QDM-103: Revisiting Diagnosis Datatypes

- **QDM defines four Condition/Diagnosis/Problem datatypes**
  - Diagnosis, Active
  - Diagnosis, Inactive
  - Diagnosis, Resolved
  - Diagnosis, Family History

- **Issues that should potentially be addressed**
  - **Specificity**: Diagnoses vs. conditions vs. problems vs. symptoms
  - **State**: Problems w/ state representation, ambiguity of *Inactive*
  - **DateTimes**: Datetime attribute definitions don't match intent/practice
  - **Ordinality**: Principal ordinality isn't tied to an encounter

Proposed Approach for Diagnosis

Diagnosis

- onset datetime
- abatement datetime
- ~~ordinality~~
- …

Encounter, Performed

- admission datetime
- discharge datetime
- diagnosis
- principal diagnosis
- …

- **Diagnosis (onset datetime)**: the estimated or actual date/time that the diagnosis/problem began
- **Diagnosis (abatement datetime)**: the estimated or actual date/time that the diagnosis/problem resolved or went into remission
- **Encounter, Performed (diagnosis)**: a diagnosis/problem addressed during the encounter *(code)*
- **Encounter, Performed (principal diagnosis)**: the diagnosis/problem established after study to be chiefly responsible for occasioning the admission of the patient to the hospital for care *(code)*

Proposed Definition: Diagnosis

A *diagnosis* represents a practitioner's identification of a patient's disease, illness, injury, or condition. A practitioner determines the *diagnosis* by means of examination, diagnostic test results, patient history, and/or family history. *Diagnoses* are usually considered unfavorable, but may also represent neutral or favorable conditions that affect a patient's plan of care (e.g., pregnancy).

The QDM does not prescribe the source of *diagnosis* data in the EHR. *Diagnoses* may be found in a patient's problem list, encounter diagnosis list, claims data, or other sources within the EHR. The preferred terminology for diagnoses is SNOMED-CT, but diagnoses may also be encoded using ICD-9/10.

The *Diagnosis* datatype should not be used for *differential diagnoses* or *rule-out diagnoses* (neither of which are currently supported by the QDM).

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Why One Data Type?

- **Distinction between *Problem* and *Diagnosis* is unclear**
  - Best distinguishing factors are *source of data* and *code system*
    - *Problems* come from *problem list* and use *SNOMED-CT*
    - *Diagnoses* come from *encounter diagnosis list* and use *ICD-9/10*

- **Distinguishing factors go *against* the goals of QDM and eCQM**
  - QDM and eCQMs should be *source-agnostic*
    - authors shouldn't care where the data is stored in the EHR
    - EHR data organization / sources may change over time
  - QDM and eCQMs should prefer *clinical* (not administrative) data
    - ICD-9/10 is focused on administrative/billing domain
    - Diagnoses may use ICD-9/10 today, but trend is toward SNOMED-CT

- **It is unclear what problem is actually solved by separate data types**

Why One Data Type?

- **Separate datatypes complicate source-agnostic measures**
  - Requires two parallel data elements: *Diagnosis* and *Problem*
  - Requires two parallel value sets: *ICD-9/10* and *SNOMED-CT*

- **Continuing with a single representation is less disruptive**
  - Authors and implementers are familiar with this model
    - They already understand its challenges (and know how to accommodate)
  - Less significant impact on existing measures and implementations

- **Other communities affirm the notion of a single representation**
  - FHIR / Patient Care community has *one* resource: *Condition*
  - OpenEHR CKM community has *one* archetype: *Problem/Diagnosis*
  - Clinicians often treat problem and diagnosis interchangeably

Current and Proposed Examples

- **Active Diabetes overlaps Measurement Period (CMS 122)**
  - **Current**
    - "Diagnosis, Active: Diabetes" overlaps "Measurement Period"
  - **Proposed**
    - "Diagnosis: Diabetes" overlaps "Measurement Period"

- **Resolved Myocardial Infarction (CMS 145)**
  - **Current**
    - "Diagnosis, Resolved: Myocardial Infarction" starts before or during "Encounter, Performed: Office Visit"
  - **Proposed**
    - "Diagnosis: Myocardial Infarction" ends before "Encounter, Performed: Office Visit"

