Data Exchange with EHR: Assessing Public Health Projects' Potential for Digital Bridge Partnership

January 21, 2020

AGENDA

Review of Assessment Framework

Overview of Projects

Illustrative Examples

- National Program of Cancer Registries (NPCR)
- Minimal Common Oncology Data Elements (mCODE)
- National Healthcare Safety Network (NHSN)
- Social Determinants of Health, concept framing

Discussion

Assessment Framework Objectives

Goal: To assess existing and potential initiatives that exchange data between EHR and public health

- ✓ Describe capabilities for **bi-directional** data and information exchange

- ✓ Describe areas of provider and public health burden

- ✓ Detail the benefits to population and public health

- ✓ Identify ways that Digital Bridge could contribute

- ✓ Organize a facilitated conversation among leaders of the initiatives and Digital Bridge governance to explore partnerships

VALUE STATEMENTS

Promote standards-based approach

Benefits both healthcare and public health

Potential to engage with Digital Bridge

Methods

1. Mind Map
2. Questions
3. Assessment Categories
    - e.g. purpose of system, type of system, owner, scalability, system architectures
4. Criteria

Mind Map Notations of Transition Workgroup Conversation | 2018-12-20
DOES NOT REPRESENT DECISIONS MADE

2nd Use Case Conversation @ DB In-person meeting

Transition Workgroup Discussion Today

Assessment

Question

Provide a brief overview of the initiative, including the official name and any common references or abbreviations and the type of the initiative (i.e. state system, national program, local project, etc.). Discuss the genesis for the initiative and any agencies/organizations that are engaged in the initiative, either as funders, leaders, partners, or stakeholders, indicating which role(s) each organization plays.

Describe the current phase of the initiative in the product development lifecycle relative to nationwide use or adoption; (e.g. initiating, planning, design, development, pilot testing and analysis, training and implementation, operation and adoption, maintenance and improvements)? What plans are there to continue to advance the project as the field of healthcare and surveillance continues to evolve?

What is the primary source of funding for the initiative? How long will the current funding apply and what are the plans to sustain the initiative after the current funding is depleted?

What laws, regulations, and policies govern, influence, or impact this initiative? How do they affect data collection, data sharing, or system utilization? What authorities regulate this initiative (federal, state, or local)?

Are there any political or cultural attitudes, ideas, or stigmas that influence the current state or future potential of the initiative?

Describe the resources currently involved in implementing or carrying this initiative through to fruition. For example, what resources are involved in the research and design, demonstration and development, pilot testing and analysis, training and implementation, operation and adoption, maintenance and enhancement deployment phases for this initiative.

What type of data is being collected as part of this initiative? Does the addition of this data collection process require the development and deployment of new productions or functionality or is it being incorporated into existing products and workflows?

Assessment Category

Project, System or Initiative Description (Brief)
Feasibility

Promote standards-based approach

Value to Healthcare

Value to Public Health

Criteria

Purpose of the System/Initiative

Type of system (options including reporting, surveillance, registries, etc.)
Architecture
Data Elements
Data Ownership

Dara Sharing Framework
Data completeness

Legal authority to utilize system or gather data?
Owner
Jurisdictional scope

Bi-directionality
Interoperability
Scalability

Multi-uses (can the system be used for other purposes?)
Cost
Financing
Effort
Benefit to Healthcare
Benefit to Public Health

Work with EHR vendors?

Relative impact to public health

B2. Name of program/systems
B3. Description of system
B4. Type
B5. Business owner
B6. Center/Insititute/Office
B10. Governance structure
B11. Stakeholders
B12. Maturity/level/current status
B13. Stage
B14. Number of users
B15. Number of sites
B16. Name & kind of sites
B17: Adoption/utilization
B7. Major funding source
B18. Authority system developed under

New. Potential/readiness to engage with Digital Bridge

B28. Standards used, e.g. data, messaging
B38. Types of data collected (e.g. clinical, lab, epi)
B29. Basic data flow
B30. Portability (current/planned)
B31. Generalizability (current/planned)
B32. Interoperability (current/planned)
B33. Scalability (current/planned)
B37. Bi-directionality (data exchange)

B39. Decrease provider burden
B40. Improve capture of case/condition of interest
B41. Timeliness of data exchange
B43. Impact on healthcare decision-making
B44. Value to provider

B39. Decrease public health burden
B40. Improve capture of case/condition of interest
B41. Timeliness of receipt of data
B42. Completeness of data received
B43. Impact on public health action
B44. Value to public health

Criteria
Purpose of the System

Type of system (optoins including reporting, surveillance, registries, etc.).
Architecture
Data Elements

Data Ownership

Dara Sharing Framework
Data completeness
Legal authority to utilize system or gather data?
Owner
Jurisdictional scope
Bi-directionality
Interoperability
Scalability

Multi-uses (can the system be used for other purposes?)
Cost
Financing
Effort
Benefit to Healthcare
Benefit to Public Health

Work with EHR vendors?

Relative impact to public health
How could Digital Bridge support this initiative?
Should Digital Bridge support in any way?

Assessment Framework

1. **Brief project description**

   Purpose, stakeholders, end users, adoption, maturity, sites, funding

2. **Promote standards-based approach**

   Standards, bidirectional data exchange, scalability, portability, generalizability

3. **Value to healthcare and public health**

   Decrease burden, improve timeliness, improve data capture, improve completeness, impact health care decision making, impact public health action

4. **Potential to engage with Digital Bridge**

PROGRAMS AND ACTIVITIES

- Adapting Clinical Guidelines to Digital Age
- Electronic Case Reporting (eCR)
- Electronic Laboratory Reporting (ELR)
- Electronic Test Ordering and Results (ETOR)
- FDA Sentinel Initiative
- Immunization Information System (IIS)
- Making EHR Data More Available for Research and Public Health (MEDMorph)
- Minimal Common Oncology Data Elements (mCODE)
- Multi-state EHR-based Network for Disease Surveillance (MENDS)
- National Healthcare Safety Network (NHSN)
- National Program of Cancer Registries (NPCR)
- National Syndromic Surveillance Program (NSSP)
- North Carolina Care 360
- Systemic Harmonization and Interoperability Enhancement for Laboratory Data (SHIELD)

Assessment Framework

Review handout

EXAMPLES

National Program of Cancer Registries (NPCR)

Minimal Common Oncology Data Elements (mCODE)

National Healthcare Safety Network (NHSN)

Social Determinants of Health, Concept Framing

Brief project description

Plans and challenges including use of standards

Value to healthcare and public health

How the project can benefit from Digital Bridge

Potential to engage Digital Bridge

Ushering a New Era in Public Health Data

> As public health leaders, we must be prepared to handle the challenges of today and, at the same time, to make real the potential of the new innovation of tomorrow.

Robert R. Redfield, MD
Director, CDC, and Administrator, ATSDR
https://www.cdc.gov/surveillance/moving-ahead/the-future.html

"Data is moving slower than the disease…"

"The nation's public health data systems are antiquated and in dire need of security upgrades - paper records, phone calls, spreadsheets and faxes requiring manual data entry are still are in widespread use and have significant consequences including delayed detection and response, lost time, missed opportunities and lost lives."

