

The “State” of Health Information Exchange (HIE) Today and Tomorrow

A Glimpse into Connecticut, Maine & Rhode Island

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Neither the Connecticut Office of Health Strategy nor HIMSS NE had any influence the content of this program.



New CME Series – with CPE sought as appropriate

Health Information Technology for Clinicians: How to Achieve Optimal Outcomes

Webinars and In-person events



Activity Director: Thomas Agresta MD, MBI

Department of Family Medicine, Center for Quantitative Medicine

UConn Health

UConn
HEALTH

Health Information Technology for Clinicians: How to Achieve Optimal Outcomes

Sample Topics

- Medication Safety/
Reconciliation
- Health Data Analytics
- eCQMs (electronic clinical quality measures)
- TeleHealth
- Precision Medicine
- Health Information Exchange
- Patient Consent models
- Public Health Informatics
- Patient-Generated Data

Learning objectives

1

Define models of Health Information Exchange used in CT, RI and ME

2

Identify some of the major healthcare delivery challenges that HIEs solve

3

Describe how HIEs are addressing current and future COVID-19 health data needs

Housekeeping



All participant lines will be muted during the panel discussion



The panelist will address you questions during the Q/A session from the Q/A chat feature



If we are not able to address your question today, we will follow up with you directly using your registered email.



This session will be recorded and available for download along with the slides used today.



Instructions on how to access will be sent after the session to your registered email along with instructions to earn CME and CPE credit.

Presenters

Allan Hackney, CISM, CRIC



**Health Information
Technology Officer - CT
Office of Health Strategy
Chair - Board of Directors
CONNIE**

Neil Sarkar, PhD, MLIS, FACMI



**President and CEO
Rhode Island Quality Institute,
Associate Professor of Medical
Science, Center for Biomedical
Informatics, Brown University**

Shaun Alfreds, MBA



**CEO HealthInfoNet
Professor Department of Family and
Community Medicine, University of
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Disclosures: All presenters have reported they have no conflicts to disclose

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HEALTH**

What is Health Information Exchange (HIE)?

❑ *HIE provides the capability to electronically move clinical information among disparate healthcare information systems, and maintain the meaning of the information being exchanged.*

- The goal of HIE is to facilitate access to and retrieval of clinical data to provide safe, more timely, efficient, effective, equitable, patient-centered care. HIE is also used by public health authorities to assist in the analysis of the health of populations.

❑ *The term "HIE" is generally used as either a verb or a noun:*

- **HIE (verb)** - The sharing action between any two or more organizations with an executed business/legal arrangement that have deployed commonly agreed-upon technology with applied standards for the purpose of electronically exchanging health-related data between the organizations.
- **HIE (noun)** - A catch-all phrase for an organization that facilitates health information exchange, known variously as **Health Information Exchanges (HIE's)**, **Health Information Networks (HIN's)**, **Regional Health Information Organizations (RHIO's)**, and so forth.

Why are HIE's important?

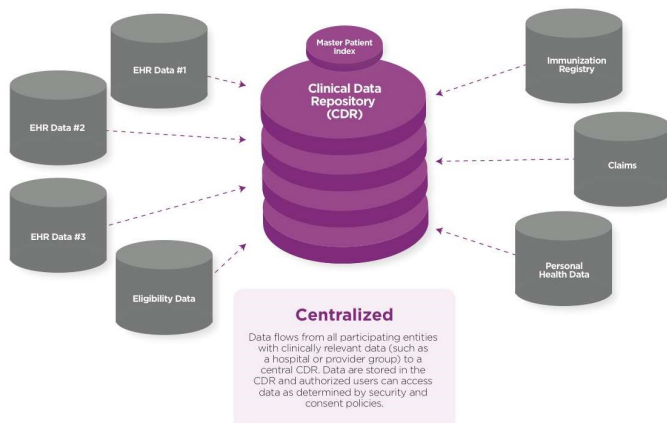
□ *HIEs and HIOs can provide many important benefits for providers, patients and hospitals, such as:*

- **Enhanced care coordination** through communication between providers is of critical importance for patient care, and leads to improved outcomes and patient safety. It can also reduce or eliminate redundant and unnecessary testing.
- **Access to the right information, at the right time**, for providers, patients and all other stakeholders.
- **Improved efficiency and reliability** through the elimination of unnecessary paperwork and providing caregivers with clinical decision support tools.
- **Improved quality and safety** through reduction of medication and medical errors.

