



A community approach to data quality: FHIR IG and SNOMED CT ValueSets for Primary Care

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From little data...

big data grows





Commonwealth Department of Health's role

- Commonwealth DoH committed to funding projects to support improved data quality in the primary health sector
- Wanted to encourage main users of primary health clinical systems (GPs) to have greater influence in designing the software they use
- Funded CSIRO in 2018 to run several projects that put clinicians at the centre of the process, with vendors and all Commonwealth Health agencies supporting their ideas
- Encouraging other software development projects beginning to adopt similar approach, given success of this community driven, co-design process



Why quality matters?

- High-quality health records support good patient care
- High-quality health records facilitate:
 - safe clinical decision making
 - effective communication between health professionals
 - trusting partnerships with patients
 - coordination and continuity of care
- Population Health
- Research

QUALITY 



Why this Collaboration?

There are no agreed common data definitions for primary care within Australia

- RACGP - Standards for General Practice, OPTIMUS project
- Australian Digital Health Agency – My Health Record (Event Summary and Shared Health Summary)
- Federal and State Health Departments, PHNs
 - data requirements to support NKPIs
 - Local integrated care programs
- Software vendors
 - different labels for fields
 - Different terminologies
- Multiple data extract providers- different approaches
- Overlapping data requirements
- An opportunity for harmonisation and alignment





Data... what do we know?

- Somewhere between 60-80% of clinical data is:
 - Free text entries
 - Narrative, progress notes, aide memoirs, practice management
 - Proxy terms
 - MBS item numbers, drugs
 - Not the data we expect
 - Diagnosis as procedures, Procedures in Diagnosis, Prescriptions as medical history
 - Missingness
 - Outdated and not curated



Misspelled, mis-typed, ambiguous

Patient identifier	Problem managed (Diagnosis, Finding)
10000	DNA [did not attend, or DNA test]
10001	+/- swelling [swelling present or absent?]
10002	Sistitus [cystitis]
10003	Anxiote [anxiety; n=651 variants]
10004	Hypecholesterolaemia [without the 1st 'r' but otherwise all different ; n=758 variants]



What problems are we are trying to solve...

Issues with data quality?

According to the *General Practice Insights Report 2016/2017*:

- **REASON FOR ENCOUNTER:** 84.5% had at least one reason recorded and **15.5% had no data entered** in the RFE field
- **DIAGNOSIS:** 29.4% of patient records had at least one diagnosis recorded but **70.6% had no data entered** in the diagnosis field
- **REASON FOR PRESCRIPTION:** 11.9% had at least one reason for prescription but **88.1% had no data entered** in RFP field



Single Provision, Multiple Use

1. Reduce effort for practices, clinicians and software Industry.
2. Support exchange between clinical systems;
3. Enable interrogation of data sets using standardised queries, resulting in consistent data results;
4. Support safe and accurate data extracts, aggregation and analyse of primary care data (assuming appropriate privacy, consent and authorisation);
5. Enable standardised knowledge related activities such as common decision support tools across systems, rather than unique per project or implementation;
6. Deliver a ready-made library of information models that can fast-track the development of new clinical systems, applications or projects.



Core Design Principles

The **core design principles**

- Single provision, single development- multiple use and reuse
- Driven by a clinical safety use case
- Reduce duplication of effort
- Not data for data's sake
- Driven by primary use not secondary use needs
- What systems can support now or with minimal effort
- Standards based

