An Overview of Data Modernization Efforts and Deep Dive into Electronic Case Reporting (eCR)

Public Health Informatics Institute

May 13, 2022

Public Health Informatics Institute

A program of

THE TASK FORCE FOR GLOBAL HEALTH

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Many images from today's presentation have been downloaded from unsplash.com and freepik.com

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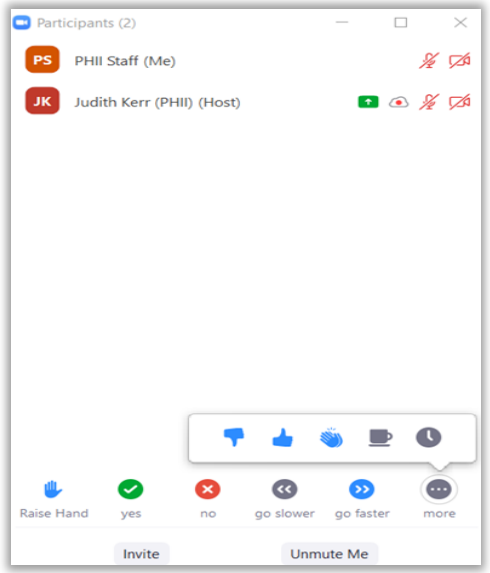
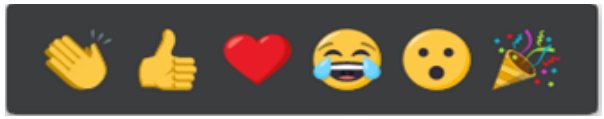
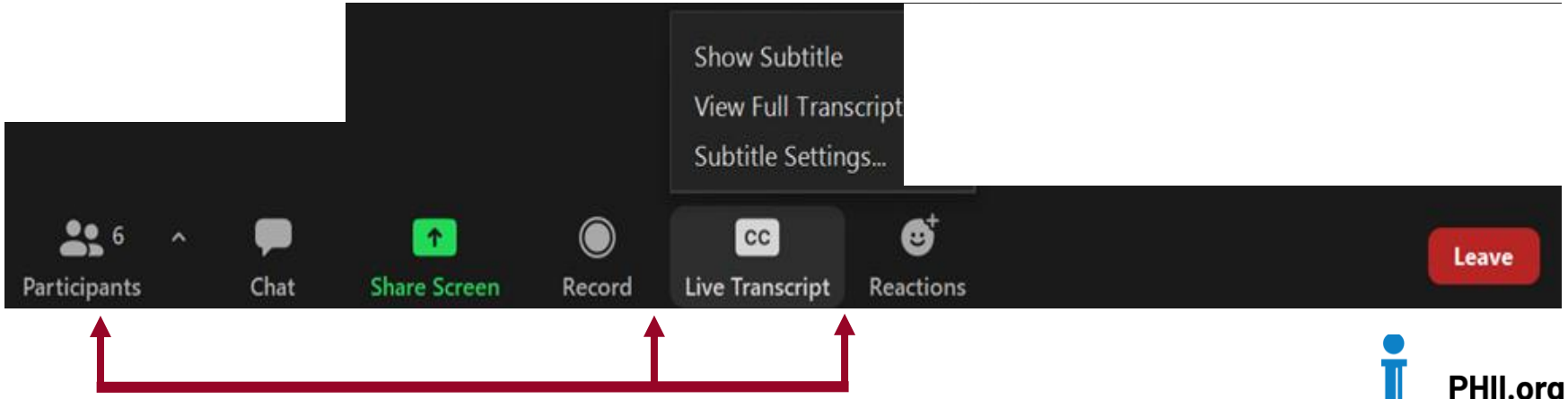
Finding your way around Zoom

- Rename yourself in Zoom to include your organization
- Type your questions into the chat or use reactions to communicate with presenters
- Live Transcript option







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Informational sessions

Today's topics: An Overview of Data Modernization Efforts and Deep Dive into Electronic Case Reporting (eCR)

Upcoming topics

- Overview of Public Health Initiatives and State's Perspective (July)

Webinar Feedback

- Five short questions at the end of the zoom call
- Help us gage the effectiveness of our webinar and provide additional resources to assist you in achieving interoperability

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Poll Question:

What program area do you represent on today's call?

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Laura Pabst, MPH
Centers for Disease Control and Prevention
National Center on Birth Defects and Developmental Disabilities

Learning objectives

1. **Discuss the data modernization initiative efforts at CDC and local jurisdictions and how it aligns with BDS interoperability.**
2. **Discuss the use of eCR and how it might be incorporated into BDS interoperability.**

Part 1: Data Modernization Initiative

Poll Question:

Are you aware of data modernization efforts within your state health department?

Poll Question:

Do you know who the data modernization director/lead in your state is?

