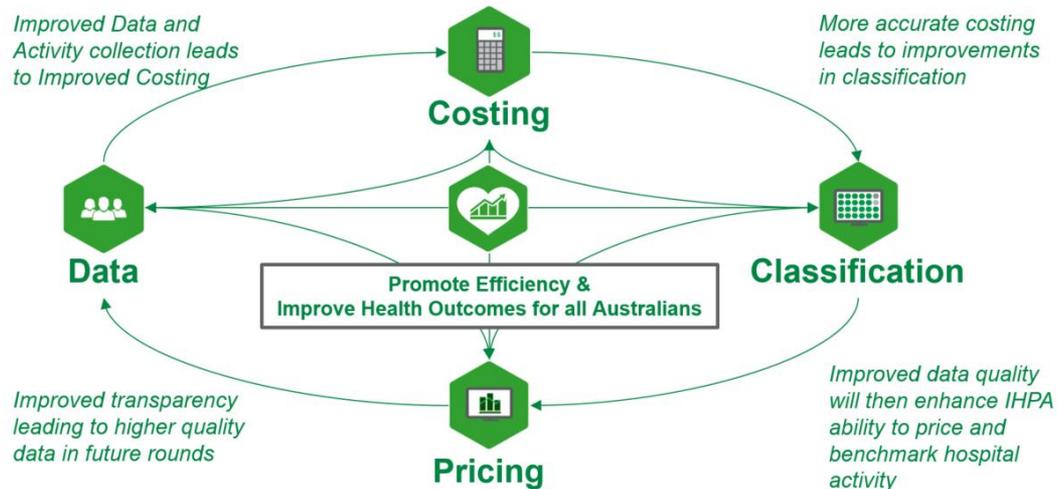


Full range of data services from requests and access, through to analysis and linkage



The Independent Hospital Pricing Authority (IHPA)

- Independently sets the National Efficient Price (NEP) for ABF public hospital services and any 'loadings' to account for variations in prices
- Determine the criteria for defining block funded services and the National Efficient Cost (NEC) of block funded hospitals
- Specify all of the classification, costing, data and modelling standards that are required for ABF



The Australian Digital Health Agency

The Australian Digital Health Agency is funded by all Australian Governments. It designs and operates national digital health services and set data standards that:

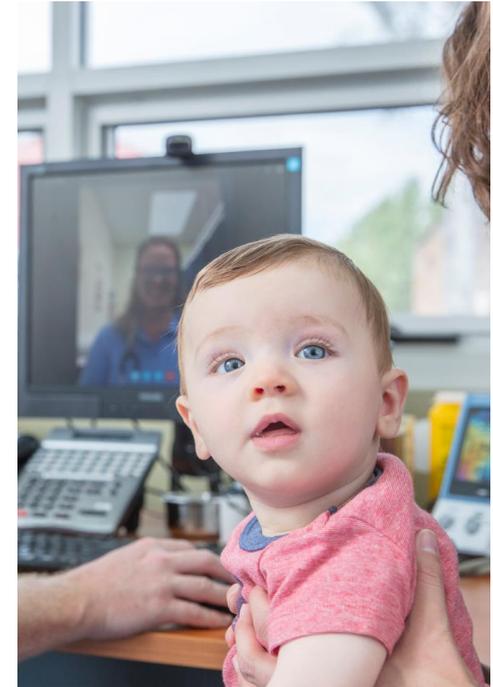
- Give consumers more control of their health and care when they wish it
- Connect and empower healthcare professionals
- Promote Australia's global leadership in digital health and innovation

When patients move between care settings, the absence of complete and up-to-date medication data can contribute to instances of care becoming high risk, resulting in medication misadventures and unnecessary hospital readmissions.

Pharmacy Guild of Australia, submission to National Digital Health Strategy 2017

The value of utilising pharmacists in digital health initiatives comes not only from the provision of dispensing histories but mainly from pharmacists using their unique skills and medicines expertise to meaningfully engage with the information contained in digital health records... to ensure the safe, effective and judicious use of medicines.

Pharmaceutical Society of Australia, submission to National Digital Health Strategy 2017



Contact us

Help Centre	1300 901 001
Email	<u>help@digitalhealth.gov.au</u>
Website	<u>healthterminologies.gov.au</u> <u>digitalhealth.gov.au</u>
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