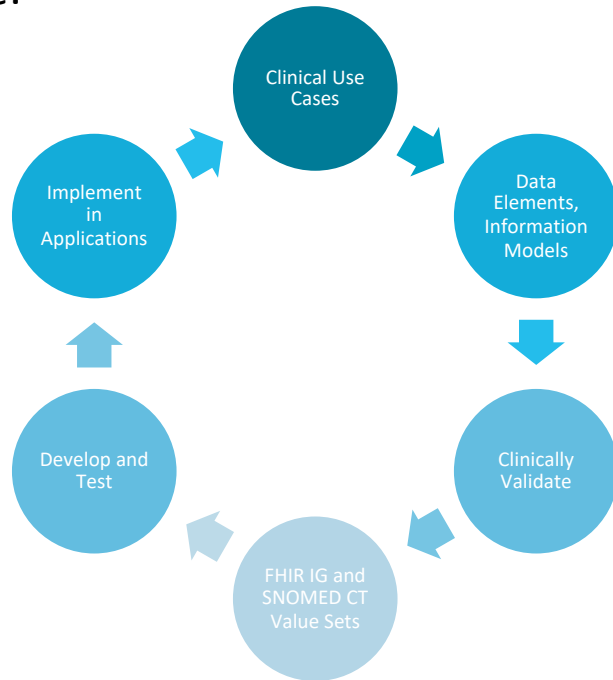


Staged approach

	Existing Specifications	Harmonised Content	Primary Care Data Dictionary	FHIR Implementation Guide
Artefact				
Purpose	<p><i>Primary Care, Standards Data Specifications, Data Sets, KPIs, Assessments, FHIR, OpenEHR</i></p> <p>Identification of all the existing specifications in Primary Care that would inform the development of the core data requirements.</p>	<p><i>Harmonised clinical data items and identification of core common items</i></p> <p>Candidate core data elements which are common to multiple existing specifications, that enable structured data recording and data reuse.</p>	<p><i>Primary care clinical information model</i></p> <p>Release 1 of the Data Dictionary defines the core common data elements to enable quality use of information as well as enable the safe and meaningful exchange of information to other care providers. The Dictionary includes: meta data, definitions and recommended terminology bindings</p> <p><i>Enter once, multiple use and interoperable exchange and reuse</i></p> <p>Community, consensus based development process with multidisciplinary clinical content and technical working groups.</p>	<p><i>FHIR IG- Primary Care Au Practice to Practice Record Exchange</i></p> <p>An industry agreed specification, informed by the Primary Care Data Dictionary Core Common Model for the exchange of an individuals record when they request a transfer of their records from their current practice to a new practice.</p>
Development/Review	<p>Initial meeting of stakeholders to identify all potential data inputs, use cases and priorities for the projects.</p> <p>Community established with clinical and technical working groups.</p> <p>Use case agreed- reusable core data set, associated SNOMED CT Value Sets and a FHIR IG to exchange.</p>	<p>Clinical Content and Technical Working Groups consensus on the core data items to be defined and included in a data dictionary and identification of the first use cases to exchange these core data items.</p> <p>Outputs progressively developed and iterated through a series of face to face workshops (4) and webconferences (5)</p>	<p>Endorsement proposed to be progressed through clinical colleges and professional groups.</p>	<p>FHIR IG profiles based on the HL7au Base resources, progressively developed and tested through a Community process.</p> <p>Endorsement proposed to be progressed through HL7au</p>

The **core principles** for the approach to **delivery** include:

1. Community approach
2. Open and transparent
3. Consensus driven
4. Agile and iterative





Identification, Harmonisation and Prioritisation

Clinical 5

Complete	HIGH	MEDIUM	LOW
Encounters Administrations Administration Code Dose Route Not given Reason not given	Encounters Administrations	LMP Date Pregnancy Appointment date	Administrations Administration Code Dose Route Not given Reason not given
Antenatal Gestational Calculated size Appointment date Third party Information given Comprehension concerns	Antenatal	Antenatal Appointment date	Antenatal Third party Information given Comprehension concerns
Referrals Referral Reason Patient reason	Referrals	Referrals Referral Reason	Referrals