HIE models

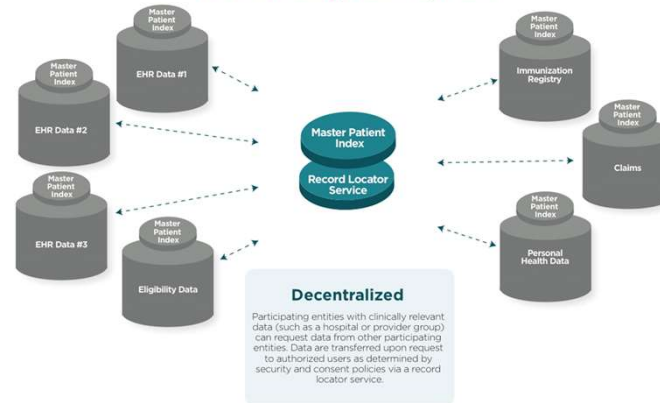
Centralized

Centralized Repository Model



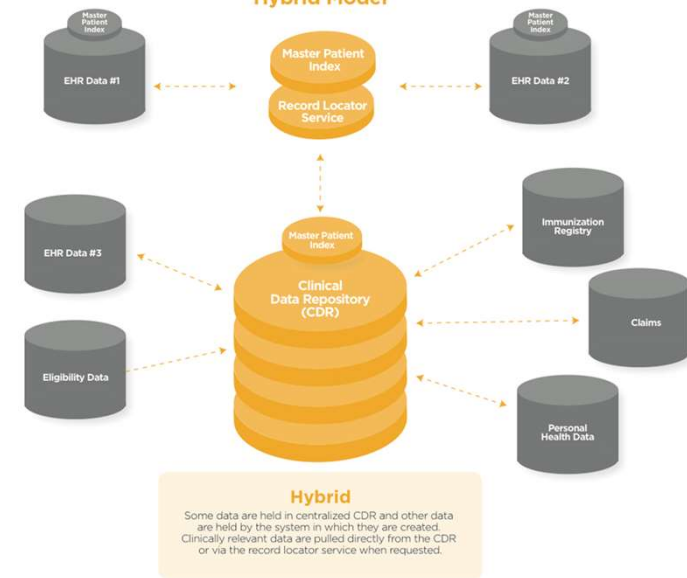
Federated

Decentralized (Federated) Model



Hybrid

Hybrid Model



Leveraging HIE Data & Tools to Respond to the COVID-19 Pandemic

Shaun T. Alfreds
Executive Director and CEO



HealthInfoNet & Maine's HIE

Overview of Connections & Services

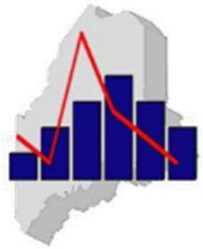
Making connections to improve patient care, quality, and safety by providing better, easier, and safer solutions.

About HealthInfoNet

- HealthInfoNet operates Maine's statewide Health Information Exchange (HIE)
 - State of Maine law governs patient informed consent requirements for HIE participation
- HealthInfoNet is an independent nonprofit organization governed by a voluntary, community-based board of directors and advisory committees
 - Our members represent medical providers, public health organizations, patients, government agencies, and businesses throughout the state
- HealthInfoNet provides a number of services to our participating provider organizations, including access to our clinical portal, real-time event notifications, public health reporting, predictive analytics and measures, and more



HealthInfoNet's History



The **Maine Health Information Network Technology Project** is initiated by the Maine Health Information Center as a feasibility study



HealthInfoNet systems' go live; designated as the State of Maine's **statewide health information exchange (HIE)**



HealthInfoNet builds on its record of innovation by establishing a subsidiary company, **Cureous Innovations**

2004

2006

2009 – 2010

2011 – present

2019



With the study completed, **HealthInfoNet** is established with support from Maine's largest health systems