Guest Speaker – Data Modernization Initiative Implementation Unit

Jim Kucik, PhD, MPH

Associate Director for the Data Modernization Initiative Implementation Unit (DMIIU) in CDC's Center for Surveillance, Epidemiology, and Laboratory Services.

Coordinates the Center's work to accelerate data modernization within CDC and with state, territorial, local, and tribal public health partners

Previously served as the Deputy Director of the Policy Research, Analysis, and Development Office (PRADO) in CDC's Office of the Associate Director for Policy & Strategy

Previous work at CDC includes extensive experience in the collection, analysis, and reporting of birth defects surveillance data.

He received a PhD in Health and Public Policy from the Johns Hopkins Bloomberg School of Public Health, an MPH with a focus in epidemiology from Emory University's Rollins School of Public Health

Accelerating Data Modernization in Jurisdictions

May 13, 2022

Jim Kucik, PhD, MPH
DMI Implementation Unit
Center for Surveillance, Epidemiology, and Laboratory Services

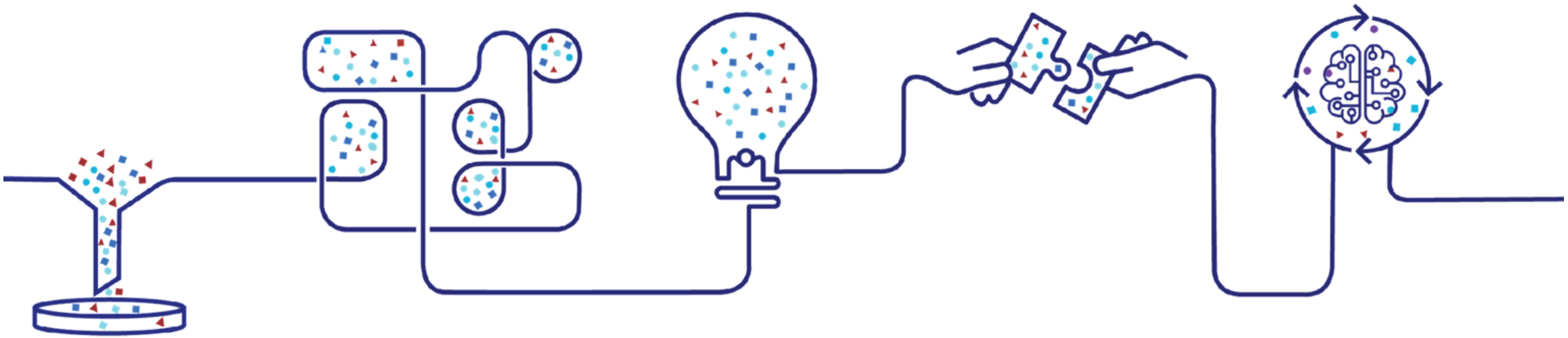
DMI
@ CDC

Our Ultimate Goal

To move from siloed and brittle public health data systems to connected, resilient, adaptable, and sustainable **‘response-ready’** systems that can help us solve problems before they happen and reduce the harm caused by the problems that do happen.

Better, Faster, Actionable Intelligence for Decision-Making

DMI Priorities



Build the right foundation

Decreased burden on reporters

Free up staff time to focus on prevention and control

Faster data for detecting emerging threats at all levels of public health

Accelerate data into action

Better data integration, visualization

Robust forecasting / modeling

Response-ready platform

Develop a state-of the-art workforce

Identify, recruit, and retain experts to generate meaningful public health insights