Clinical 7

Complete	HIGH	MEDIUM	LOW
Encounters Plans Service requested Patient Agree	Encounters Plans	Encounters Plans	Encounters Plans
Legal Consent for treatment Consent for third party	Legal	Legal	Legal
Assessments Cardiovascular risk Audit C assessment Assessment date Audit C how often Audit C 5d drinks/day Audit C <6 drinks/day Mental capacity assessment	Assessments	Assessments Cardiovascular risk Audit C assessment Assessment date Audit C how often Audit C 5d drinks/day Audit <6 drinks/day Mental capacity assessment	Assessments



Investigations
Pathology
Code
Value
Date
Imaging

Clinical 9

MEDIUM	LOW
Encounters Immunisations Immunisation	Encounters Immunisations Immunisation
Sequence In due Other medicines	Diseases Excluded Other medicines
Complimentary/OTC Implanted devices Pregnancies Pregnancy LMP EDD Delivery date Birth outcome Finish	Not prescribed by this Practice Exclusion Implanted devices Id Pregnancies Pregnancy LMP EDD Delivery date Birth outcome Finish

Clinical

Complete	HIGH	MEDIUM	LOW
Encounters Measures Height Weight BMI BP systolic diastolic position Waist Heart Respiratory Body PulseOx Head	Encounters Measures Height Weight BP systolic diastolic position	Measures	Encounters Measures
			Waist Heart Respiratory Body PulseOx Head



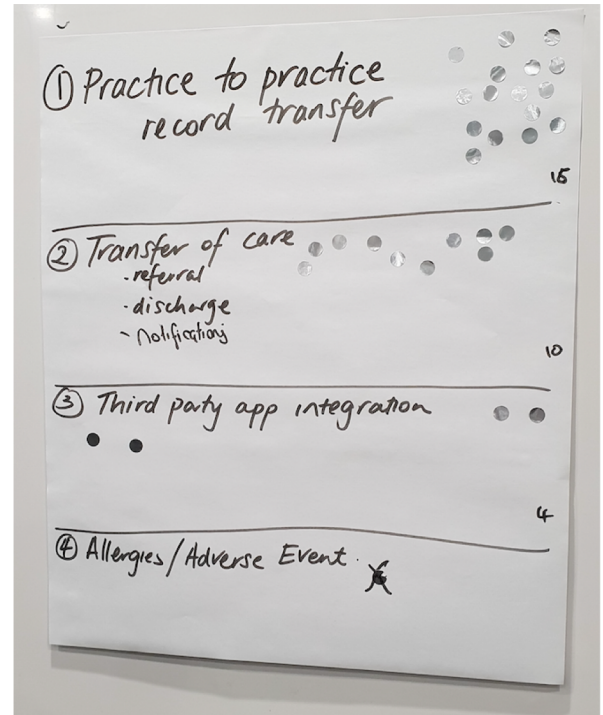
Use Cases

Agreed Project Scope

- Practice to Practice Record Transfer
- Continuity of Care (Primary to Acute to Primary)
- Third party app integration

Project delivery

- Agreed process to develop and validate the Information Model and FHIR Implementation Guide
- Connectathons – test the IM and FHIR IG





Consensus- Common Data Dictionary

- Starting point- Common Data Set to support practice to practice record transfer, and transfer of care
- At its core is the RACGP Local Clinical Record, KPIs, referral and the MyHR Shared Health Record Specifications
- Data Dictionary document defines each item, includes the valid value sets which support each item. Documents the various names that are used within existing GP software.
- SNOMED CT Primary Care Value sets developed to support the data dictionary.



Who is part of the Community?



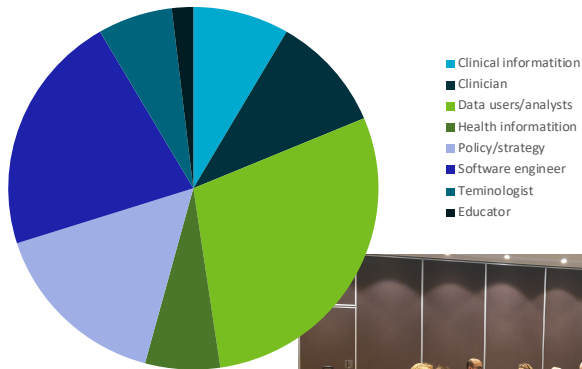
Over 70 members in the CWG

- 5 teleconferences and 4 face to face meetings

Over 70 members in the TWG

- 4 teleconferences and 4 face to face meetings

Category of attendees occupations





The Data Model

Where we landed for Release 1

Core principle- ***enter once, maintain and re-use often***

- Clinically useful to receiving clinician
- Supports safe transfer of care
- Systems can or with minimum effort provide functionality