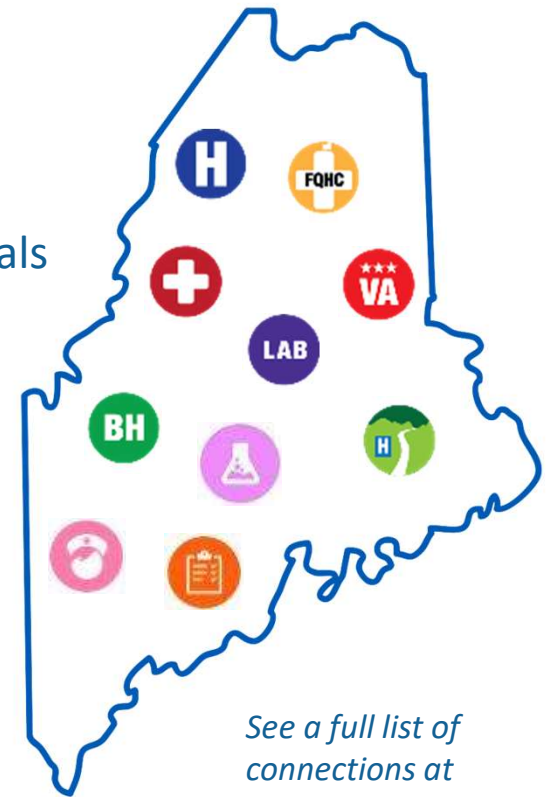


HealthInfoNet becomes **market-leading HIE**, expanding connections to behavioral health and general medical providers, Veterans Affairs clinicians; developing predictive analytics platform and medical event notifications system; establishing key connections with public health registries; collecting and reporting social determinants of health information; etc.



Maine HIE Participants

- Connected to more than 790 provider locations across Maine
- The type of providers connected include:
 - All health systems, acute care hospitals, and critical access hospitals
 - Veterans Affairs sites
 - A majority of ambulatory facilities, FQHCs
 - Some behavioral health and post acute care facilities
 - Laboratories (including NorDx, Quest, ALI, Dahl-Chase)
 - Maine EMS (ImageTrend)
 - Pharmacy datasets (SureScripts and MaineCare)



See a full list of connections at www.hinfonet.org



Maine HIE Data Sources

As we connect to sites across the state, our data warehouse is expanding to incorporate new data sources and use cases – from clinical and claims data to social determinants of health and more



Demographics



Encounters



Vital Signs



Laboratory &
Microbiology Results



Radiology Reports



Adverse Reactions &
Allergies



Medication History
(Prescribed & Filled)