Support + extend partnerships

Better / more timely access to data within and across ecosystem

Common tools to support STLT partners

Manage change + governance

Adaptive, agile approaches

Collaboration

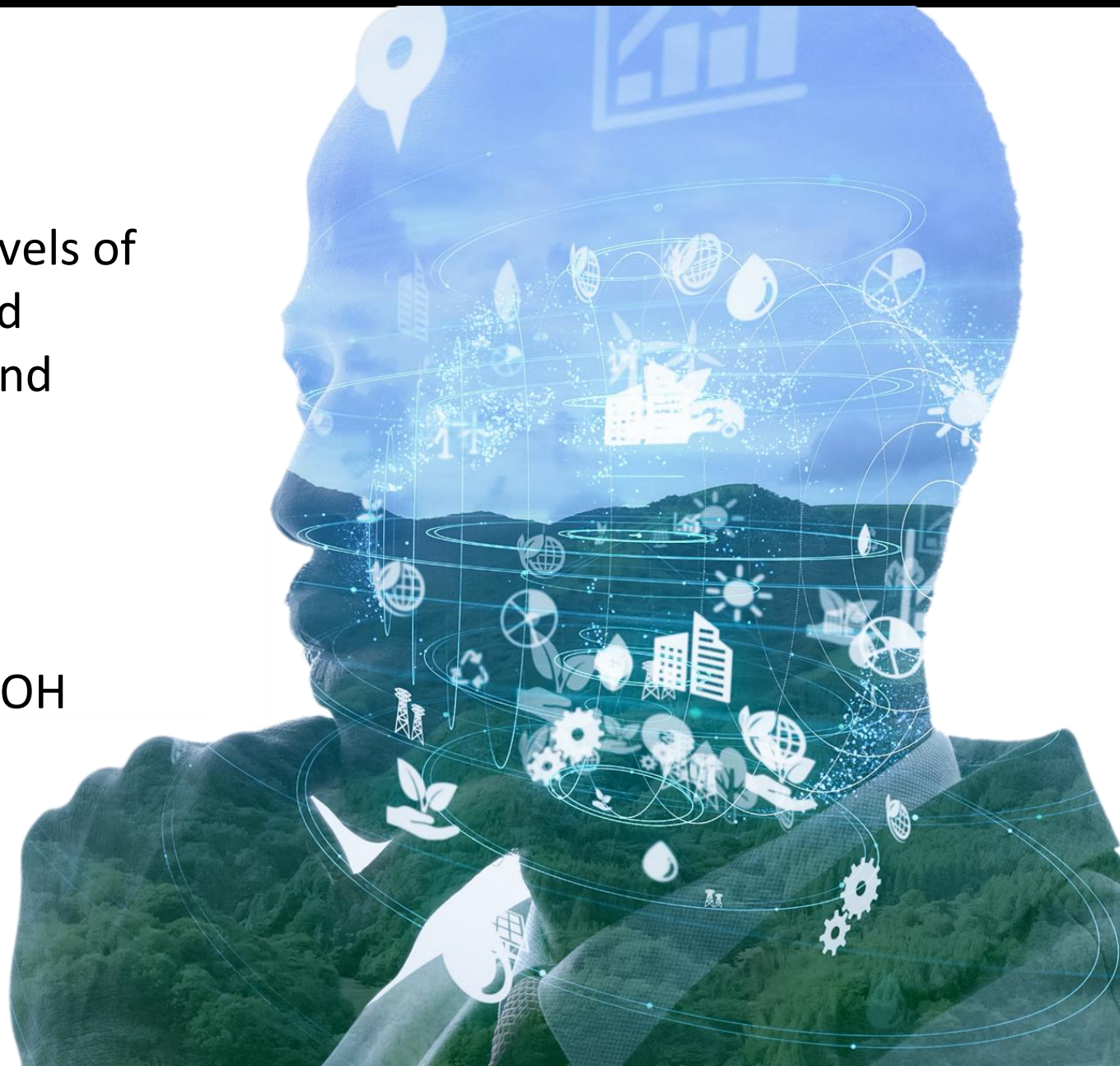
Improved acquisition

[DMI Strategic Implementation Plan (cdc.gov)]

What will be different because of DMI?

When the next emergency happens, we will have:

- A foundation for data sharing across all levels of public health for coordinated, scalable and timely case investigation, management, and reporting
- Shared analysis capabilities for rapid identification of trends within and across jurisdictions, including forecasting and SDOH
- A prepared data science workforce
- Decreased burden on data reporters and public health staff



Supporting STLTs

How is CDC supporting jurisdictions' data modernization efforts?

Providing direct funding through various mechanisms (i.e., ELC cooperative agreements) to support data modernization initiatives.

Offering technical assistance that provides experts and resources to support data modernization activities.

Collaborating with national partners to identify jurisdictions' data modernization needs and support current activities.

Direct Funding

Health Information Systems Capacity

Purpose:

Provides jurisdictions support to maintain, improve, and modernize health information systems infrastructure. Improvements should be:

- Forward-thinking and strategic
- Advance standards-based electronic data exchange
- Increase interoperability
- Sustain and enhance integrated surveillance information systems.

Direct Funding

$200M in direct support to state, local, and territorial public health jurisdictions

Funding will:

- Advance foundational data modernization activities
- Accelerate core surveillance enterprise data systems

Direct Funding for DMI

$200M to current 64 ELC recipients according to a three-tiered formula

Tier 1:
Core Data Modernization Infrastructure
(≈ $46M)

Tier 2:
Electronic Case Reporting (eCR) scale up
(≈ $77M)

Tier 3:
National Vital Statistics System Modernization
(≈ $77M)

Tier 1: Strategies

Jurisdictions will:

- Understand, coordinate, and lead data modernization efforts in the jurisdiction
  - Lead and coordinate efforts in health jurisdiction
  - Document and understand workforce, data, and health information system needs and opportunities
- Accelerate data and health information system modernization
  - Implement workforce enhancements
  - Accelerate improvements to data quality, exchange, management

Technical Assistance

Data Modernization Assessment and Planning

National Partner Activities

Implementation Partner Activities

DMI Learning Community

- Network of DMI Leads in PHAs
- Monthly webinars
- Online platform

Annual DMI Workshop

CSTE Workgroups and CoP

Data Science Team Training

New Standards to Increase Interoperability

Moving Forward

DMI = People
Processes
Technology

Thank you!