57 data elements

- 40 codeable with SNOMED CT and other Value Sets
- Comments allowed
- Free text can be supported
- Support most use cases

Some pragmatic decisions for now given system capability

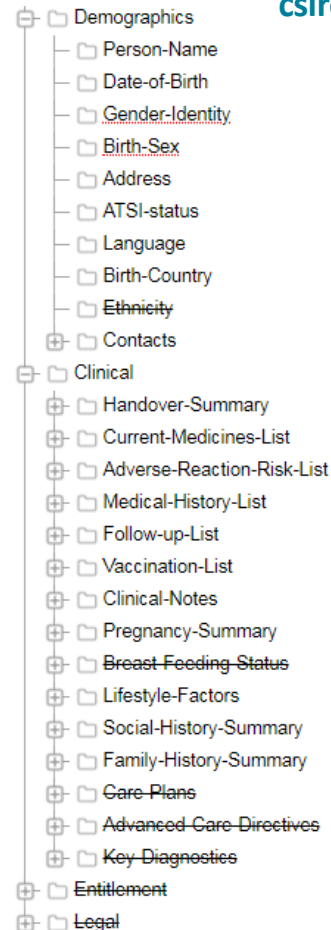
Some issues reserved for Release 2

Outstanding content considerations:

Sex, Gender, Birth Country and Ethnicity

Additional implementation considerations:

Medico-legal, digital consent and workflow.





Value Sets and Bindings

Structured coded data; free text discouraged



SNOMED and FHIR



ValueSets developed for:

- Diagnoses
- Procedures
- Reason for Encounter
- Medications
- Adverse Reactions... etc

Required bindings ensure that data is valid

- Dx are entered in Dx
- Px are entered in Px
- Rx are entered in Rx
- Hx is entered in Hx

Non valid entries are prevented

Data structures are predictable, uniform

Is machine processable

Can send and receive with minimal curation

Preserves semantics



In parallel -Education and Change

1. Aboriginal and/or Torres Strait Islander status
2. Allergies and adverse reactions
3. Medications & Reason for Medication
4. Reason for Encounter and Diagnosis
5. Immunisations



Training packages available

Training Package:

Train the Trainer/Peak Bodies Presentation Slides

Webinar Presentation Slides (1 hour)

Face to Face Presentation Slides (1 hour)

Teamwork Practice Questionnaire
Draft Quality Improvement Activity (PDSA)
eg raise awareness of clinical coding

1-page Summary Guides

- Best Practice
- MedicalDirector
- Communicare

Training Workbooks

- Best Practice
- MedicalDirector
- Communicare

Videos

- Best Practice
- MedicalDirector
- Communicare

Multi-modal options

designed with you,
designed for you!