Diagnosis, Conditions,
& Problems



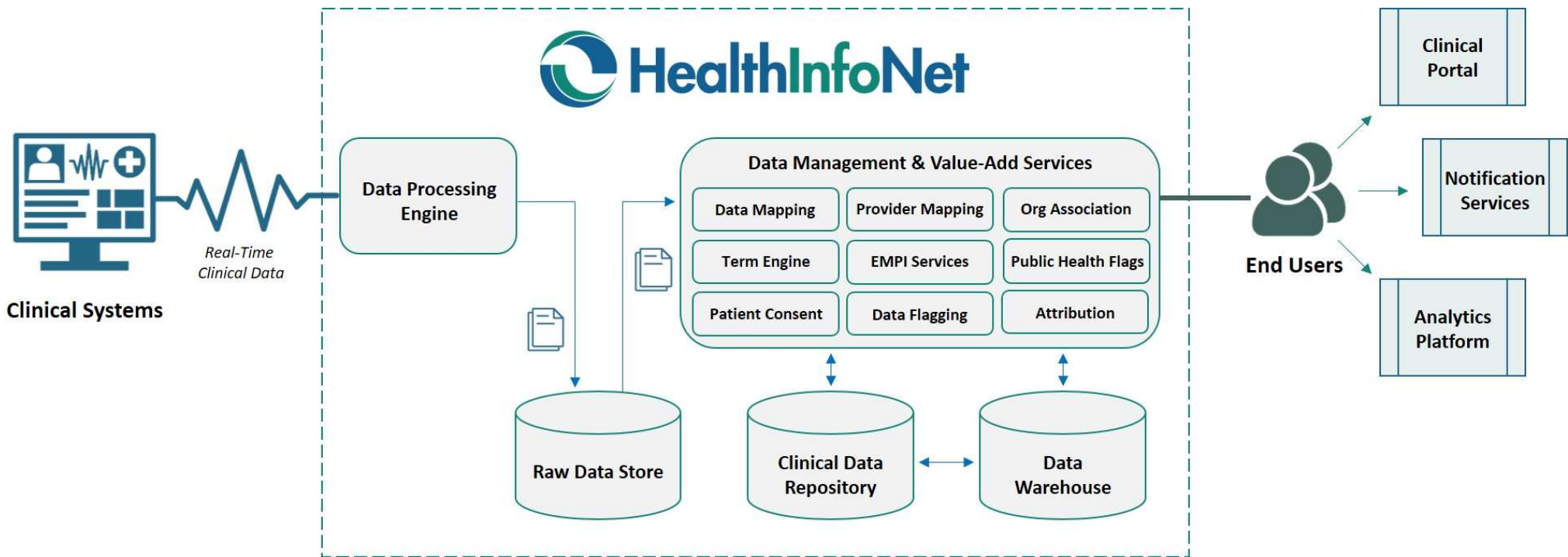
Immunization
Information



Documents & Social
Determinants



Maine HIE Information Architecture



Patient Care Data Dissemination

- Deliver aggregated patient-level demographic, encounter, and diagnostic information through a centralized resource designed to support care coordination and treatment options

HOW IS IT ACCESSED?

- InContext EHR application
- Parameter-based launch
- Online via VPN or 2-factor auth

WHO IS IT ACCESSED BY?

- Pharmacists • Hospitalists • Care Managers • Emergency Staff
- Physicians • VA Staff • Behavioral Health Workers • Quality Coordinators

WHAT DATA IS AVAILABLE?

- Demographic information
- Encounter history
- Lab and microbiology results
- Vital signs
- Radiology reports
- Adverse reactions/allergies
- Medication history
- Diagnosis/conditions/problems
- Immunization records
- Documents (e.g., PCP notes)
- Social determinants data

WHAT FEATURES ARE OFFERED?

- Worklist patient management
- Real-time events of care notifications
 - Admissions and discharges
 - Final reports and results
 - New documents
 - Deaths
- Mental health information
- VA connections
- Evidence-based care decision information

Analytics & Reporting

- HIN provides timely reporting through innovative applications of analytics and delivery mechanisms
 - Near real-time predictive analytics used to address risk and improve outcomes
 - Statewide Maine CDC quality dashboards to assess diabetes and hypertension outcomes
 - Medicaid utilization measurement to assist MaineCare with identifying members using the emergency department for non-emergent diagnoses
 - Alerts sent to the Maine CDC:
 - Laboratory reporting – Specific lab results indicating the existence of one of 72 diseases for mandated reporting
 - Syndromic Surveillance – Events of care where the chief complaint indicates possible disease or condition that requires review/intervention





HIE Clinical Portal COVID-19 Information



Available COVID-19 Information within the Clinical Portal

Adapting and advancing as clinical workflows and needs change across the care continuum through applications of timely and actionable information.

Finding a Patient's COVID-19 Test Results

- During the COVID-19 pandemic, Clinical Portal users can find important information about their patients' laboratory test results
- Upon logging in to the Clinical Portal, users will find an alert on the Demographic Search screen providing instructions on how to access a patient's COVID-19 laboratory test results

Search Criteria

Facility	<input type="text"/>	MRN	<input type="text"/>
First Name	<input type="text"/>	Last Name	<input type="text"/>
Date of Birth	<input type="text"/>  	ZIP	<input type="text"/>

Notice: How to Find a Patient's COVID-19 Laboratory Test Results

1. Search for and select a patient on this screen.
2. From the selected patient's Patient Summary screen, go to their document view.
3. Visit the patient's Laboratory folder to find available COVID-19 test results, **OR** conduct a search of the patient's documents on the following keywords: COVID-19, COVID19, CORONAVIRUS, NCOV, SARS, SARS COV 2, SARS-COV-2

Click [here](#) for more information. If users have any questions, please contact HealthInfoNet's Customer Care team at customer care@hinfonet.org.



HIE Reporting Dashboards COVID-19 Information

Available COVID-19 Information within Reporting Dashboards

Adapting and advancing as clinical workflows and needs change across the care continuum through applications of timely and actionable information.

