Problem Oriented Health Record (POHR) Standards Development

HL7 Electronic Health Record Work Group — POHR Project
Working Group Meeting
Monday, 19 September 2022
POHR Functional Requirements

• Initial PLM phase based on Functional Categories
  • Starting point: EHR-S Functional Model (FM), Care Provision (CP) Conformance Criteria (CCs) #1-26 — POHR FP adds CCs #100-139
    • Limited clarifying changes made per balloting comments
    • Examples of PLM standards — see slide 5
  • Initial PLM FP to be published as “informative” document, subject to change by later project phases

• Currently developing various POHR Use Cases, as basis for data requirements, FHIR mapping, and further functional categories
  • Use cases illustrate vital POHR functions in addition to PLM. For more detail, see slides 6 and following below.
POHR Data Requirements and FHIR

- Initial mapping to FHIR Resources/Elements (compare USCDI)
  - Started with Problem List Management
  - Examine Compatible Elements (e.g. FHIR "Condition" Resource...)
  - Identify Disparate and Missing Elements
  - Collaborate with Patient Care Work Group to Add/Refine Elements
  - Create FHIR Resource Profile(s) and Extension(s), as appropriate
  - Create FHIR POHR Implementation Guides/White Papers
- Revisit FP, Refine/Expand PLM Functions/Conformance Criteria
- Continue with Data Requirements - other Vital POHR Functions
POHR Guidance — to be developed

• Considerations, Recommendations, Best Practices:
  • POHR background: evolution from problem-oriented record to system
  • Guidance for POHR Software Designers, Developers, Implementers
  • Guidance for POHR Primary End Users = Clinicians, Patients
  • Guidance for developers and users, intended to help optimize POHR design and actual use for patient care. Optimal use in real-world care improves POHRs for secondary uses outside patient care (e.g., research, quality improvement, regulation, public health, admin, economic analysis)

• Guidance = White Paper – Developed, Reviewed and Approved
  • By EHR Work Group OR
  • Via Full HL7 Consensus Ballot
HL7 EHR Work Group

POHR FP PLM Standards - examples

• Types of Conformance Criteria in POHR FP (CCs # 100-139)
  • Modes/sources for problem entry; user roles in problem entry
  • Terminologies for problem entry and display
  • PL clean-up, e.g. for duplicate problems, updating status; duration or recurrence thresholds for changing status
  • Defining problems in terms of evidentiary basis, goals, status, disability
  • Sorting and displaying problems, e.g. by specialty/organ system, by priorities of individual users, by date of last edit
  • Linkage of problems, e.g. root problem and manifestations (see also EHR-S FM CCs re linking problems to encounters, meds, orders, etc.)
  • Specifying problems relevant to current inpatient hospitalization and managing unified PL across care settings; reconciliation at discharge
Use cases specify the following basic elements:

- Actor and actor role in a use case (event)
- Data requirements (inputs and outputs with respect to data/records). Concept is that outputs from one event become inputs to next event
- Actions supported by EHR system functions, other system functions
- Corresponding EHR-S FM Functions and POHR Conformance Criteria
- FHIR category correspondences (including discrepancies and gaps)

Initial use case: New patient and new POHR; establish preliminary PL, and refine/expand it into complete PL of defined problems. This event is broken down into sequential sub-events:

- 1A: collect new patient’s prior medical records for curation into new POHR
- 1B: construct preliminary PL per initial encounter and prior record review
- 1C: refine/expand preliminary PL into complete list of defined problems
• Susan Q Public, age 25, has moved from Portland, Maine to Wilmington, Delaware, in order to live near her elderly parents. She does not have records from her former doctors in Maine and now wants to find a new primary care practitioner (PCP) in Delaware. But her immediate health concern is a recent flare-up of long-standing problems with pelvic pain, abdominal pain, and gastrointestinal symptoms. (These problems are suggested by an AHRQ WebM&M Case Study at https://psnet.ahrq.gov/web-mm/endometriosis-common-and-commonly-missed-and-delayed-diagnosis.) Unable to get a prompt appointment with a local PCP, she goes to the nearest hospital emergency department (ED).

• An ED physician does a brief history of present illness (HPI) and a limited physical exam, without ordering lab tests or imaging. From that limited data, he arrives at an initial "working" diagnosis of irritable bowel syndrome (IBS). Determining that an inpatient admission is not necessary, the ED physician discharges her with an opioid prescription for pain relief. A hospital social worker helps her arrange an appointment at a local multi-specialty group practice (GP clinic) for a month later, and transmits the ED discharge summary to the GP clinic as a PDF. The discharge summary states the IBS working diagnosis but does not state the ED physician's specific observations and findings, whether positive, negative, or uncertain. Only some of these are recorded by the ED physician in the hospital EHR encounter note.

