Maximizing EHR Data for Public Health Reporting

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The Interoperability Dream – Technology that bridges the divide between families, clinicians, communities & public health

• Patient – collect & return useful, timely information
• Provider – prompt best practices, improve work flow
• Care Manager – e-referrals to community resources
• Community – receipt/transfer of patient information
• Reporting - structured data for -
  – Public health reporting
  – Clinical quality improvement
  – Local surveillance
  – Program evaluation
CDC – Public Health Use Cases

- Electronic Case Reporting (eCR)
- Cancer Reporting
- Vital Records (Birth and Death) Reporting
- Value Based Care & Occupational Data
What is Electronic Case Reporting (eCR)?

The automated generation and transmission of case reports from the electronic health record (EHR) to public health agencies for review and action.
Digital Bridge Approach to Electronic Case Reporting (eCR)

- As its first project, the Digital Bridge Collaborative has designed a multi-jurisdictional approach to eCR. In 2017-2018, Digital Bridge is coordinating eCR initial implementations.
  - Implementations based on requirements and architecture approved by the DB Governance Body. Examining legal and sustainability issues.
  - Sites in California, Houston, Kansas, Massachusetts, Michigan, New York City and Utah.
    - Each site has a public health agency, a health care provider organization and an EHR vendor
  - Sites will support 5 conditions initially: pertussis, gonorrhea, chlamydia, salmonellosis and Zika.
  - Uses existing data and technical standards
  - Uses shared infrastructure for receipt, validation, decision support and routing between healthcare and public health agencies (APHL AIMS Platform and CSTE Reportable Conditions Knowledge Management System)
  - Preliminary results are expected early-mid 2018.
Digital Bridge eCR Process

Health Care
- Import/Apply Trigger Codes
- Provide Patient Care
- Match Trigger Codes
- Send Case Report
- Follow-Up Activity
- RCTC
- HL7 eICR
- HL7 RR

Decision Support (AIMS)
- Validate Case Report
- Create Reportability Response
- Send Reportability Response
- RCTC
- HL7 eICR
- HL7 RR

Public Health
- Provide Trigger Codes
- Compare to Reporting Criteria
- Determine Reportability
- Investigate Case
- Receive/Process Case Report
- Create Reportability Response
- Send Reportability Response
- Manual process
- STLT-specific reporting criteria
- Electronic Lab Reporting
- ELRs

RCTC = Reportable Conditions Trigger Codes
HL7 eICR = HL7 Electronic Initial Case Report
HL7 RR = HL7 Reportability Response
AIMS = APHL Informatics Messaging Services Platform
RCKMS = Reportable Conditions Knowledge Management System
STLT = State, Tribal, Local, Territorial
ELRs = Electronic Lab Reports
Cancer Reporting
Central Cancer Registries in the US by Federal Funding Source

- 1992 Cancer Registry Amendment Act, Public Law 102-515, authorized CDC to establish National Program of Cancer Registries (NPCR)

- Nationally reportable disease; required by state law

- Population-based longitudinal data from multiple sources on all diagnosed cancers including diagnosis, treatment and vital status data

- Highly standardized data collection system
Cancer Program Accomplishments

Physician Electronic Health Record (EHR) Reporting:

- IHE Physician Reporting to a Public Health Repository – Cancer Registry (PRPH-Ca), based on HL7 Clinical Document Architecture (CDA)
- Meaningful Use (MU) Cancer Reporting for Eligible Professionals:
  - Stage 2 menu item (2014 implementation)
  - Stage 3 optional item (2018 implementation)
  - Standards (PRPH-Ca and Cancer IG) published in ONC 2014 and 2015 Certification Rules
  - At least 32 state cancer registries receive data from physicians in one of these formats
- eMaRC Plus Physician Reporting Module
  - 35+ states using
  - Processes IHE PRPH-Ca and Cancer IG data
Cancer Program Accomplishments

Electronic Pathology and Biomarker (ePath) Reporting:

• IHE Anatomic Pathology Reporting to Public Health – Cancer Registry (ARPH) profile based on HL7 2 messaging:
  – 46 state cancer registries receive ‘live’ ePath data
  – 25 laboratories reporting to state cancer registries
  – 36+ states use eMaRC Plus ePath Module to receive and process ePath reports

• IHE Structured Data Capture (SDC) Profile to report College of American Pathologists (CAP) Electronic Cancer Checklist (eCC) pathology and biomarker data to cancer registries
  – Implemented in the California Cancer Registry
  – eMaRC Plus SDC Module in development

• HL7 Fast Healthcare Interoperability Resources (FHIR) SDC to report cancer data to state cancer registries
Anatomic Pathology Laboratory
Pathology Report indicates cancer