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

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.

Part 2: Electronic Case Reporting

Poll Question:

Are you familiar with electronic case reporting (eCR)?

Guest Speaker – Electronic Case Reporting Team

Grace Mandel, MPH

Public Health Advisor and Liaison to Public Health Agencies for the eCR team in CDC's Center for Surveillance, Epidemiology, and Laboratory Services.

Ms. Mandel supports public health agency modernization goals and helps connect agencies to resources to advance their eCR activities.

During the COVID-19 response, worked with jurisdictions to help them receive and use electronic COVID-19 case reports. She also helped enable new healthcare organizations to transmit real-time COVID-19 electronic information.

Ms. Mandel joined CDC in 2017 as a Presidential Management Fellow and served as a Special Assistant to the Director of CSELS and to the Deputy Director of Science.

She earned her MPH focused on gerontology and aging from the Johns Hopkins Bloomberg School of Public Health, and a BA in political science from Wellesley College.

Electronic Case Reporting: Introduction for Birth Defects Programs

Grace Mandel

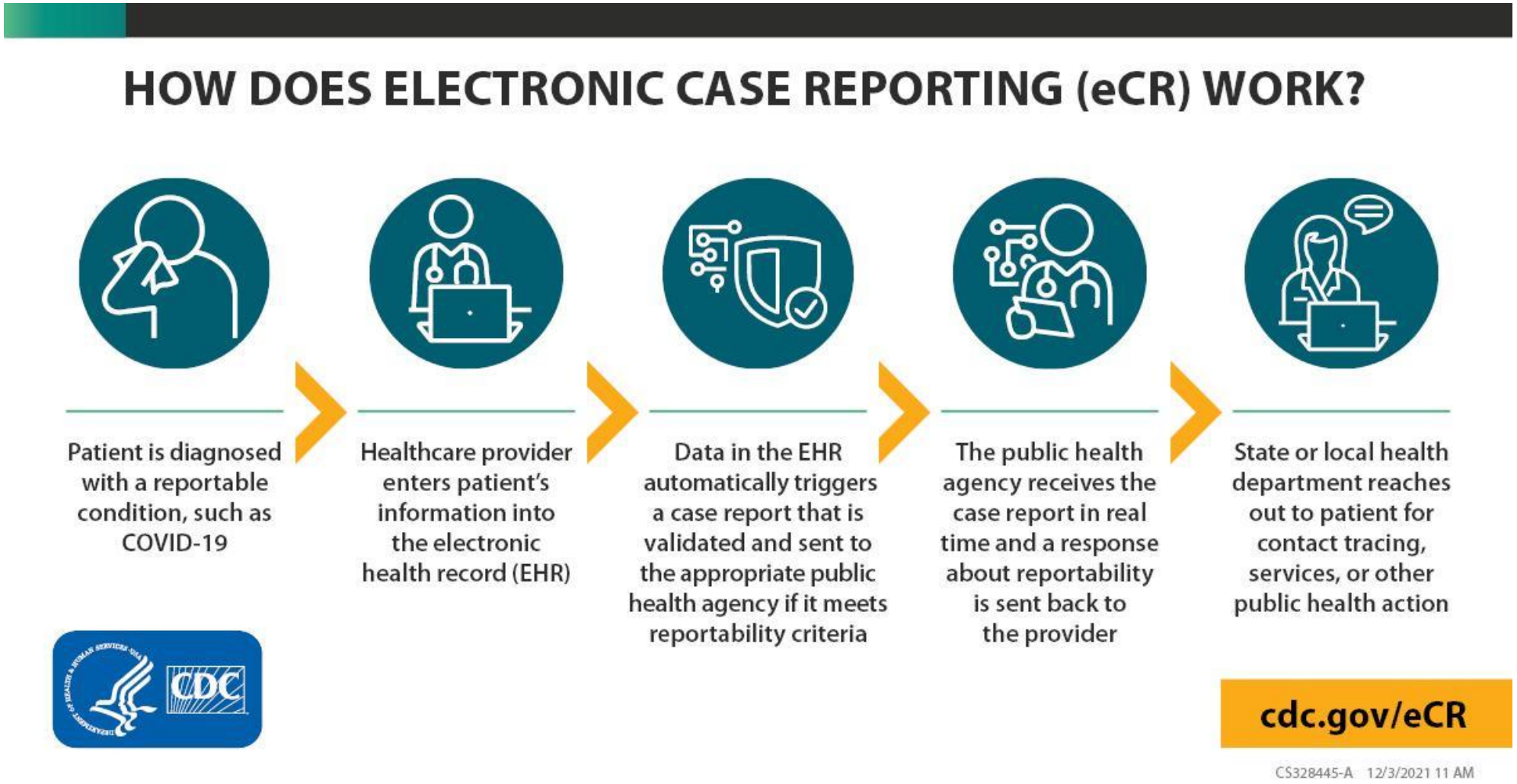
Liaison to Public Health Agencies, eCR Team

May 13, 2022

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

How does eCR work?