• At the GP clinic appointment a month later, the patient meets with her new PCP for 20 min. and provides contact information for the last doctor she saw in Maine. The GP clinic office staff subsequently contacts her last doctor in Maine and the Maine HIE, seeking copies of whatever paper and electronic records are available from the various doctors she had seen in Maine. Those encounters occurred during a ten year period in which she had been experiencing the chief complaint symptoms of concern.

• The PCP reviews the ED discharge summary, skims the incomplete prior records received as of the appointment, collects HPI and physical exam data, and orders some basic lab tests and imaging, for purposes of investigating the chief complaint (to the extent time permits during the 20 min. appointment). He asks the staff to schedule a follow-up appointment, at which the PCP hopes to be able to fully review the patient's prior records, review the lab test and imaging results, do a complete screening and health assessment, further investigate the chief complaint, develop a complete PL, and formulate care plans and/or referrals for all identified problems.

• That night, the PCP writes an encounter SOAP note that includes, as part of the assessment, a preliminary PL as follows: (1) IBS, recorded as the encounter diagnosis for billing purposes, (2) abdominal pain, and (3) gastrointestinal symptoms. In his assessment, the PCP expresses uncertainty as to whether problems (2) and (3) should be combined with (1) as manifestations of the IBS diagnosis. The encounter note selectively records data from the HPI and physical exam. Like the earlier ED discharge summary, the encounter note does not state all of the PCP's observations, whether positive, negative, or uncertain. The note also does not make clear whether the PCP regards the IBS diagnosis as confirmed (rather than provisional) and thus as a basis for a treatment care plan (which he defers until the next appointment).
POHR FP — Summary Analysis of Initial Use Case

• Importance of identifying/defining all problems carefully at the outset
  • When this 15-year-old girl was first seen for menstrual pain and bleeding, her clinicians jumped to a conclusion (premature closure). They diagnosed “primary dysmenorrhea,” failing to recognize:
    • Two distinct problems (cramps and bleeding) required investigation
    • Primary dysmenorrhea is a diagnosis of exclusion, requiring rule-outs of alternatives
    • Several important alternative diagnoses should first have been investigated, even more so after the first attempt at therapy failed to bring improvement
  • When a new problem (GI symptoms) later appeared, again the clinicians prematurely closed on a diagnostic hypothesis, as if it had been confirmed.
  • Years more of suffering and futile care elapsed until the correct diagnosis was made (endometriosis), and that happened only when revealed by an appendectomy.
  • This case became a 12-year diagnostic odyssey of suffering (and expense), much of which could have been avoided had problem-oriented care occurred at the outset.
POHR FP — Further Use Cases/Topics

- Problem-oriented management of highly complex cases involving multiple problems and multiple clinicians, potentially until end of life
- Linkage of record entries to problems on problem list – manual and automated alternatives
- Care planning: specific data categories for problem-oriented approach
- Progress notes
  - Subjective/symptomatic (S) and objective/other components - relationship
  - SOAP notes and APSO alternative sequence
  - Assessment component of SOAP notes
  - Flowsheets (using spreadsheet capabilities for presenting quantitative and other data in tabular form for one or more problems)
  - When to write progress notes – setting priorities and clinician burden
• Problem orientation in relation to FHIR
• Problem orientation in relation to USCDI
• Health maintenance activities in POHR
• Patient involvement — central to problem-orientation
• CDS – central to true problem-orientation; new medium for practice guidelines
• Implications beyond individual patient care, e.g. research, public health, population-based vs. individualized medical knowledge
# HL7 EHR Work Group

## POHR Integration Path w/Collaborations

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<thead>
<tr>
<th>Selected Areas of Potential Integration (Primary Uses in Patient Care)</th>
<th>Key HL7 Work Group Collaborators</th>
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<tbody>
<tr>
<td>Problem List Management – Problem Definition</td>
<td>Patient Care (PCWG)</td>
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<tr>
<td>Linkage of PL to Other Record Entries</td>
<td>PCWG, Orders+Observations</td>
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<td>Care Plans/Planning Coordination of Care</td>
<td>PCWG/Care Plan DAM, Multiple Chron Condit. Human and Social Services WG Patient Empowerment WG</td>
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<td>Medications List and Reconciliation; other List Management (Immunizations, Allergies, etc.)</td>
<td>PCWG, Pharmacy WG, EHR WG Med Reconciliation Project</td>
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<td>Orders and Results, Referrals</td>
<td>Orders+Observations</td>
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<td>Clinical Decision Support</td>
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<td>FHIR (upcoming Rel. 5 proposals)</td>
<td>Patient Care, FHIR Infrastructure</td>
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<tr>
<td>Clinical Documentation</td>
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POHR Project Standards Development
## HL7 EHR Work Group

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<td>Quality Measurement and Reporting</td>
<td>Clinical Quality Information</td>
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<td>Billing, Claims, Finance</td>
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9 May 2022