Testimony of Janet Hamilton, Director of Science and Policy at CSTE, speaks at Public Witness Day, April 9, 2019 Labor, Health and Human Services, Education, and Related Agencies (116th Congress)

https://appropriations.house.gov/events/hearings/public-witness-day-1

The New World of Public Health Data

- Timely

- Accurate

- Accessible

THE REALITY → **THE OPPORTUNITY**

REACTING
Always behind when an epidemic occurs

ANTICIPATING
Getting ahead of an epidemic **to stop it**

COUNTING DATA
Collecting data without the ability to rapidly analyze it

UNDERSTANDING DATA
Faster analysis to **gain real-time insights**

STORING IN SILOS
120 silos that restrict data sharing between systems

SHARING ON PLATFORMS
Interoperable, accessible data **for action**

LOOKING BACK
Using data to see what has already happened

LOOKING FORWARD
Using data to **predict and prevent threats**

MOVING SLOWLY
Outdated, paper based-systems with multiple points of data transfer

MOVING FAST
Creating a true digital highway to **transfer data in real time**

USING RESOURCES INEFFICIENTLY
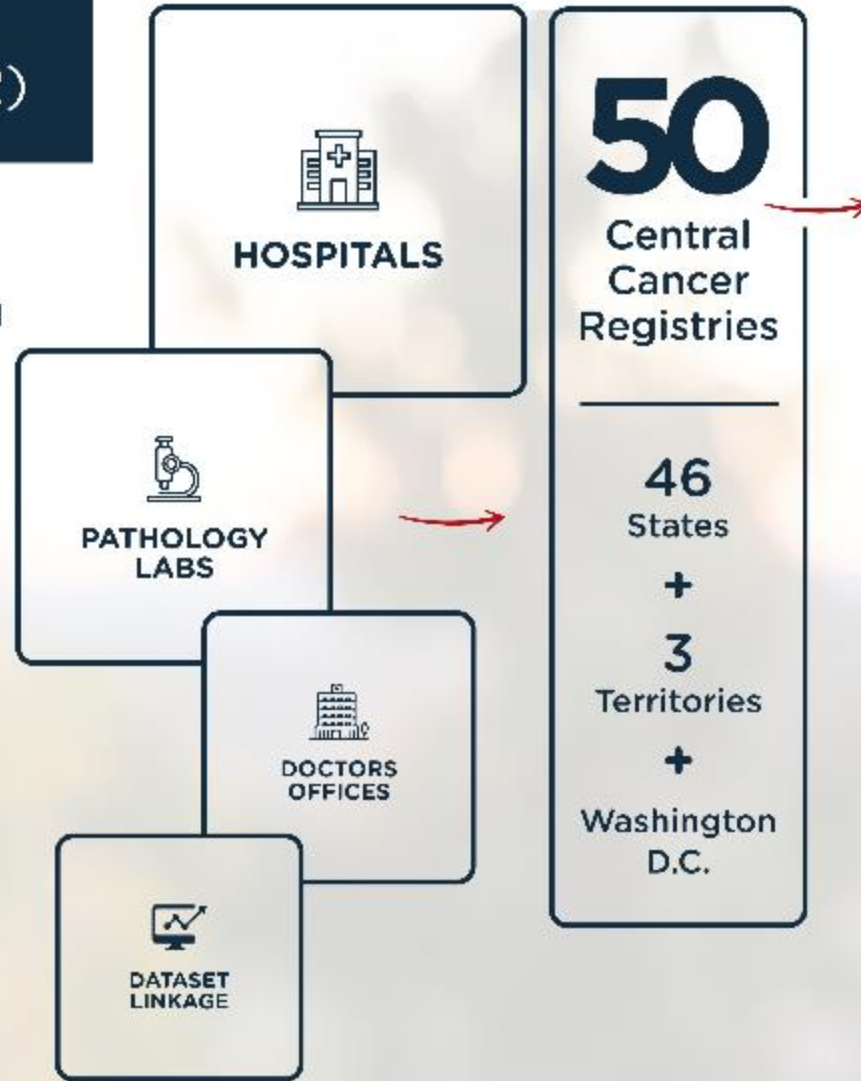New resources always required to do new data collection

CONNECTING RESOURCES
Leveraging existing resources and making common **investments for the future**

National Program of Cancer Registries (NPCR)

- Coordinates collection, verification and reporting of important information on all reportable cancer cases.

- Helps identify better ways to prevent, treat and control cancer.

HOSPITALS

PATHOLOGY LABS

DOCTORS OFFICES

DATASET LINKAGE

50 Central Cancer Registries

46 States
+
3 Territories
+
Washington D.C.

NPCR
NATIONAL PROGRAM of CANCER REGISTRIES

US CS
U.S. Cancer Statistics
The Official Federal Cancer Statistics

- Data Visualization Tool
- State Cancer Plans
- Public Use Dataset
- Reports & Research

Over 1.7 million new cases & nearly 600,000 deaths annually.

CDC U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Measuring Progress. Targeting Action.

The Challenges

1 Old Data

2 Labor Intensive

3 Duplication of Effort

4 Costly

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Current Reporting Structure

Reliable. Trusted. Scientific.
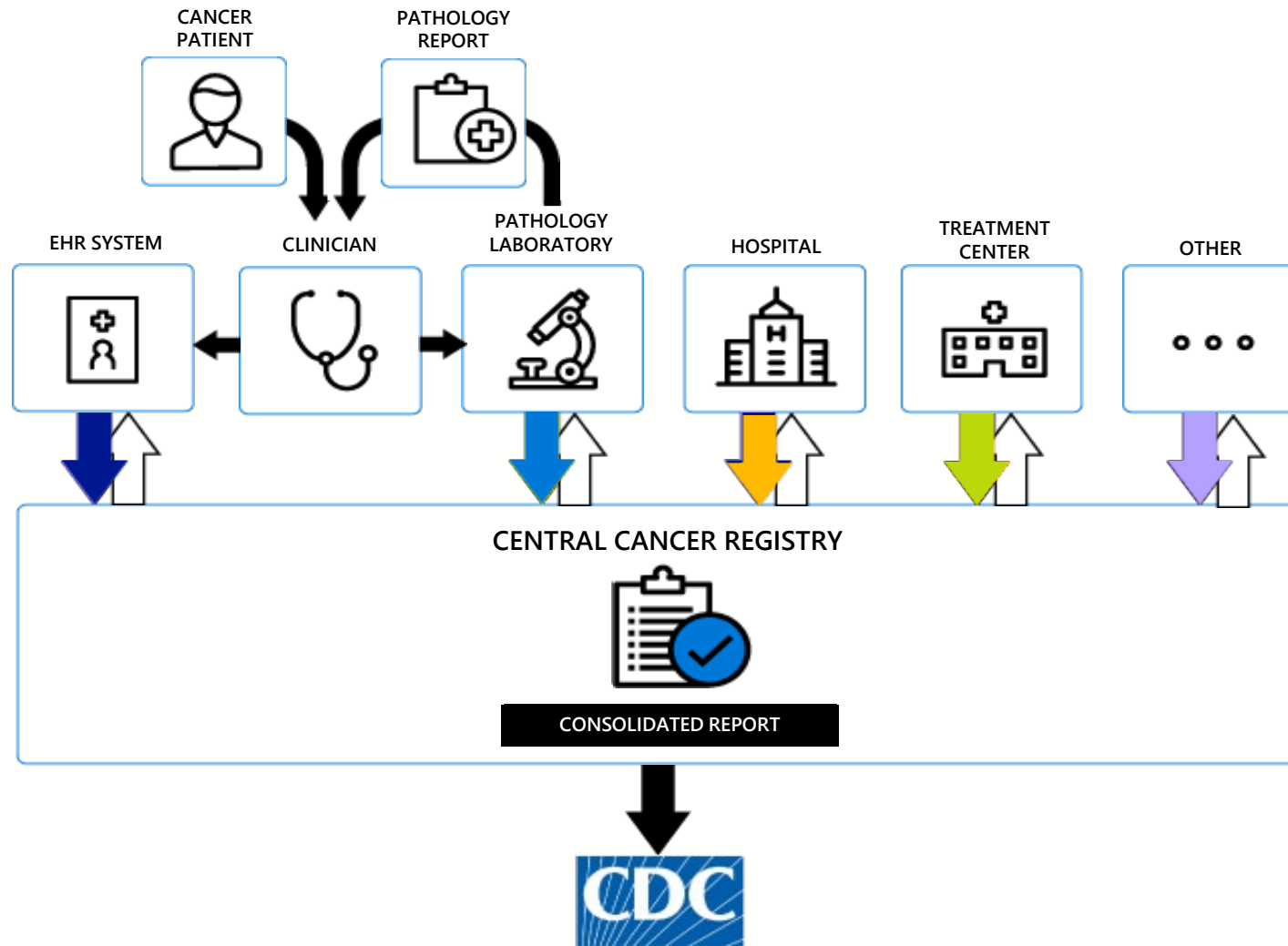
Data Volume, Complexity, and Veracity