112 Training Resources



BP PREMIER

Module 1 - Extra page of learning links - Adding Aboriginal and Torres Strait Islander status - BP PREMIER - Train IT Medical .pdf
Module 1 - Key reasons to code Aboriginal and Torres Strait Islander status - BP PREMIER - Train IT Medical .JPG
Module 1 - Summary Sheet - Adding Aboriginal and Torres Strait Islander status - BP PREMIER - Train IT Medical .docx
Module 1 - Video - Adding Aboriginal and Torres Strait Islander status - BP PREMIER - Train IT Medical .mp4
Module 1 - Video Script - Adding Aboriginal and Torres Strait Islander Status - BP PREMIER - Train IT Medical .docx
Module 2 - Key reasons to code Allergies and Adverse Reactions - BP PREMIER - Train IT Medical .JPG
Module 2 - Summary Sheet - Allergies and Adverse Reactions - BP PREMIER - Train IT Medical .docx
Module 2 - Video - Allergies and Adverse Reactions - BP PREMIER - Train IT Medical .mp4
Module 2 - Video Script - Allergies and Adverse Reactions - BP PREMIER - Train IT Medical .docx
Module 3 - Key reasons to code diagnoses - BP PREMIER - Train IT Medical .JPG
Module 3 - Summary Sheet - Diagnosis Coding - BP PREMIER - Train IT Medical .docx
Module 3 - Video - Diagnosis coding - BP PREMIER - Train IT Medical .mp4
Module 3 - Video Script - Diagnosis coding - BP PREMIER - Train IT Medical .docx
Module 4 - Key reasons to code a Medication and Reason for Medication - BP PREMIER - Train IT Medical .JPG
Module 4 - Summary Sheet - Medication and Reason for Medication - BP PREMIER - Train IT Medical .docx
Module 4 - Video - Medication and Reason for Medication - BP PREMIER - Train IT Medical .mp4
Module 4 - Video Script - Medication and Reason for Medication - BP PREMIER - Train IT Medical .docx
Module 5 - Key reasons why adding an immunisation is important - BP PREMIER - Train IT Medical .JPG
Module 5 - Summary Sheet - Adding an Immunisation - BP PREMIER - Train IT Medical .docx
Module 5 - Video - Adding an Immunisation - BP PREMIER - Train IT Medical .mp4
Module 5 - Video script - Adding an Immunisation - BP PREMIER - Train IT Medical .docx
Summary Sheet - Configuration Options - BP PREMIER - Train IT Medical .docx
Summary Sheet - Reason for visit - BP PREMIER - Train IT Medical .docx
Bp Premier Learning Workbook - Standardised data coding - unbranded - Train IT Medical v2.docx

Stored for you on 'Confluence'
<https://confluence.csiro.au>



Quality Improvement (PDSA) samples



Activity – Use this blank PDSA form to create a customised improvement activity for your practice.

PDSA TEMPLATE WITH SAMPLE IMPROVEMENT ACTIVITY



What is our GOAL (what are we trying to accomplish)	Raise Awareness of Clinical Coding <ul style="list-style-type: none"> ▪ Code diagnoses 			
What measures will we use? (i.e. data)	% of diagnoses in Past Medical History for active patients that are coded			
What ideas can we use? (how are we going to achieve our goal)	<u>List ideas here to work on in table below</u> <ul style="list-style-type: none"> • Team meeting to discuss the issue, benefits & how to address • Attend education e.g. webinars / face to face sessions • Post-education follow-up team discussion • GP & RN team review of clinical documentation • Use of Diagnosis coder to merge uncoded with coded diagnosis • Pen CAT / Polar Data Quality Audit of records to measure baseline 			
IDEAS	PLAN How will we do it – who,	DO Did we do it	STUDY What	ACT What is our





Train IT Medical
Competence with Confidence

Bp Premier

Adding a coded diagnosis

(using Best Practice Clinical software)

An educational learning video by:
Katrina Otto
Train IT Medical Pty Ltd
www.trainitmedical.com.au
katrina@trainitmedical.com.au
Designed in collaboration.

This Primary Care Data Quality Education Project is designed to improve patients' electronic health records in primary health care services and received funding from the Australian Government: Department of Health.