COVID-19 Reporting Dashboards

- Developed a series of Tableau reporting dashboards through a collaborative process with data from HealthInfoNet and inputs from Cureous Innovations Inc., Stroudwater Associates, and the Maine Department of Health and Human Services (DHHS)
- The data used in developing the dashboards come from the provider organizations participating in the statewide HIE
- The objective of the dashboards is to report on the patient population that has been tested for or diagnosed with COVID-19 in a laboratory site located in Maine
- The audience for the dashboards are DHHS, Maine CDC, and HealthInfoNet's clinical participants (Health Systems, Hospitals, FQHCs, Practices etc.)



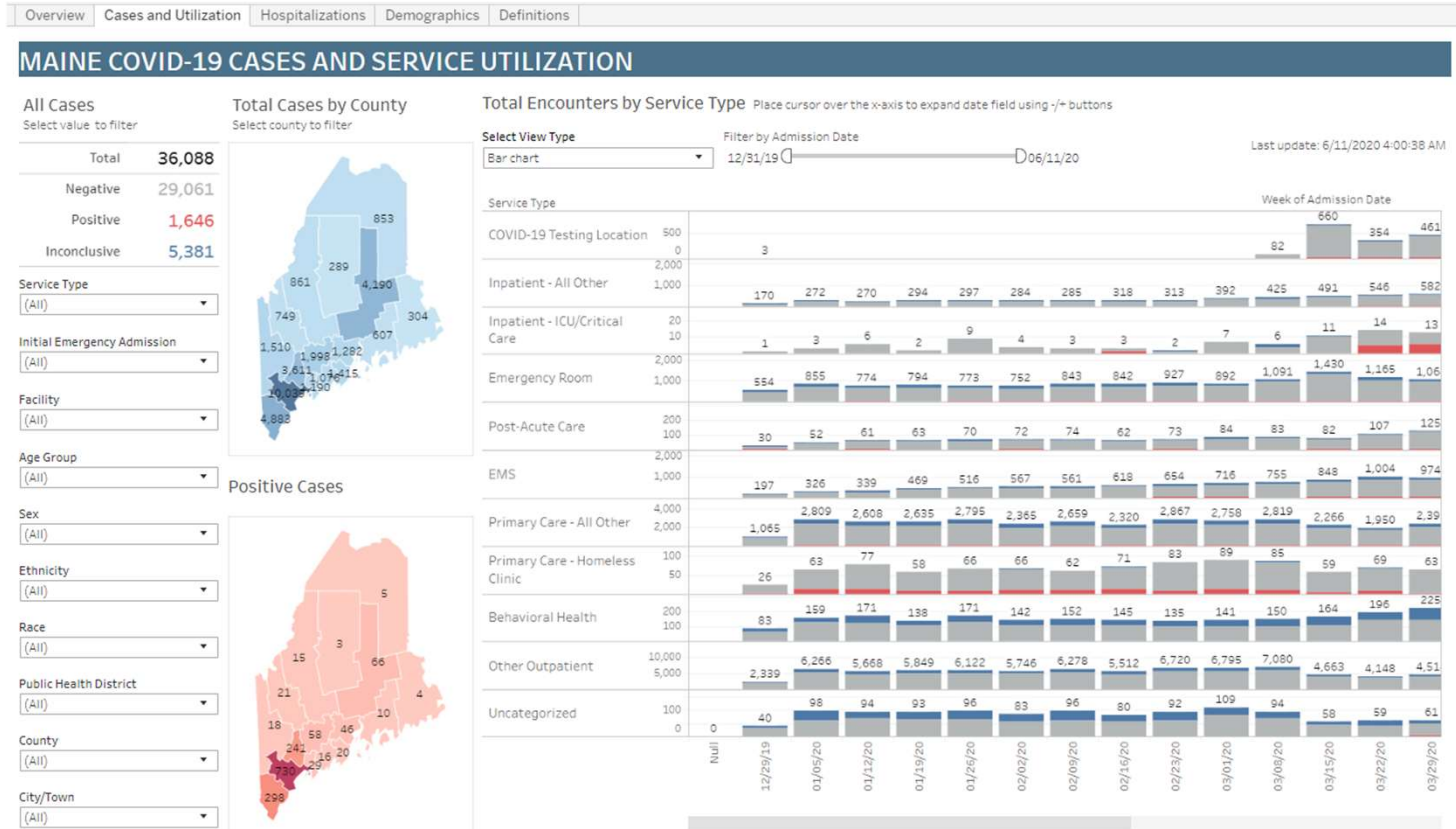
COVID-19 Reporting Dashboards (cont.)