Hospitals (6,200)

Labs (5,500)

Oncologists (20,000)

Radiation Therapy & Oncology Facilities

Outpatient Centers

State Central Cancer Registries (50)

CDC — CENTERS FOR DISEASE CONTROL AND PREVENTION

Data Schemas
- HL7 v1, v2, v3, FHIR
- PDF
- XML
- Paper

Pipeline

Incentives/Cost
- Mandate
- Manual Aggregators
- Standardizing = Cost

Quality
- Duplicate Records
- Incomplete Records
- Incomplete Dataset

Accelerating Progress in Cancer Control

1 — **Uniform Platform**

2 — **Automate Record Creation**

3 — **Automate Record Completion**

4 — **Standardize Interfacing**

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Future Reporting Structure

- Access by key stakeholders to the latest data

- Rapid processing

- Timely, accurate, complete data reporting

CLOUD-BASED COMPUTING PLATFORM

CENTRAL CANCER REGISTRY

x 50 STATES

CDC

Division of Cancer Prevention and Control
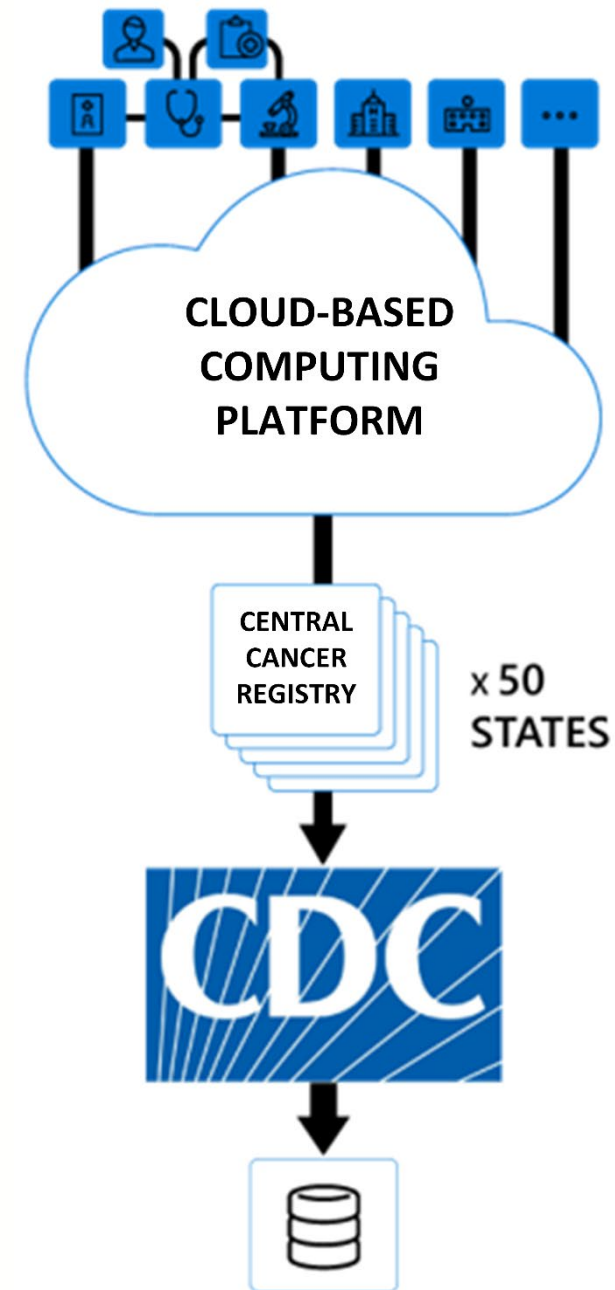
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Benefits of a Cloud-Based Computing Platform

High-quality Data	Resource Conservation	Shared Common Platform	Streamlined Process

Better data; easier access and quality benchmarking
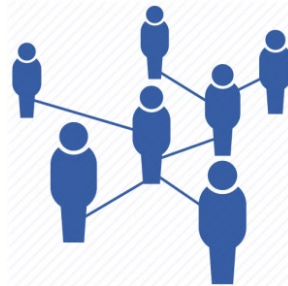
Reduces health care provider burden and improves public health linkages

Automation, efficiency and standardization

Faster case identification; better intervention and resource allocation

Current EHR Data Exchange and Use

Milestones in Physician/Clinic Interoperability

- **Physician reporting to central cancer registries from EHRs**
  - Currently implemented in at least **36** central cancer registries
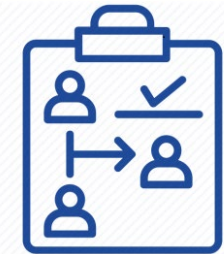 - Current standard: *HL7 CDA® Release 2*

- **Promoting Interoperability (aka Meaningful Use):** Cancer Reporting for Eligible Professionals
  - Stage 2 menu item (2014 implementation)
  - Stage 3 optional item (2018 implementation)
  - IGs published in ONC 2014 and 2015 Certification Rules
- **eMaRC Plus Physician Reporting Module**
  - CDC NPCR-developed free software tool
  - Processes both HL7 CDA IG reports
  - **35+** states using the module

  Software & Tools: www.cdc.gov/cancer/npcr/tools/

Emerging Standards in EHR Data Exchange and Use

Making EHR Data More Available for Research and Public Health (MedMorph) [In Progress]

- Funded through Patient Centered Outcomes Research Trust Fund (PCORTF)

- Create method for obtaining EHR data for multiple public health domains and varied use cases

- Will produce FHIR IG and reference architecture for cancer case reporting

Common Oncology Data Elements eXtensions (CodeX) HL7 FHIR Accelerator [Planning]

- Create FHIR IGs and other informative documents for implementers in the field of oncology

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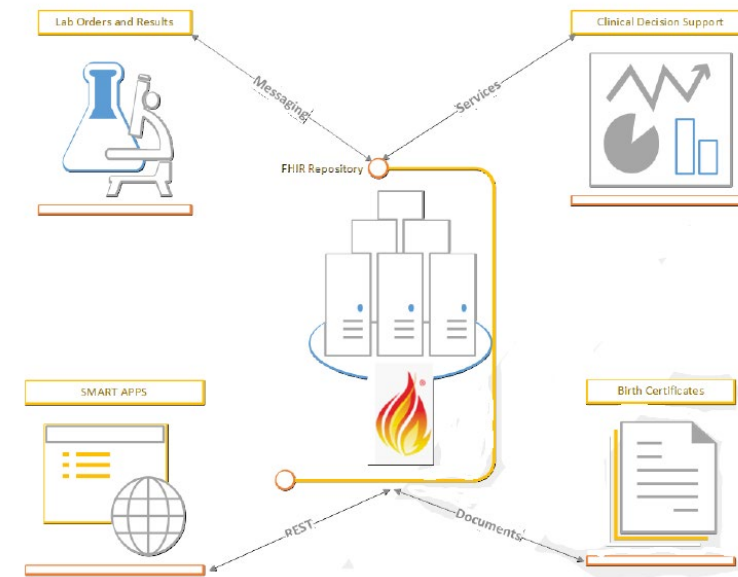
Emerging Standards in EHR Data Exchange and Use