00:04 | 04:25

Complete and continue

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Competence with Confidence

Adding a coded diagnosis

(using Best Practice Clinical software)

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MODULE 1 - ADDING ABORIGINAL & TORRES STRAIT ISLAND...
Video - Adding Aboriginal and Torres Strait Island...
Video + closed captions: Adding Aboriginal and/or...
Summary Sheet - Adding Aboriginal and Torres Stra...
Module 1 - Key reasons to code Aboriginal and Tor...
Extra learning resources & links to further learni...
MODULE 2 - ADDING ALLERGIES & ADVERSE REACTIONS IN...
Module 2 - Video - Allergies and Adverse Reactions
Module 2 - Key reasons to code Allergies and Adver...
Module 2 - Summary Sheet - Allergies and Adverse R...
MODULE 3 - ADDING A DIAGNOSIS (PAST HISTORY) IN ME...
Module 3 - Video - Adding a coded diagnosis
Module 3 - Key reasons to code a diagnosis
Module 3 - Summary Sheet - Adding a coded diagnosi...
MODULE 4 - ADDING MEDICATION & REASON FOR MEDICATI...
Module 4 - Video - Medication and Reason for Medic...
Module 4 - Key reasons to code a reason for medica...



MedicalDirector

The screenshot shows the MedicalDirector website homepage. At the top, there is a navigation bar with the MedicalDirector logo, links for Solutions, Support, and About, and a red 'Contact Us' button. The main content area features a large image of a hand writing on a document with a laptop in the background. The headline reads 'Primary care data quality improvement'. Below this, a sub-headline states 'Maintaining high-quality health records benefits patients, providers and the entire healthcare community.' A small text block below that says 'Discover how good data integrity can help you in your practice by listening to these testimonials from a Registered Nurse, General Practitioner and Practice Manager.' At the bottom, there are three video thumbnails with play buttons, each featuring a different healthcare professional. The names and titles are: Margaret Windsor (Registered Nurse, Cert IV), Dr Charlotte Middleton (General Practitioner, MBBS), and Katrina Otto (Practice Manager, BEd, DipBus). A small red 'Learn more' button is visible in the bottom right corner of the screenshot.

“Guidelines for maintaining high quality data for your active patients.”

[Access via: https://www.medicaldirector.com/PCDQIP](https://www.medicaldirector.com/PCDQIP)



12 Months on – Community Achievements

The Data Model

Common Core - **enter once, use often**
Practice to Practice use case
Reusable components for additional use cases.

Data Dictionary

Summary cheat sheet
Terminology Value Sets, Bindings

FHIR Implementation Guide

AU Base - progress
Worked examples
Connectathons
Reusable components for Phase 2

Education materials

Slide decks
Videos
How-to guides

Supporting materials

Search strategies
Mapping and migration
Dealing with terminology content
Data inputs

Analytics

Using SNOMED encoded data
Other reporting requirements
Starter sets, inferring Dx
Data outputs





Where to next

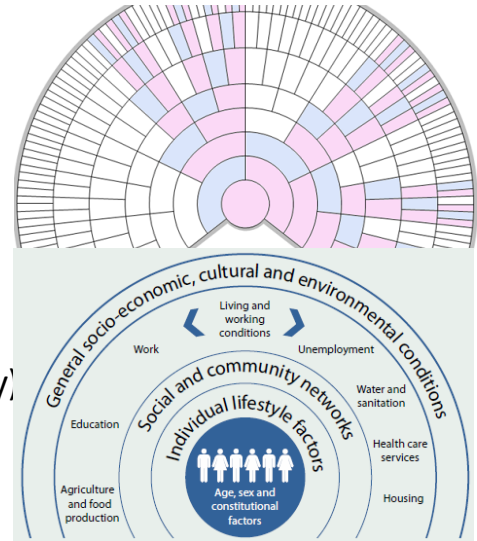
The community is expanding more clinicians, organisations and Vendors joining!

Data Dictionary and Value Sets

- Demographics
- **Clinical**
 - Family history
 - Social determinants (HL7 -International Gravity)
 - Risk factors

Important for

- Identification of risk factors, risk prediction
- Social determinants of health
- Pro-active intervention and care delivery
- Preventive health programs
- Healthcare Assessments



FHIR IG – use cases being discussed with the Community next month



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Thank you