Opportunities and Challenges for Using Digital Health Applications in Oncology: A Virtual Workshop
July 13-14, 2020

mCODE™
Minimal Common Oncology Data Elements

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Definition: Learning Health System

“An integrated health system which harnesses the power of data and analytics to learn from every patient and feed the knowledge of what works best back to clinicians, health professionals, patients and other stakeholders to create cycles of continuous improvement.”

Friedman CP et al, 2010; Sci Trans Med 2:57
# Tobacco Use Assessment

![ASCO CancerLinQ](Image)

<table>
<thead>
<tr>
<th>Value</th>
<th>Distinct Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-smoker</td>
<td>560,281</td>
</tr>
<tr>
<td>Never smoked tobacco</td>
<td>462,842</td>
</tr>
<tr>
<td>Ex-smoker</td>
<td>373,431</td>
</tr>
<tr>
<td>Current smoker</td>
<td>121,186</td>
</tr>
<tr>
<td>Unknown tobacco consumption</td>
<td>83,550</td>
</tr>
<tr>
<td>Smokes tobacco daily</td>
<td>81,250</td>
</tr>
<tr>
<td>Occasional tobacco smoker</td>
<td>22,607</td>
</tr>
<tr>
<td>Heavy smoker</td>
<td>5,898</td>
</tr>
<tr>
<td>Light tobacco smoker</td>
<td>3,478</td>
</tr>
<tr>
<td>Tobacco user</td>
<td>576</td>
</tr>
<tr>
<td>Current tobacco non-user</td>
<td>212</td>
</tr>
<tr>
<td>Chews tobacco</td>
<td>160</td>
</tr>
<tr>
<td>Passive smoker</td>
<td>140</td>
</tr>
<tr>
<td>Smokeless tobacco</td>
<td>96</td>
</tr>
<tr>
<td>Pipe smoker</td>
<td>23</td>
</tr>
</tbody>
</table>

* >15.5 million entries

Subset of **51** different representations

**EMRs:**
- Allscripts
- Epic
- Aria
- Mosaiq
- Centricity
- OncoEMR
- CureMD
- NextGen
STRUCTURED DATA ELEMENTS FROM CURRENT EHRs

**GENERALLY AVAILABLE**
- Diagnosis codes
- Encounter codes
- Infused medications
- Laboratory tests
- Smoking/Pain assessments
- Physical exam values

**SOMETIMES AVAILABLE**
- Staging (group and individual elements)
- Oral medications
- ER/PR/HER2 status
- ECOG performance scores
- Hospice referral

**GENERALLY NOT AVAILABLE**
- Histology
- Genetic tests
- Treatment intent
- Surgery
- Radiation Therapy
- Imaging results
- Disease status (progressing, stable, NED)
Vision: Patient Data Collected Once to Support Many Uses

RESEARCHERS: discovery, efficacy, safety, quality, compliance

DATA AGGREGATORS registries, R&D databases, regulatory reporting, etc.

TECH PROVIDERS/EHRs, REGULATORS, FUNDERS, OTHERS will play crucial roles in certain use cases
Purpose: To develop and maintain standard computable data formats, known as Minimal Common Oncology Data Elements (mCODE), to achieve data interoperability and enable progress in clinical care quality initiatives, clinical research, and healthcare policy development.
...put tools for language growth in the hands of the users

Source: http://build.fhir.org/ig/HL7/fhir-mCODE-ig/branches/master/index.html#Modeling
A New HL7 FHIR Accelerator

A community and platform to accelerate interoperable data modeling and implementation around mCODE, leading to step-change improvements in cancer care and research

http://hl7.org/CodeX
CodeX Community of Practice

A group of health systems and supporting organizations, working together within the CodeX HL7 FHIR Accelerator.

Goal: Develop and share best practices for implementing mCODE and extensions into production EHRs and other systems.

Latest developments on mCODE, CodeX, and cancer data exchange

Develop and share best practices for clinical workflows, data modeling, and exchange

Ask questions and learn from the experience of other community members

Organizations participating in the CoP to date include:
- Alliance for Clinical Trials in Oncology
- American Society of Clinical Oncology
- ASTRO
- Brigham and Women’s Hospital
- Cancer Insights
- Center for International Blood & Marrow Transplant Research
- Centers for Disease Control and Prevention
- Cerner
- Dana Farber Cancer Institute
- Duke University Health System
- Elsevier
- Epic
- Foundation Medicine
- Intermountain Medical Center
- JKM Software
- Kaiser Permanente
- MaineHealth
- Mayo Clinic
- Memorial Sloan Kettering Cancer Center
- Trinity Health/Saint Joseph Health System
- Princess Margaret Cancer Center
- Quantum Leap Health Collaborative
- University of California San Francisco Medical Center
- University of Michigan Medicine
- University of Texas Southwestern Medical Center
ICAREdata® Integrating Clinical trials And Real world Endpoints data
How well does mCODE v1.0 cover the data elements required to complete case report forms for Alliance treatment trials?
ICAREdata mCODE to CRF Mapping Process Overview

- CRF – mCODE Mapping
  - CRF-mCODE Gaps
  - mCODE Element Implementation Priority
    - STEAM Team Epic Implementation
      - Epic Playbook
        - Clinical site Epic mCODE Implementation
          - builds community and platform to accelerate interoperable data modeling and implementation around mCODE
          - Run pilots at scale

STEAM = Scalable Technology for EHR Adoption of mCODE
## Growing Community Working across Use Case Projects

<table>
<thead>
<tr>
<th>Use Case</th>
<th>Currently working on project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical Trials Matching</td>
<td>Cancer Action Network™</td>
</tr>
<tr>
<td></td>
<td>TrialScope</td>
</tr>
<tr>
<td></td>
<td>CANCER INSIGHTS</td>
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<tr>
<td>Registries</td>
<td>CIBMTR®</td>
</tr>
<tr>
<td></td>
<td>CDC</td>
</tr>
<tr>
<td>Radiation Oncology Care Coordination</td>
<td>CDC</td>
</tr>
<tr>
<td></td>
<td>ASTRO™</td>
</tr>
<tr>
<td>Clinical Care Pathways</td>
<td>flatiron</td>
</tr>
<tr>
<td>Prior Authorization</td>
<td>BlueCross BlueShield Association</td>
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For more information:

- https://mCODEinitiative.org

- https://confluence.hl7.org/display/COD/CodeX+Home