2018 FHIR Connectathon

- Developed preliminary draft FHIR profile

- Created extensions for cancer-specific Value Sets

- Published profiles to FHIR servers

- Performed validations on the cancer reporting profile on Forge

- Performed simulated experiments with standards for triggers and artifact distribution

CommonWell Health Alliance

- Create an interoperable method to get EHR data to augment cancer cases identified in pathology laboratory reports

- Submit pilot use case to focus on leveraging FHIR to query provider members of the CommonWell Health Alliance for patient data to augment a cancer abstract after initial case identification in a clinical pathology report

Successes and Process Improvement

- **EHR vendors have made significant changes based on NPCR and registry feedback**
  - Programming
  - Workflow
  - Picklists
  - Triggers
  - Defaults
- **eMaRC enhancements**
  - Derive key cancer elements and set defaults when missing
  - Bugs identified through testing with real data

- **Stage 3 implementation guides**
  - Key elements required and cannot be null
  - Better guidance for unknown/missing key elements
  - Better reportability trigger guidance
- **Improved Stage 3 Certification Tool**
  - CDC emphasized the critical need for content validation
  - CDC provided significant input during development
  - Expect better content and fewer issues/errors

Challenges with EHR Data Exchange

- **Limited uptake by EHRs**
  - 40 EHR vendors certified for 2014 Edition
  - 35 EHR vendors certified for 2015 Edition
- **Working with individual EHR vendors**
  - Labor intensive, time consuming
  - Requires individualized approach with each vendor
  - Hard to identify appropriate contact person(s)
  - Lack of response
- **Cancer registries collect longitudinal data**

- **Limited implementation by providers**
- **Dissemination of knowledge artifacts (e.g., reportability trigger codes and cancer-specific value sets) to all implementers**
  - Includes need to disseminate periodic updates
- **Workflow and implementation issues**
  - Key cancer data items missing
  - Defaults for missing data set by vendor inappropriately
  - Triggers implemented partially and inconsistently

Potential Digital Bridge Benefits

- **Help address challenges discussed in previous slides, especially:**
  - Working with vendors
  - Increase uptake by vendors
- **Can Digital Bridge help with the other challenges? Especially:**
  - Increase uptake by providers
  - Workflow and implementation issues

- **Pooled resources to engage vendors/providers for reportable disease surveillance**
- **Less confusing for vendors when a single organization is coordinating the messaging**

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Readiness to Engage with Digital Bridge

- **First HL7 CDA IG for cancer developed ~9 years ago**
  - Several two formally published updates
  - Lessons learned were incorporated into revised versions
- **We have been working central cancer registries and EHR vendors with production implementations for ~6 years**
  - Provide significant technical assistance to central cancer registries
  - Work with multiple EHR vendors to provide technical assistance and help identify and resolve bugs and enhancements

- **Successful testing of cancer CDA standard at ~ 10 IHE Connectathons**
- **Successful demonstrations of demonstrated EHR-cancer data exchange at ~10 HIIMSS Interoperability Showcases**
- **Several efforts in progress to develop a FHIR solution for physician reporting to central cancer registries**

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Thank you!

Go to the official federal source of cancer prevention information:

www.cdc.gov/cancer

Cancer Prevention Works

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Oncology Standard Health Record

Every patient's journey improves all future care

Standard Health Record

MITRE

45% increase in cancer drugs in development over the past ten years with **87%** as targeted therapies
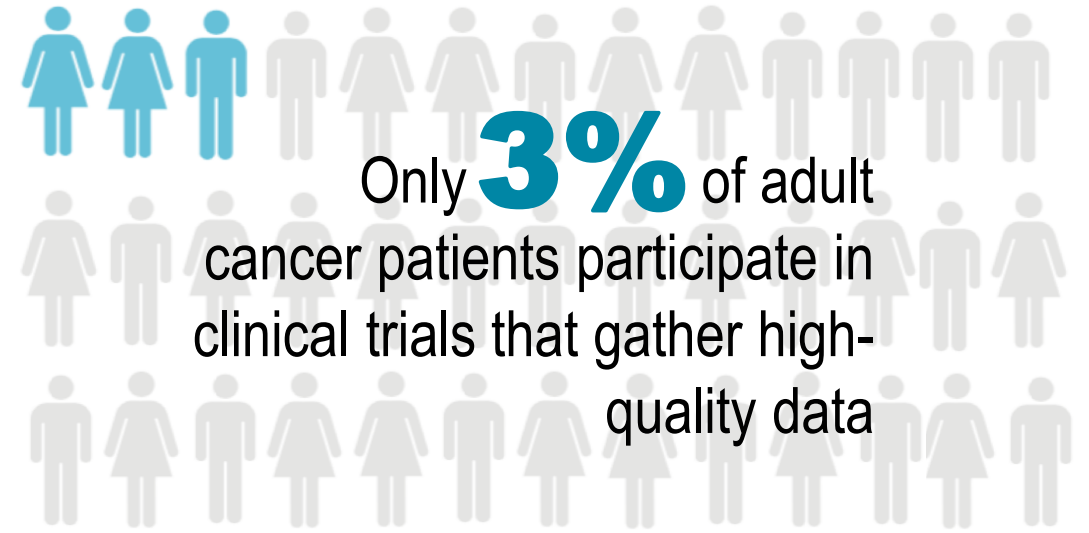
Only **3%** of adult cancer patients participate in clinical trials that gather high-quality data

Most of the nearly 15 million individuals living with cancer in the U.S. have **Electronic Health Records (EHRs)**

EHR data challenges:
- Significant variation
- Unstructured data
- High Burden

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MITRE

mCODE™

mCODE™, or Minimal Common Oncology Data Elements, is a data standard that can be widely adopted. It holds promise to greatly increase **high-quality data** for all cancer types.

A **standard health record** for oncology

Minimal set of critical data elements

Standardized for collection and sharing

Recommended by top oncologists

Supports multiple cancer use cases

Improves cancer care and research

Patients

Providers

Research

CANCER

Payers

Pharma

Patient	Treatment
Disease	Outcome
Genomics	Lab/Vital

Vendors

Government/ Regulatory

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mCODE™ Initial Collaborators

ASCO AMERICAN SOCIETY OF CLINICAL ONCOLOGY

MITRE

CancerLinQ

ASTRO

ALLIANCE FOR CLINICAL TRIALS IN ONCOLOGY

FDA U.S Food and Drug Administration

NIH NATIONAL CANCER INSTITUTE

DANA-FARBER CANCER INSTITUTE

BRIGHAM AND WOMEN'S HOSPITAL

Intermountain Healthcare

logica information at the speed of life

HL7 International

FHIR

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mCODE™

Building a Trusted Network of Health Systems

metro-minnesota MMCORC — community oncology research consortium

ThedaCare.