Public Health Agency eCR Benefits

Provides critical clinical data from healthcare for better surveillance and response

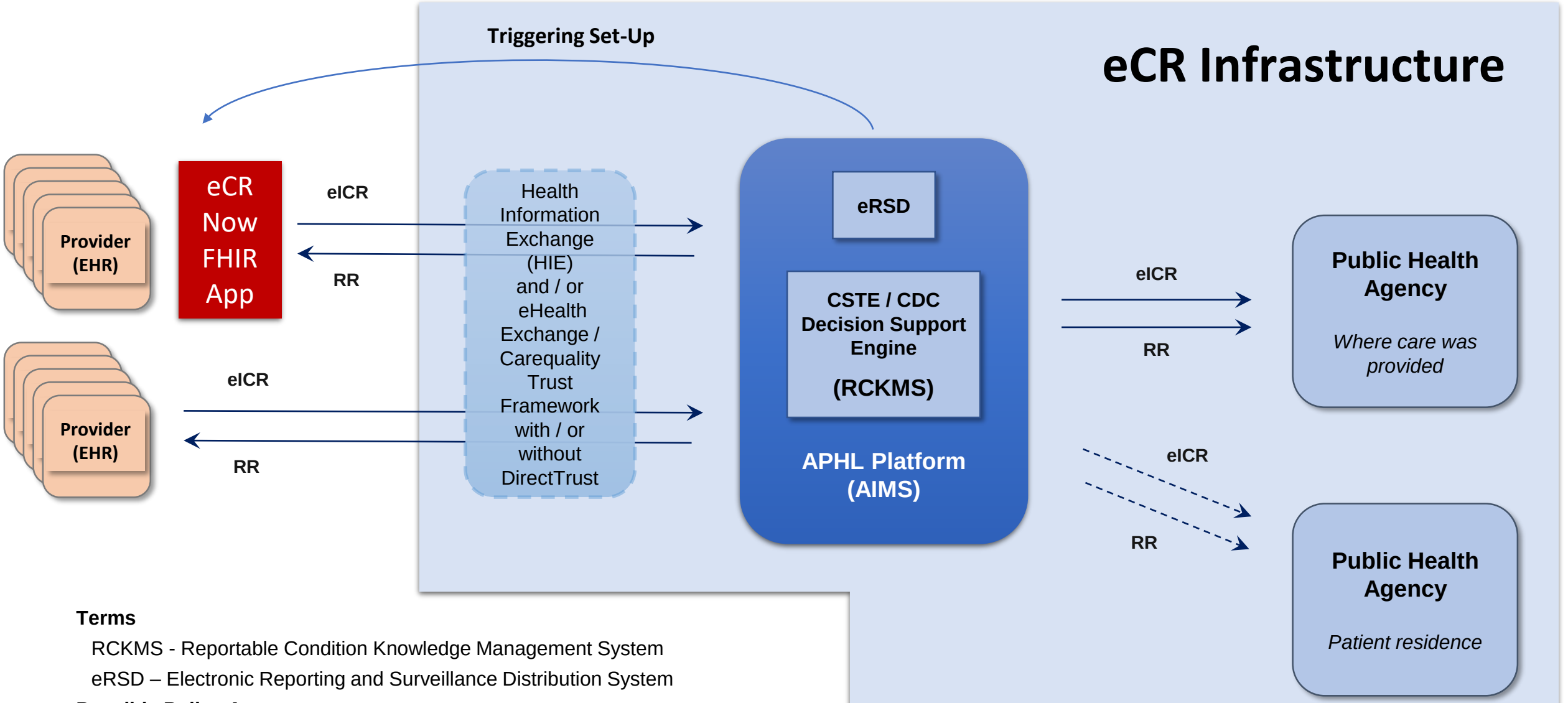
- Accelerates response
- Efficiently monitors the spread of reportable diseases
- Improves communication with healthcare
- Provides more complete data
- Enables bidirectional data exchange

Healthcare Provider eCR Benefits

Reduces burden without disrupting the clinical workflow

- Saves time by eliminating manual data entry and reporting
- Fulfills legal reporting requirements
- Streamlines jurisdiction reporting challenges
- Can be implemented for all reportable conditions
- Receives information back from public health associated with the reportable condition
- Fulfills the CMS Promoting Interoperability Program requirement for eCR