Current and Proposed Examples

- **Any Cancer Before Or During the Measurement Period (CMS 166)**
  - **Current**
    - Union of
      - "Diagnosis, Active: All Cancer"
      - "Diagnosis, Inactive: All Cancer"
      - "Diagnosis, Resolved: All Cancer"
    - starts before or during "Measurement Period"
  - **Proposed**
    - "Diagnosis: All Cancer" starts before or during "Measurement Period"

- **Encounter-based Principal Diagnosis (CMS 26)**
  - **Current**
    - "Diagnosis, Active: Asthma (ordinality: Principal)" starts during "Encounter, Performed: Inpatient"
  - **Proposed**
    - "Encounter, Performed: Inpatient (principal diagnosis: Asthma)"

Current VTE6 IPP Example (CMS 114)

- AND: "Occurrence A of Encounter, Performed: Encounter Inpatient" satisfies all
  – (length of stay <= 120 day(s))"
  – ends during "Measurement Period"
- AND:
  – AND NOT:
    - Union of:
      - "Diagnosis, Active: Venous Thromboembolism (ordinality: 'Principal')"
      - "Diagnosis, Active: Obstetrics VTE (ordinality: 'Principal')"
    - starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"
  – AND:
    - Union of
      - "Diagnosis, Active: Venous Thromboembolism"
      - "Diagnosis, Active: Obstetrics VTE"
    - starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"

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Proposed VTE6 IPP Example (CMS 114)

- AND: "Occurrence A of Encounter, Performed: Encounter Inpatient" satisfies all
  - (length of stay <= 120 day(s))"
  - ends during "Measurement Period"

- AND NOT: "Occurrence A of Encounter, Performed: Encounter Inpatient" satisfies any
  - (principal diagnosis: Venous Thromboembolism)
  - (principal diagnosis: Obstetrics VTE)

- AND:
  - Union of
    - "Diagnosis, Active: Venous Thromboembolism"
    - "Diagnosis, Active: Obstetrics VTE"
  - starts during "Occurrence A of Encounter, Performed: Encounter Inpatient"

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Summary of Changes

- **Changes to *Diagnosis* data types**
  - Consolidate *Diagnosis Active/Inactive/Resolved* to *Diagnosis*
    - Presence of *abatement datetime* indicates status
    - Separate *Inactive* status is no longer available
  - Remove *ordinality* attribute
  - Replace *start datetime* attribute with *onset datetime*
  - Replace *stop datetime* attribute with *abatement datetime*
  - Provide clear definitions of data type and attributes

- **Changes to *Encounter, Performed* data type**
  - Add *diagnosis* attribute (coded value)
  - Add *principal diagnosis* attribute (coded value)
  - Provide clear definitions of new attributes

Backup

Current Diagnosis Datatypes

Table 6. Condition/Diagnosis/Problem Datatypes and Attributes

Datatype	Definition	Attributes
Diagnosis, Active	To meet criteria using this datatype, the diagnosis indicated by the Condition/Diagnosis/Problem QDM category and its corresponding value set should reflect documentation of an active diagnosis. Keep in mind that when this datatype is used with timing relationships, the criterion is looking for an active diagnosis for the time frame indicated by the timing relationships.	• Anatomical Location Site • Laterality • Negation Rationale • Ordinality • Patient Preference • Provider Preference • Severity • Start Datetime • Stop Datetime
Diagnosis, Inactive	To meet criteria using this datatype, the diagnosis indicated by the Condition/Diagnosis/Problem QDM category and its corresponding value set should reflect documentation of an inactive diagnosis. Keep in mind that when this datatype is used with timing relationships, the criterion is looking for an inactive diagnosis for the time frame indicated by the timing relationships.	• Anatomical Location Site • Negation Rationale • Ordinality • Patient Preference • Provider Preference • Severity • Start Datetime • Stop Datetime
Diagnosis, Resolved	To meet criteria using this datatype, the diagnosis indicated by the QDM category Condition/Diagnosis/Problem and its corresponding value set should reflect documentation of a resolved diagnosis. Keep in mind that when this datatype is used with timing relationships, the criterion is looking for a resolved diagnosis for the time frame indicated by the timing relationships.	• Anatomical Location Site • Negation Rationale • Ordinality • Patient Preference • Provider Preference • Severity • Start Datetime • Stop Datetime

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