RUSH UNIVERSITY MEDICAL CENTER

ST. JOSEPH MERCY ANN ARBOR — SAINT JOSEPH MERCY HEALTH SYSTEM

Trinity Health

MAYO CLINIC

KAISER PERMANENTE

UCSF

Intermountain® Healthcare

THE UNIVERSITY OF TEXAS MD Anderson Cancer Center

MGH 1811 MASSACHUSETTS GENERAL HOSPITAL

DANA-FARBER CANCER INSTITUTE

BRIGHAM HEALTH BWH BRIGHAM AND WOMEN'S HOSPITAL

Penn UNIVERSITY OF PENNSYLVANIA

Geisinger

St. Elizabeth HEALTHCARE

mCODE™ Thought Leaders

| ASCO | ALLIANCE FOR CLINICAL TRIALS IN ONCOLOGY | ASCO | MAYO CLINIC | CareJourney A Hunch Analytics Company | J&J | BIDEN CANCER INITIATIVE | Intermountain Healthcare | Intermountain Healthcare | UNIVERSITY OF PENNSYLVANIA HEALTH SYSTEM | NIH NATIONAL CANCER INSTITUTE |

Monica Bertagnolli | Steven Piantadosi | Robert Miller | John Halamka | Aneesh Chopra | Sean Khozin | Greg Simon | Stan Huff | Margaret Van Meter | Larry Shulman | Jim Doroshow

Keynote: GREG SIMON
Biden Cancer Initiative
The Biden Cancer Initiative: Creating the Cancer Research and Care System You Think We Already Have
Tuesday @ 1:15 pm | Kodiak

HL7® FHIR® DevDays

M-CODE: Minimal Common Oncology Data Elements

Press Releases

Biden Cancer Initiative Recognizes MITRE Partnership's Core Cancer Model

American Society of Clinical Oncology, CancerLinQ, and Intermountain Hospital join effort to improve patient care and research

A volunteer-led, staff-driven, cross-ASCO project to assemble a core set of structured data elements for the oncology EHR

ASCO
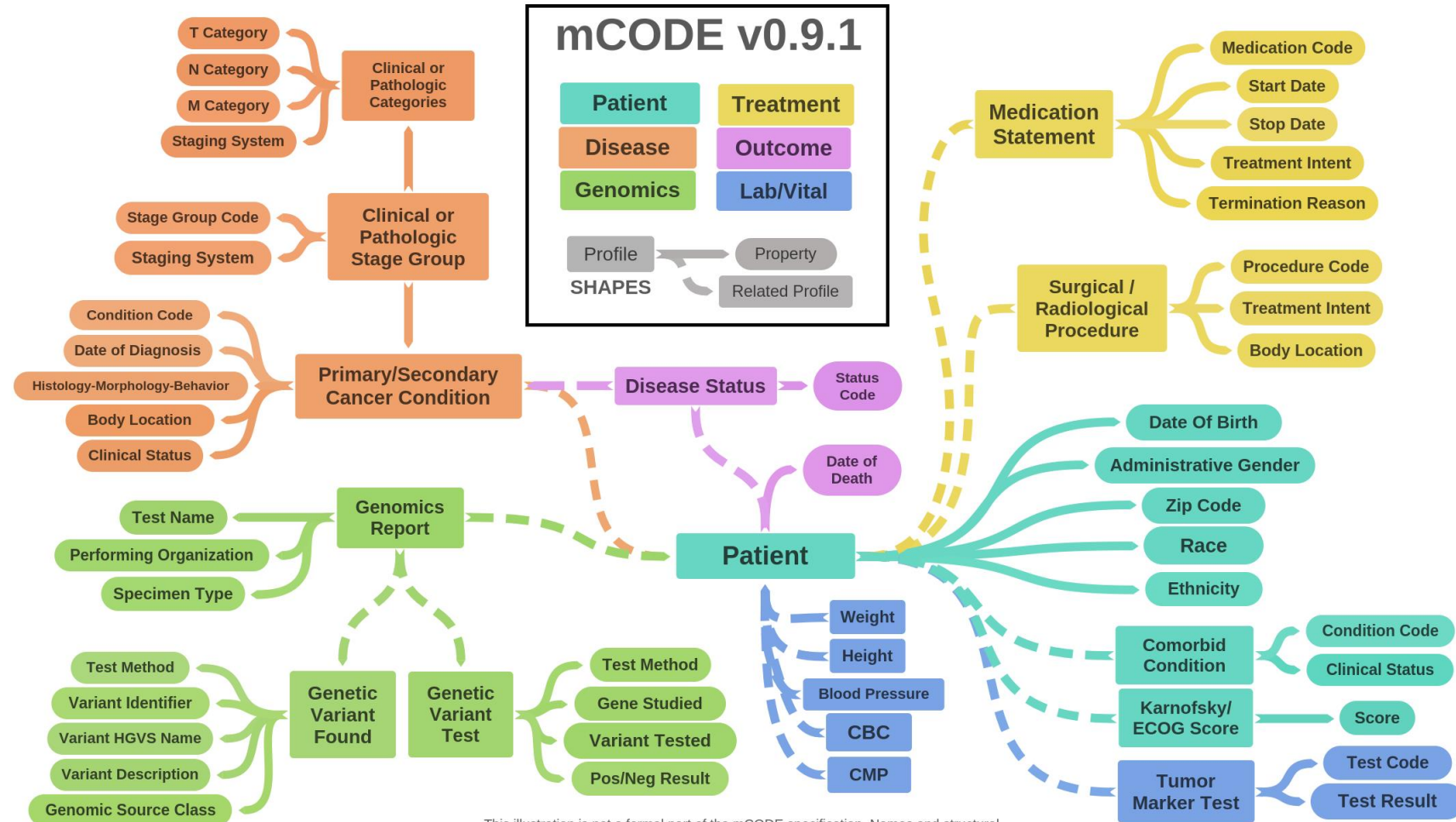
MITRE

Logical Model

Open standard of minimal structured cancer data

FHIR Implementation Guide through HL7

EHR workflows for collection

Service based interfaces for EHR data extraction

Use case focus with targeted implementations

mCODE v0.9.1

Patient	Treatment
Disease	Outcome
Genomics	Lab/Vital

Profile — Property
SHAPES — Related Profile

T Category
N Category → Clinical or Pathologic Categories
M Category
Staging System

Stage Group Code → Clinical or Pathologic Stage Group
Staging System

Condition Code
Date of Diagnosis
Histology-Morphology-Behavior → Primary/Secondary Cancer Condition
Body Location
Clinical Status

Disease Status → Status Code / Date of Death

Test Name
Performing Organization → Genomics Report
Specimen Type

Test Method
Variant Identifier
Variant HGVS Name → Genetic Variant Found
Variant Description
Genomic Source Class

Genetic Variant Test
Test Method
Gene Studied
Variant Tested
Pos/Neg Result

Patient
Weight / Height / Blood Pressure / CBC / CMP

Medication Statement
Medication Code / Start Date / Stop Date / Treatment Intent / Termination Reason

Surgical / Radiological Procedure
Procedure Code / Treatment Intent / Body Location

Date Of Birth / Administrative Gender / Zip Code / Race / Ethnicity

Comorbid Condition → Condition Code / Clinical Status

Karnofsky/ECOG Score → Score

Tumor Marker Test → Test Code / Test Result

This illustration is not a formal part of the mCODE specification. Names and structural relationships shown here may not precisely correspond to the data dictionary and FHIR profiles.

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mCODE™ Implementation Projects

Clinical Research

ICAREdata™

EHR-based clinical trials endpoints collection:

Develop and validate data elements that define clinical utility (treatment response, toxicity, change in treatment, deviation from clinical pathway).

Clinical Care

Compass

Demonstrate the use of mCODE elements to allow providers and patients to make informed, shared, data-driven decisions and provide data back to generate new knowledge.

Clinical Care

Camino

Oncology Clinical Pathways are evidence-based treatment protocols for delivering cancer care. This initiative uses mCODE elements in producing computable pathways, which provide key decision support in the selection of treatment options.

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A New HL7 FHIR Accelerator

Building a <u>community</u> and platform to accelerate <u>interoperable data</u> modeling and implementation around <u>mCODE</u>, leading to <u>step-change improvements</u> in <u>cancer care and research</u>

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Approach

Gather stakeholders **collaborate** to:

- Prioritize **use cases** around interest and impact

- Create new **data models** and **FHIR IGs**, extending **around the mCODE core**

- Build **Reference Implementations**

- Execute **pilots** in the field to demonstrate feasibility and value

- **Open** standards and open source*

* Models, IGs, APIs and other artifacts developed collaboratively by members working within CodeX projects will be available royalty-free. Systems developed outside of CodeX are welcomed to leverage all CodeX products for free and may be used as part of connectathons and pilots under whatever licensing terms the owners choose.