eCR Infrastructure



Terms

RCKMS - Reportable Condition Knowledge Management System

eRSD – Electronic Reporting and Surveillance Distribution System

Possible Policy Agreements

eHealth Exchange, Carequality, CommonWell, APHL participation agreement

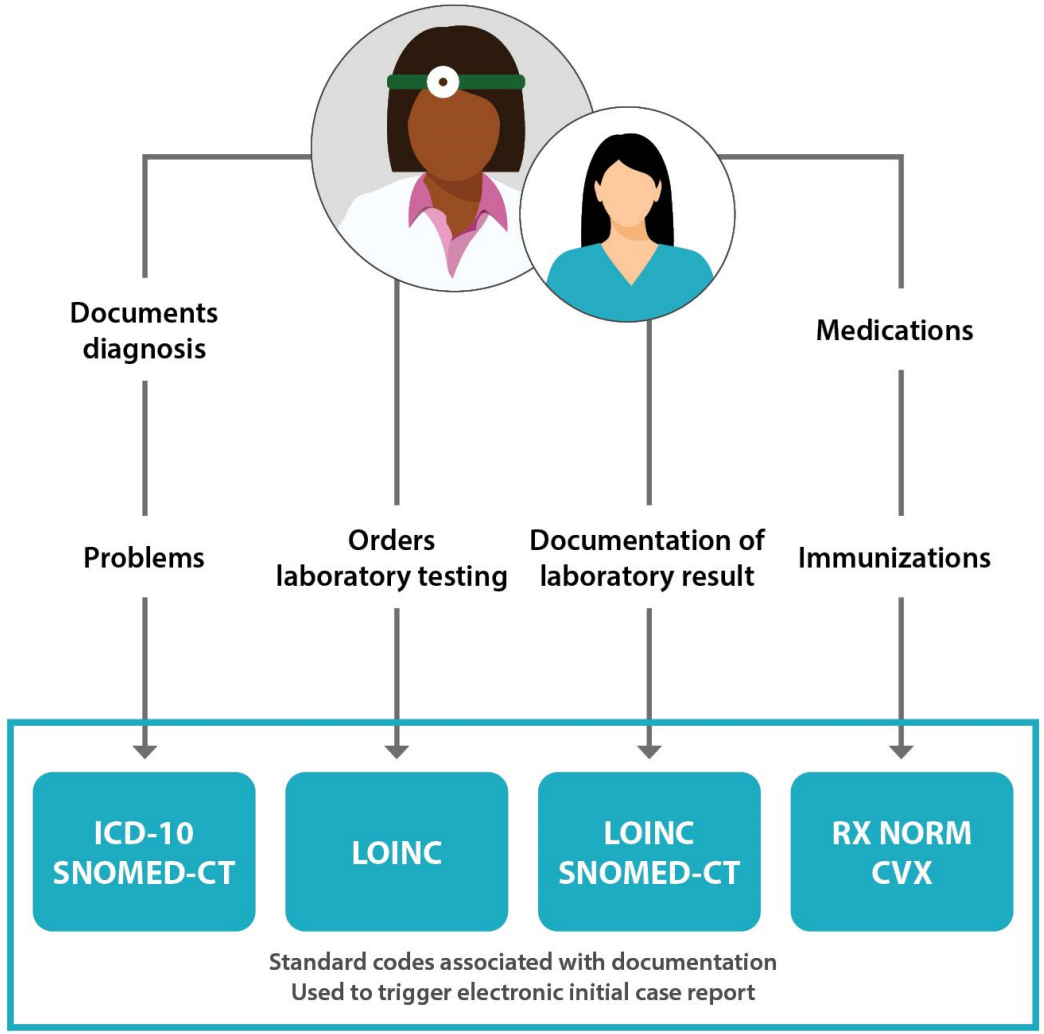
HL7 Standards

eICR - Electronic Initial Case Report CDA v1.1

RR - Reportability Response CDA v1.0

Source: CDC eCR Team

Triggers



Source: CDC eCR Team

Electronic Initial Case Report (eICR)

- Uses HL7 CDA-based document or FHIR.
- Includes CSTE-identified data elements necessary for public health to initiate a case investigation.
- Currently implemented: the CDA eICR R1.1 Implementation Guide was published in January 2017.
  - FHIR eCR IG was published in January 2020.
  - CDA Release 2.0 was published in January 2020.
  - Based on COVID lessons, IG was updated in HL7 Jan 2021 ballot cycle. Release 3.0 to be published in Fall 2021.

eICR Data Elements, Release 1.1

Patient	Patient	Provider	Facility	Encounter	Provenance

• **Identity**
  • Patient Id
  • Patient Name
  • Parent/Guardian Name
• **Contact**
  • Patient or Parent/ Guardian Phone
  • Patient or Parent/ Guardian Email
• **Location**
  • Patient Address
	• **Demographics**
	  • Patient DOB
	  • Patient Administrative Sex
	  • Patient Birth Sex
	  • Patient Race
	  • Patient Ethnicity
	  • Patient Preferred Language
		• **Identity**
		  • Provider Id
		  • Provider Name
		• **Contact**
		  • Provider Phone
		  • Provider Fax
		  • Provider Email
		• **Location**
		  • Provider Office/Facility Name
		  • Provider Address
			• **Identity**
			  • Facility ID Number
			  • Facility Name
			  • Facility Type/ Hospital Unit
			• **Contact**
			  • Facility Phone
			  • Facility Fax
			• **Location**
			  • Facility Address
				• Encounter Type
				• Visit Date/Time (outpatient)
				• Admission Date/Time
				• Discharge Date/Time
					• **When**
					  • Date of Report
					  • Report Submission Date/Time
					• **Where**
					  • Sending application

eICR elements are aligned with the USCDI.