Primary Care Provider/Specialist
Physician diagnoses cancer

IHE *SDC, IHE ARPH
Pathology Report indicates patient has cancer

State Public Health Agency

IHE PRPH-Ca (XDR)
Physician transmits patient data to Cancer Registry

*CNOTE: IHE SDC and RFD require a Form Manager to maintain a repository of forms

Cancer Registry System
Birth and Death Reporting
National Vital Statistics System

7 million events processed per year

4.0 million birth records per year
3.0 million death records per year
50,000 fetal death records
The Problem

- Vital Events reporting includes demographic, medical, and geographic data derived from birth certificates, death certificates and fetal death reports

- Current process of capturing vital records information is
  - Duplicative
  - Labor-intensive
  - Costly
  - Can be error prone

- Results in issues with timeliness of data submission and the quality and usefulness of these data may be adversely affected
eVital Standards Initiative

Capturing birth and death data in electronic health record systems

Improving the timeliness, accuracy, and completeness of vital records data from provider to Jurisdiction and bi-directional Jurisdiction – National information flows

Electronic exchange using HL7 and IHE-based standards

Standard Metrics
# National Standards for Vital Records Reporting

## Birth and Fetal Death Reporting

<table>
<thead>
<tr>
<th>Standard/Profile</th>
<th>Description</th>
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<tbody>
<tr>
<td>HL7 V2.6 Birth and Fetal Death Reporting (BFDR) IG</td>
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<tr>
<td>HL7 Clinical Document Architecture (CDA) BFDR IG</td>
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<tr>
<td>Integrating the Healthcare Enterprise (IHE) BFDR-E (Enhanced) Content Profile</td>
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## National Standards for Vital Records Reporting

<table>
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<tr>
<th>Death Reporting</th>
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<tr>
<td>HL7 V2.6 Vital Records Death Reporting (VRDR) IG</td>
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<td>HL7 Clinical Document Architecture (CDA) VRDR IG</td>
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<tr>
<td>IHE VRDR Content Profile</td>
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<tr>
<td>Death Fast Healthcare Interoperability Resource (FHIR) Profiles</td>
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[https://www.cdc.gov/nchs/nvss/evital/accessing_evital_standards.htm](https://www.cdc.gov/nchs/nvss/evital/accessing_evital_standards.htm)
Occupational Data Capture and Reporting
Occupational Data for Health (ODH) to Facilitate Improving Worker Health

The majority of adults in the U.S. spend most of their waking hours at work.

- Enhance public health surveillance data
- Provide data to trigger decision support (right person, place, time)
- Facilitate awareness for health events, newly discovered conditions
- Support prevention, diagnosis, management, treatment
Longest Held Occupation
- Could be aggregate of many jobs
- Longest-held industry in relation to longest-held occupation
- No history retained

Retirement
- Defined as “self-identified”
- Only start date
- Not linked to a job entry or usual occupation entry

“Occupational History”
- Current and past jobs

Employment Status
- Employed, Unemployed, or Not-in-Labor-Force
- History retained

Combat Zone or Hazardous Duty Work
- Not limited to military (e.g., DOD contractors)
- Only date ranges
- Not linked to a job or usual occupation entry
Recently updated ODH in the IHE Technical Framework as part of the Healthy Weight Profile

- Coordinated with draft HL7 standards:
  - CDA® R2 Implementation Guide: C-CDA R2.1 Supplemental Templates for Occupational Data for Health, Release 1
  - Fast Healthcare Interoperability Resources (FHIR®) Specification
  - Version 2.9 Messaging Standard (TBD)
Providing Clinical Decision Support Knowledge

American Thoracic Society Documents

An Official American Thoracic Society Statement:
Work-Exacerbated Asthma

American Diabetes Association

DiabetesPro™
Professional Resources Online

Standards of Care

ADA Standards of Care are based on a complete review of the relevant literature by a diverse group of highly trained clinicians and researchers. After weighing the quality of evidence, from rigorous double-blind clinical trials to expert opinion, recommendations are drafted, reviewed, and submitted for approval to the ADA Executive Committee. They are then revised on a regular basis, and subsequently published in Diabetes Care.

Standards of Medical Care in Diabetes

A comprehensive Position Statement covering all components of diabetes care, general treatment goals, and tools to evaluate quality care.

Access the standards: [Link]
Public Health and Interoperability

EHR (examples)

- Patient Management
- Registration
- PPE?
- Images
- EMP
- Lab
- Orders
- Billing
- CDS

Case data: CDA

Future: FHIR?

Public Health Agency

Syndromic surveillance & ELR: HL7 v2 message

Intra- and Inter-EHR: CDA

Lab: HL7 v2 message

Future: FHIR?

Case data: HL7 v2 message

Study data: FHIR?
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