MITRE

CodeX™ and mCODE™

Common Oncology Data Elements eXtensions

Cancer Data Accelerator
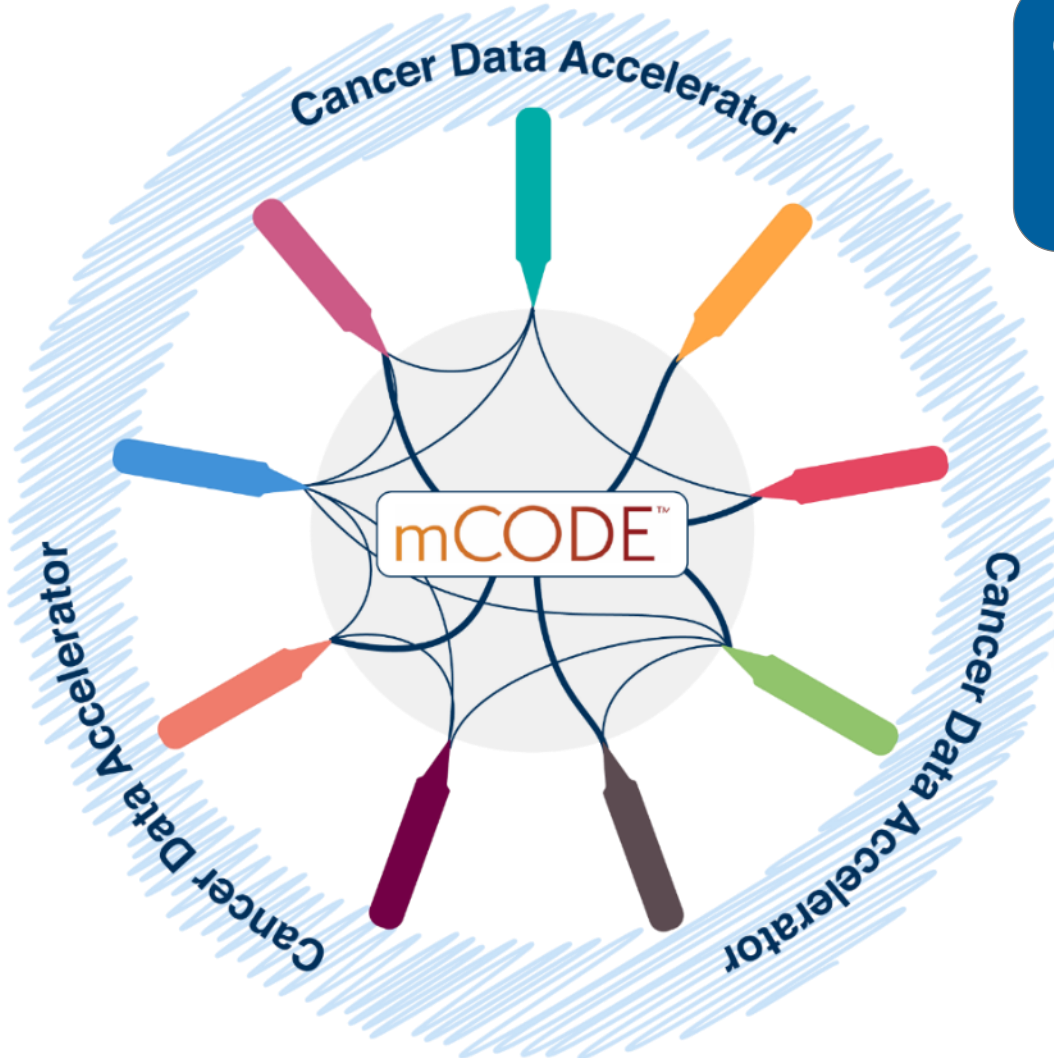
mCODE™

CodeX Domains of Interest to Prospective Members
*Use cases within domains
will be shaped by CodeX members*

0 **Community of Practice**

1 **Real World Data**

2 **Evidence-based Care**

3 **Patient Data Management**

4 **Payment Models**

5 **Registry Reporting**

MITRE

Registry Reporting (In Development)

- **Enable more automated reporting to cancer registries using mCODE APIs**

- **Improve timeliness and accuracy of data while reducing reporting costs**

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mCODE™ Opportunities for Public Health

- mCODE supports the increasing need to extract information from the EHR to:
  - Enhance public health surveillance
  - Design, monitor, and evaluate the impact of public health interventions
  - Inform public health policy and guidelines
  - Streamline data exchange between EHR and public health systems
  - Identify ways to link EHR data to other non-traditional data sources for advanced surveillance (e.g. Family Wellness)

- mCODE development approach can be applied to disciplines beyond oncology

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The Path to Meaningful Interoperability

FHIR establishes the high-level syntax and interfaces for exchange

Argonaut and USCDI standardize foundational patient data

Da Vinci and Carin formalize targeted exchange frameworks

Discipline focused modeling provide the detail needed for semantic interoperability

MITRE
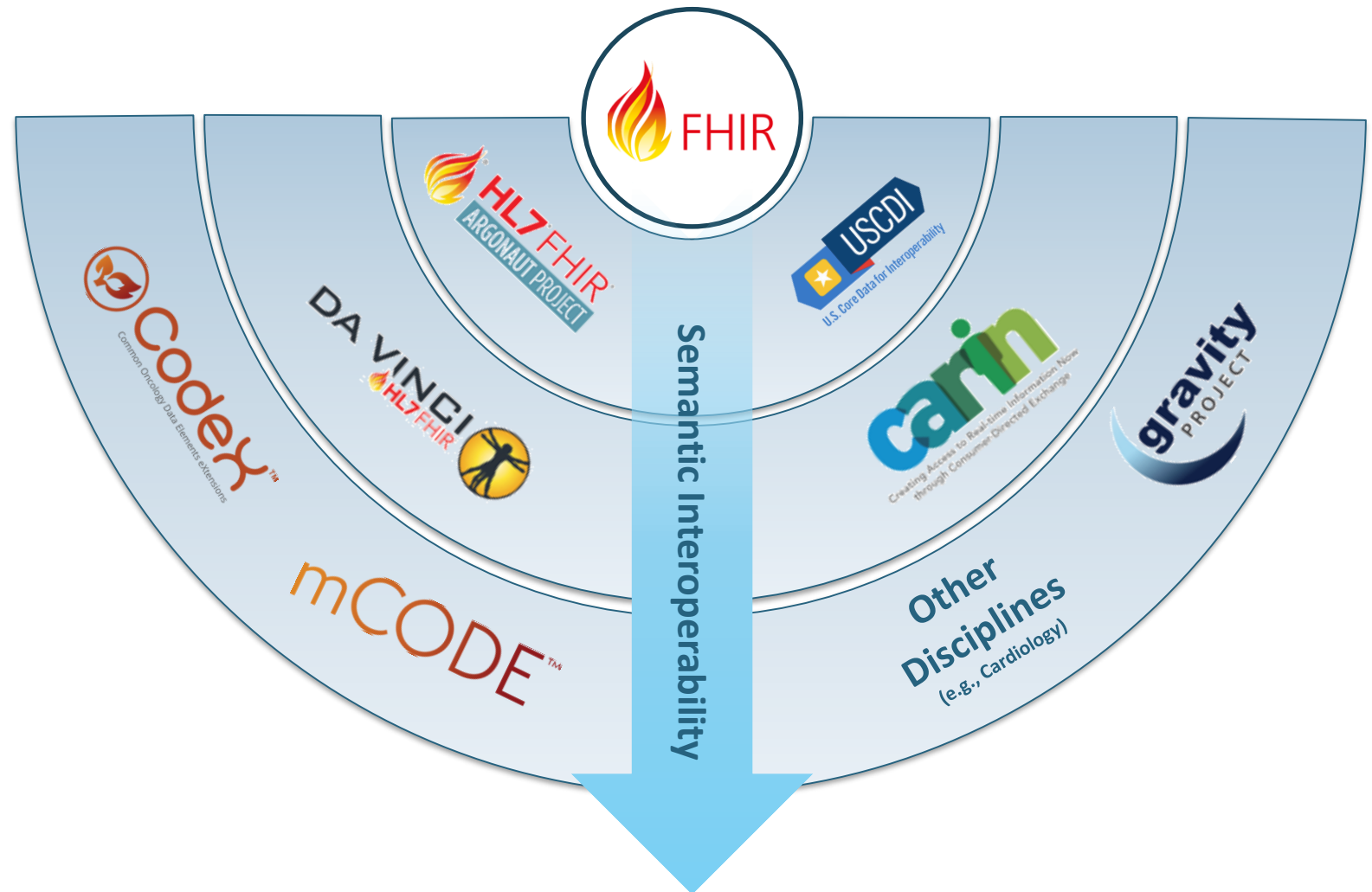
Oncology
Standard Health Record

"Every patient's journey can improve all future care"