eICR Data Elements, Release 1.1 (Continued)

Clinical: Notes, Symptoms, & Diagnoses	Clinical: Lab	Clinical: Medication	Clinical: Risk Factors - Pregnancy	Clinical: Risk Factors - Other	Clinical: Other

• History of Present Illness
• Reason for Visit
• Symptom List
• Problem List
  • **Problem (Diagnosis) Trigger**
• Encounter Diagnoses
  • **Problem (Diagnosis) Trigger**
• Diagnosis Date
• Date of Onset
	• Lab Order Code (Ordered test)
	  • **Lab Order Code Trigger**
	• Placer Order Number
	• Lab Order Code (Resulted test)
	  • **Lab Order Code Trigger**
	• Lab Result
	  • **Lab Result Code Trigger**
	• Filler Order Number
		• Medications Administered (list)
		• Immunization Status (list)
			• Pregnancy Status	• Patient Occupation
				• Travel History Dates
				• Travel History Location
					• Death Date

eICR elements are aligned with the USCDI.

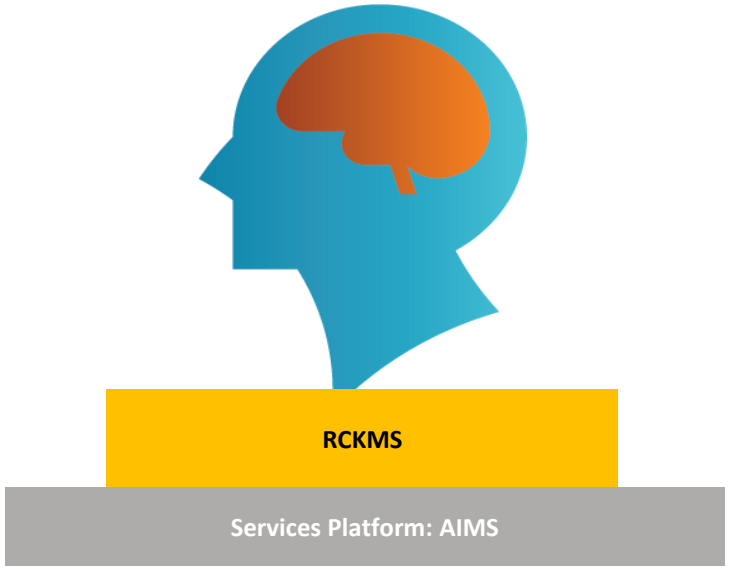
New Elements in eICR 3.0*

Patient	Clinical: Lab	Clinical: Medication	Clinical: Risk Factors - Pregnancy	Clinical: Risk Factors - Other	Clinical: Other
• Gender identity • Tribal Affiliation • Tribal Enrollment Status • Country of Nationality • Country of Residence	• Lab Result Status • Specimen Source • Specimen Type • Specimen Id • Specimen Collection Date	• Medications: Admission • Medications: Administered • Medications: Historical • Medications: Planned • Immunization Status • Vaccine Credential Patient Assertion	• Pregnancy Status • Pregnancy Status Determination Date and Method • Estimated Date of Delivery and Determination Method • Estimated Gestational Age of Pregnancy • Estimated Gestational Age Determination Date and Method • Last Menstrual Period • Pregnancy Outcome and Date • Postpartum Status	• Present/Usual Industry • Present/Usual Occupation • Current Job Title • Current Employer Name, Phone, Address • Occupational Exposure • Emergency Outbreak Information • Exposure/Contact Information • Travel History: Purpose and details • Homelessness Status • Disability Status	• Therapeutic Medication Response • Vital Signs • Chief Complaint • Past Medical History • Review of Systems • Procedure • Planned Procedure

*Release 3.0 adds these additional data elements.

