C-CDA Scorecard Rubrics

General Dates

- Document uses sensible date time precision.
  - C-CDA's date times should use ISO8601 strings to express appropriate precision.
- Correct use of time zone offsets from GMT.
  - Ensure offsets in US are –nn and not +nn syntax
- Validate the date / time values, YYYY within human lifespans, dates as valid dates and times as valid times.

Physical Quantities

- Physical units are valid UCUM expressions.
  - Any time a physical unit is used, it should be a valid UCUM expression.
  - This should take into account proper case for the characters.
- 10 Powers use one of these two syntax
  - Validate syntax, inclusive of preferred power syntax (ex. 10^3 or 10*3)
- UCUM codes used for given LIONC codes, match recommended units.
  - Propose that for at least the 2000 most common LOINC codes in use, that a preferred UCUM units code be defined and validated against.

General Codes

- SNOMED CT, LOINC, RxNorm, ICD9 and ICD10 codes validate against UMLS
  - Codes that claim to be from SNOMED CT, LOINC, and RxNorm should be present in UMLS 2014AA.
- SNOMED CT, LOINC, RxNorm, ICD9 and ICD10 codes match their displayName
  - Codes in a C-CDA should assign a valid @displayName that reflects the meaning of the underlying concept. A best practice is to use preferred labels from UMLS.
- Document uses official C-CDA templateIds whenever possible
  - C-CDA's prescribed templateIds should be used whenever possible. Additional templateId elements are allowed, but official C-CDA templateIds should always be present when they apply.

Vitals Codes

- Vitals are represented using structured entries
  - Vitals in C-CDA should be represented with individual structured entries corresponding to BP, Heart Rate, BMI, etc.
- Vitals are expressed with LOINC codes
  - Vitals in C-CDA should be coded with LOINC. Specifically, with codes from the HITSP Vital Sign Result value set.
- Vitals are expressed with UCUM units
  - Vitals in C-CDA should be represented with physical quantities that have appropriate UCUM codes. From C-CDA guide the recommended UCUM units.

- Best practices for Organizer need to be followed.
  - Appropriate Effective date (low/high) for contents
- Observations found in vitals signs should be those recommended.
  - Ensure that only recommended vitals are found and that results and other observations are placed in more appropriate sections.

Social History

- Smoking Status Observations have the correct template ID
  - Smoking status observations should have template ID 2.16.840.1.113883.10.20.22.4.78
- Structured Smoking Status Observations use correct SNOMED CT Codes
  - Smoking Status observations should be coded according to an explicit list of eight SNOMED CT Codes.
- Only structured Smoking Status Observations are used
  - Smoking status should be recorded in a discrete 'smoking status observation', not in the more generic, less-computable 'social history observation‘.

Problems & Problem Codes

- Problem statuses are internally consistent
  - Each concern act can contain more than 1 problem. If there is a status attached to the concern act as well as the problem, these should not contradict. A concern status of 'completed' is compatible with a problem status of 'Resolved' or 'Inactive'. A concern status of 'active' is compatible with a problem status of 'Active'.
  - Concern act.status of completed or suspended, shall have a problem concern act.effective time high
  - A Concern act.active shall not have an act.effective time high
  - (repeat the above for Observation class, if this can be done given the status value in the depreciated Problem status observation value set)
- Problems coded with CORE Subset of SNOMED
  - Each problem in the problem list should be coded with a SNOMED code from the CORE Subset of SNOMED.

Medications / Immunizations Codes

- Medications coded with RxNorm SCD, SBD, GPCK, or BPCPK codes
  - C-CDA medication lists should contain medications coded as RxNorm Semantic Clinical Drugs, Semantic Branded Drugs, and packs. This means prescribable products on the level of 'loratadine 10mg oral tablet'.
- Immunizations should be in the immunizations section and not medication section.
- Immunizations coded with CVX codes

Lab Results Codes

- Lab Results coded with LOINC's top 2K codes.
  - Lab results should be coded using LOINC. In practice LOINC is huge, but 2000 codes cover 98% of real-world usage. This means that most results should be covered by the 2000+ most common LOINC codes published by Regenstrief.

Allergy Coding

- Allergy codes should come from a common limited set of codes Allergies.
  - Need a defined limited subset of allergy codes, that are recommend for clinical documentation.

Entries links to Narrative

- For each entry, get points for linking the entry to the related narrative text.
- You should loose a lot of points if you are not valid to the CDA R2 Schema.

Entry / Author Reference

- That a entry reference made in the document can be mapped to the destination class with the same ID.
- Every author reference should point to an instance of the author fully specified with the same assignedAuthor ID in the document.

Procedures / Results

- Can any additional rules can be established which validate what go into procedure section, what goes into result section?
- C-CDA indicates that Procedure Section contains contents are broader than the RIM concept of procedure.
- C-CDA indicates that Results Section contains only observations.
- No specific rubrics identified.

Unique Instance Identifiers

- Generally, the identifiers found within a CDA document should be unique and non-reoccurring within the same document.
- Exceptions are where the Encompassing Encounter in the header is identified in the Encounter Section, then the same encounter id should be expressed.
- Exceptions are where devices implanted, are maybe identified in two locations, the Procedure Section and the Medical Devices Section.

References

- UCUM: Table of Example Codes (Update 2014):
  - https://loinc.org/usage/units (you should be able to download pdf & excel file from this site, no login required)
  - This pertains to the discussion of which code might be preferred when multiple are available (e.g. “10*3” over “10+3” or “10^3”)

- Top 2,000 LOINC codes (Update 2015):
  - https://loinc.org/usage/obs (you will need to login to LOINC site for these)

- CORE Subset of SNOMED (Update 2016):
  - https://www.nlm.nih.gov/research/umls/Snomed/core_subset.html (you will need UMLS login for these)

- While the above list appears to be maintained by UMLS & IHTSDO, here’s the original article from when the work was done to establish the subset (published in JAMIA 2010): http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3000762/ (free publication on PubMed, no login required)

- The participating organizations:
  - Kaiser Permanente
  - Mayo Clinic
  - Intermountain Healthcare
  - Regenstrief Institute
  - University of Nebraska Medical Center
  - Hong Kong Hospital Authority