MITRE
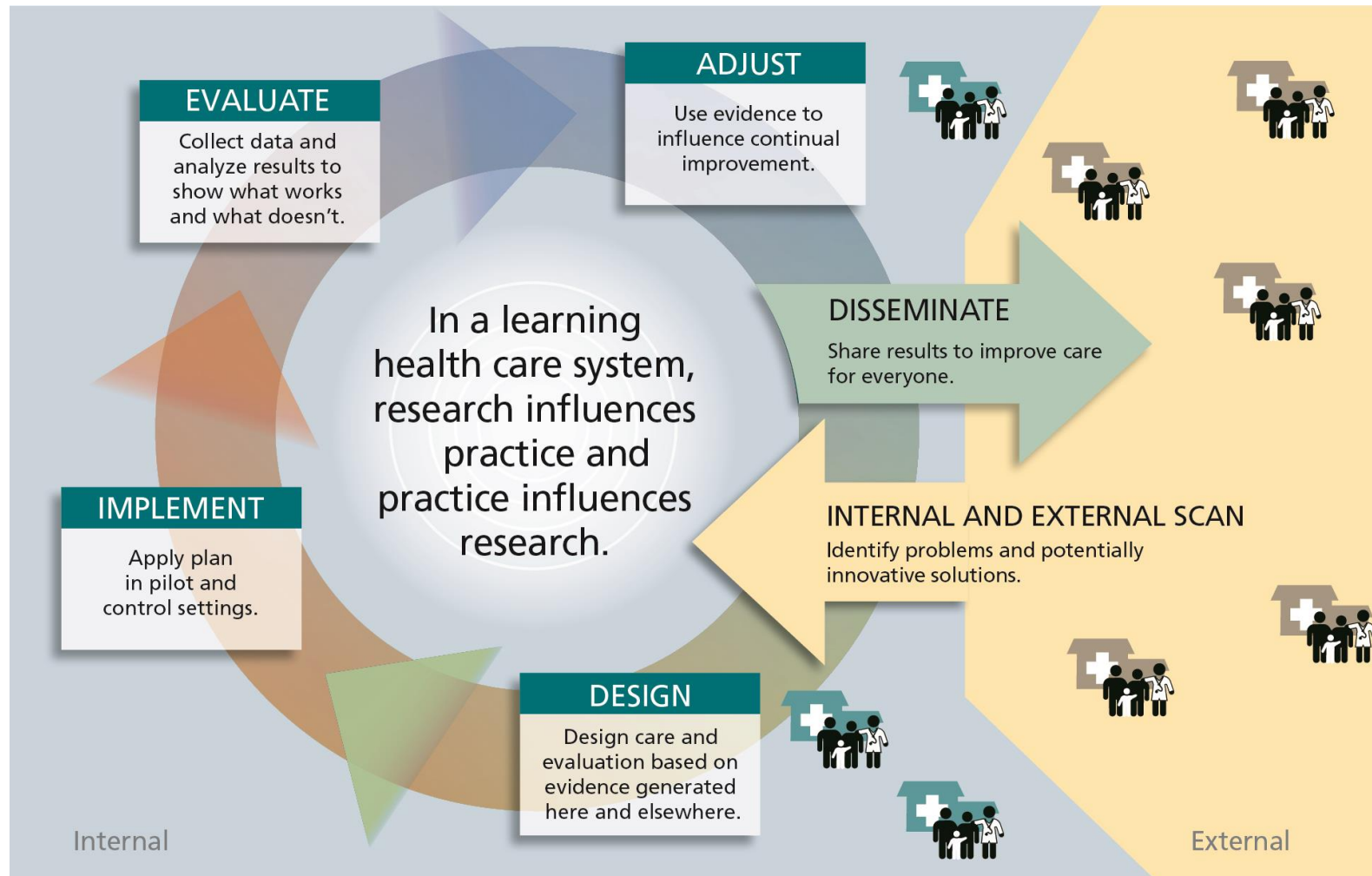
Using eCR and the CDC's National Healthcare Safety Network for Surveillance and Quality Measurement of Healthcare-Associated Infections Among Skilled Nursing Facility Residents

Daniel Pollock
Surveillance Branch Chief
Division of Healthcare Quality Promotion
Centers for Disease Control and Prevention

Presentation Objectives

Project Synopsis: Proposed collaboration calls for Digital Bridge and the CDC's National Healthcare Safety Network (NHSN) to join forces in an innovative effort to advance skilled nursing facility (SNF) surveillance and quality measurement

Partnership with Digital Bridge: Critical importance of convening key stakeholders and leveraging eCR platform, services, and experience

Value Proposition: Multiple benefits for public health and patient care

Plans and Challenges: Strategy envisioned and speed bumps anticipated in use of electronic health record system (EHRs) data and interoperability standards

Readiness for Collaboration: NHSN's resources and deployable assets

Background Information: NHSN and SNFs

NHSN

- Design: Web-based system developed and maintained by CDC for surveillance of healthcare-associated infections (HAIs), antimicrobial use and resistance, and other healthcare outcomes and processes
- Current participation: Over 25,000 healthcare facilities nationwide
- Data entry: Manual via web interface or electronic file submission via Health Level Seven Clinical Document Architecture
- Main data users: Healthcare facilities; CDC and state and local health departments; Centers for Medicare and Medicaid Services (CMS) public reporting and payment programs

Skilled Nursing Facilities

- Approximately 16,000 skilled nursing facilities (SNFs) in the U.S.; over 3,800 participate in NHSN
- Among all SNFs, HAIs are the top cause of hospital admissions
- SNFs have limited capacity for traditional HAI surveillance
- CMS seeks to add SNF HAI quality measures to its post-acute care public reporting and payment programs

Background Information: NHSN's Use of an Electronic Data Supply Chain to Deliver Hospital HAI Quality Measure Data to CMS

Extraction and processing of HAI data by means of vendor or homegrown IT solutions

Hospital Data Sources: Laboratory Information Systems, Electronic Health Record Systems, Operating Room Information Systems, and Admission, Discharge, Transfer Systems

Numerators: Single HAI events
Denominators: Patient-level data for surgical site infections; unit level data for other HAIs

Data files submitted from hospitals to NHSN via manual upload or Direct

CMS uses NHSN's HAI quality measure data for public reporting and payment
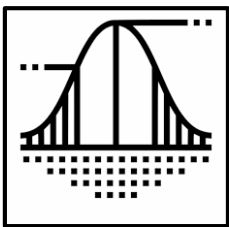
NHSN's data analysts produce hospital-specific HAI quality measure files for CMS

NHSN Servers

Synopsis of Proposed Project

Goal: Enable use of hospital EHRs to detect and report HAIs among SNF residents who are transferred to hospitals for evaluation and management