Decision Support: The Reportable Conditions Knowledge Management System (RCKMS)

- Logic-based decision support service
- Sits on an intermediary services platform (AIMS)
- Consists of 3 parts
  - Authoring interface: Public health agencies enter their local reporting requirements
  - Knowledge repository
  - A decision support service that determines if a potential case is reportable or not, and to which jurisdiction(s)



Source: CDC eCR Team

Reportability Response (RR)

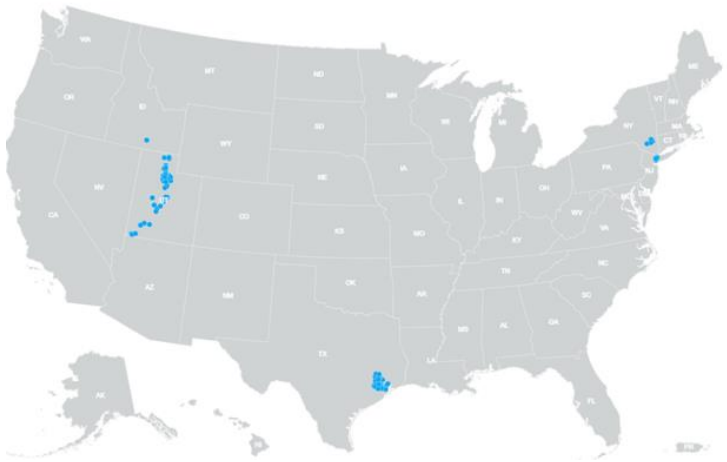
Includes **information from public health back to clinical care** and confirms

- Report of the condition
- Jurisdiction(s) receiving the report
- Optional additional relevant information (e.g., treatment guidelines or local context)
- Processing and provides feedback (i.e., errors)

Source: CDC eCR Team

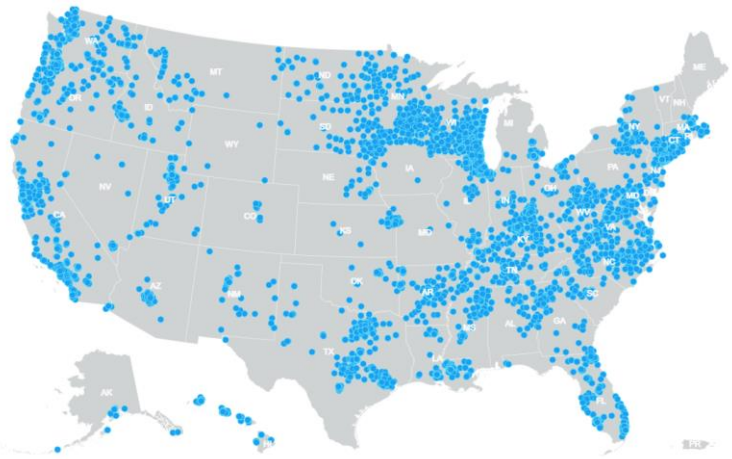
Healthcare's Use of eCR Widens Nationwide

On January 20, 2020,
187 facilities were using eCR for
5 pilot conditions



At the end of 2020,
over **6,500 facilities**
were using eCR for COVID-19

As of May 2, 2022,
over **12,000 facilities**
are using eCR for COVID-19



Over 18.5 million COVID-19 reports have been sent from healthcare as of March 31, 2022

eCR by the Numbers*

62

47 states, D.C., Puerto Rico, and 13 local jurisdictions are now receiving electronic initial case reports for COVID-19 from AIMS

>12,000

Facilities are in production for eCR

>18.5 M

COVID-19 reports have been sent from healthcare to public health agencies

*as of May 2, 2022

Source: CDC eCR Team

Birth Defects Discussion Questions

There are many different ways to build interoperability between healthcare and public health. Is this architecture and data standard the right approach for some conditions reportable to birth defects programs? **Poll Question**

What is the technical infrastructure that can support birth defects programs to receive and use eICRs?

Who within your public health agency current receives eICRs and RRs? What relationships would be helpful to support eCR for birth defects programs?

Source: CDC eCR Team

Questions

Contact Us

Data Modernization Initiative

https://www.cdc.gov/surveillance/projects/dmi-initiative/index.html

Electronic Case Reporting

ecr@cdc.gov

PHII

info@phii.org

PHII.org

Don’t forget to give us your feedback in the post call survey!

PHII.org

Resources

- CDC's Data Modernization Initiative: https://www.cdc.gov/surveillance/data-modernization/index.html
- PHII Data Modernization Website: https://phii.org/data-modernization-initiative/
- Supporting Jurisdiction Public Health Departments
- Electronic Case Reporting: https://www.cdc.gov/ecr/index.html; https://ecr.aimsplatform.org/healthcare/confirm-policy-path
- Reportable Conditions Knowledge Management System: https://www.rckms.org/
- To help birth defects programs determine readiness for automated electronic data exchange using health information standards review the BDS readiness assessment https://phii.org/resources/birth-defects-surveillance-readiness-assessment/

What is North Star Architecture?

The **North Star Architecture** is CDC's investment in public health data infrastructure for STLTs.

- Secure, multi-tenant, cloud environment for more efficient sharing of infrastructure, applications, tools, and data
- Offer a range of STLT support levels
  - **Local STLT Hosting**: current state
  - **Hybrid:** mix of STLT self-hosted and SaaS offerings
  - **Central Hosting:** cloud-hosting of STLT infrastructure in isolated, secure, STLT-controlled environments
- Participatory CDC-STLT governance to develop transparent rules for infrastructure and product development, operations, and data access/use