Source Data: Structured data entered into EHRs in the emergency department, observation unit, and early in the course of inpatient care – including diagnoses, antimicrobial orders, antimicrobial administrations, laboratory test orders, laboratory test results – are source data for detecting and reporting HAIs

HAI Detection and Reporting: Source data run against a logic-based decision support service, located on an intermediary services platform, indicates if HAI case criteria are met; an electronic message confirming reportability prompts completion of a full case report, including patient identifiers, which is assembled by extracting and loading EHRs data into a numerator data file for submission to NHSN

Denominator Data Submissions: SNFs submit monthly counts of resident days to NHSN using current process

Data Analysis: SNF HAI data used to develop, test, and propose a quality measure

Partnership with Digital Bridge

Electronic SNF HAI reporting by hospitals calls for new uses of already built components
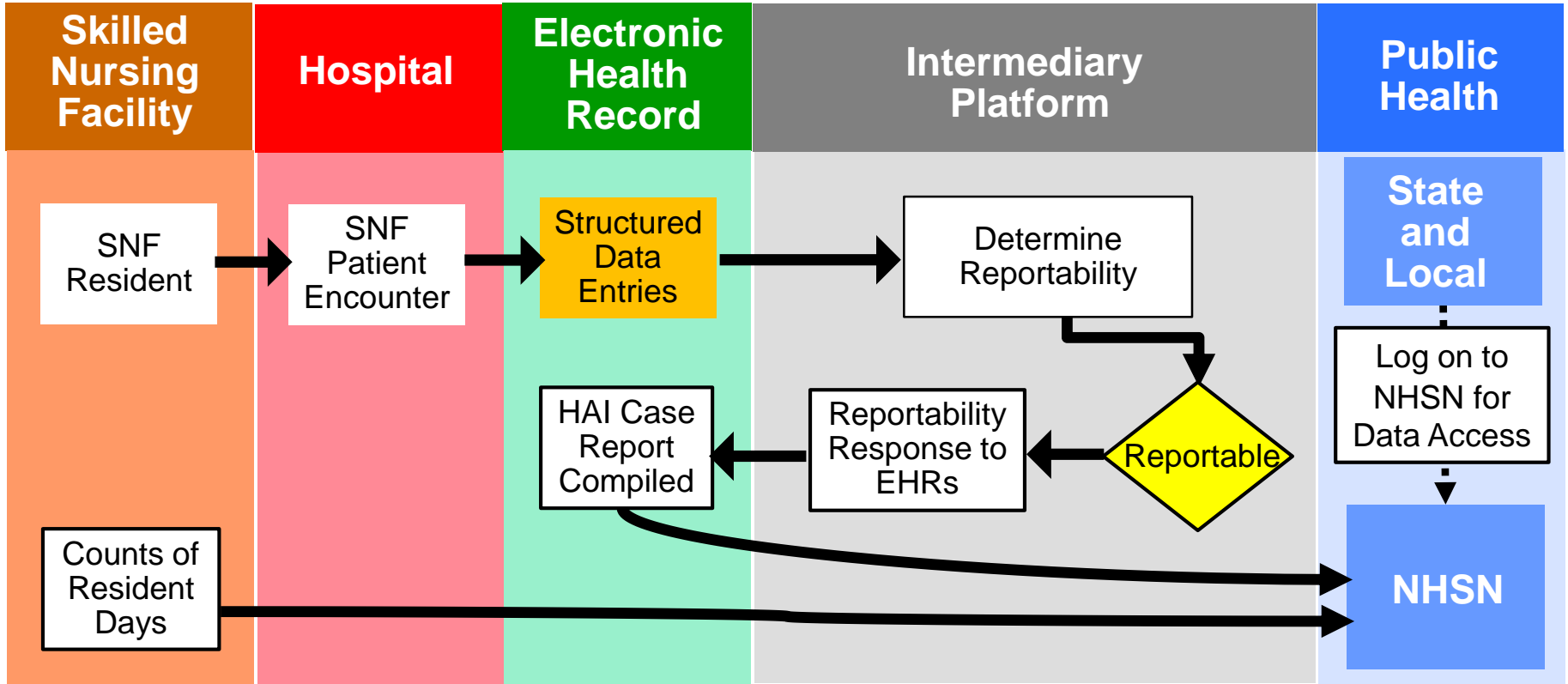
Value Proposition for Public Health and Healthcare

Leverages existing eCR and NHSN platforms: Capitalizes on availability of technical infrastructure and surveillance processes already in use; takes advantage of expertise and experience accrued from use of eCR and NHSN platforms

Extends HAI surveillance coverage: Increases scope of SNF HAI surveillance coverage without imposing substantial new reporting burdens on SNFs

Provides new data for HAI prevention: SNFs, public health agencies at all jurisdictional levels, and other HAI prevention stakeholders gain an additional data resource

Enables electronic HAI quality measurement: Facilitates development, testing, and deployment of a new SNF quality measure (or measures) and an electronic supply chain of quality measure data that follows the hospital-to-NHSN-to-CMS reporting pathway

Plans and Challenges

Plans
1. Specify structured data capture, case criteria, and reporting requirements
2. Convert decisions about structured data, case criteria, and reporting requirements to standards-based, data exchange specifications and implementation guidance
3. Adapt or build a logic-based decision support service for case determinations
4. Work with implementers to operationalize and refine specifications and processes
5. Develop NHSN's backend for receiving, storing, and processing SNF HAI case report data and NHSN's user interface for SNFs to access and use the data
6. Validate case report data, including process steps used to produce and submit data
7. Use SNF HAI data to develop, test, and propose an electronic HAI quality measure

Challenges
1. Conceptual – SNF HAI case finding using hospital EHRs data and eCR
2. Operational – New use case for Digital Bridge and NHSN; new SNF quality metric
3. Organizational – EHRs vendor, hospital, and SNF participation in proof of concept
4. Financial – Research and development resources; maintenance support

NHSN's Readiness for Collaboration

Multidisciplinary Team: Physicians, nurses, epidemiologists, statisticians, information technologists, developers, informaticians, and health educators

Multiple Working Relationships: Clinical communities of practice, healthcare facilities throughout the U.S., state and local health departments, infection preventionists, healthcare information technology companies, numerous professional organizations, CMS and other federal agencies, and data standards development organizations

Interoperability Experience: Many years of collaboration with Health Level Seven (HL7), extensive development and use of HL7 standards, ongoing technical support for EHRs and other vendors in use of the HL7 Clinical Document Architecture (CDA) standard for HAI reporting to NHSN

An Extensible Surveillance Platform: Widely used web-based system with strong commitments to using electronic healthcare data for surveillance purposes and to maintaining an up-to-date technical infrastructure

Thank You!

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For more information about NHSN:
http://www.cdc.gov/nhsn/

Social Determinants of Health

Discussion

1. What value could Digital Bridge contribute to existing efforts?

   ▶ Interoperability

   ▶ Alignment

   ▶ Scale

   ▶ Common needs

2. How does this assessment inform the decision on a "second use case"?

   ▶ Validates Digital Bridge criteria

   ▶ What does Digital Bridge tackle next?

3. Now decide, what is the next use case?

Discussion

1. What value could Digital Bridge contribute to existing efforts?

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2. How does this assessment inform the decision on a "second use case"?

   ▶ Validates Digital Bridge criteria

   ▶ What does Digital Bridge tackle next?

3. Now decide, what is the second use case?

- Champion eCR scale up

- Contribute to existing activities

- Take on a use case that leverages eCR infrastructure

- Take on a use case that has a different architecture

- Take over the world!

Acknowledgements

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Placeholder Slide*
eCR Transition and Scale Up Update &
eCR Legal Arrangements

CDC, APHL, CSTE

*Slides awaiting approval. We apologize for the inconvenience. Thank you.