There are three (3) primary dashboards included in the first release of reporting:

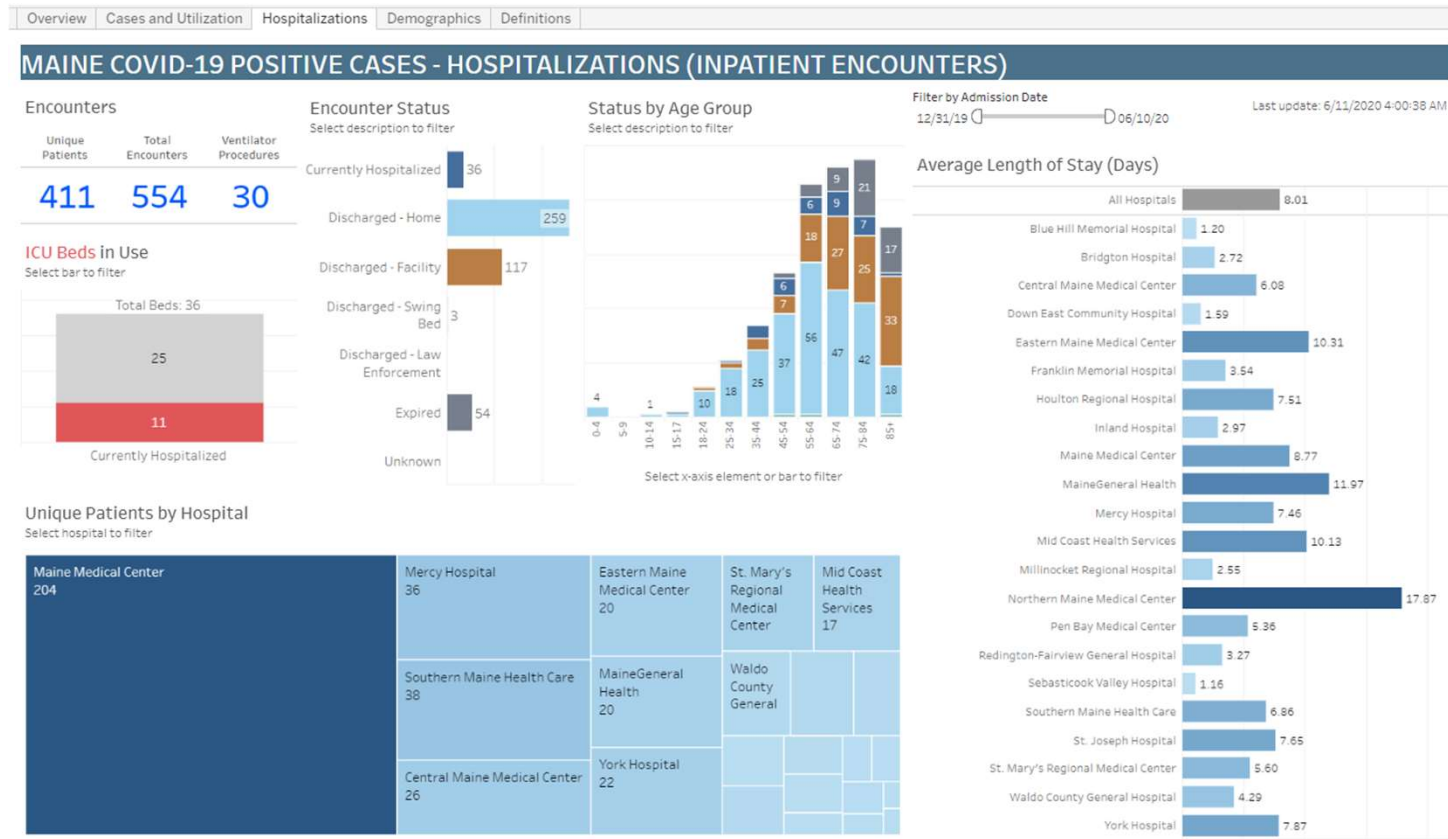
- 1. Cases and Utilization** – Demonstrates the utilization of the healthcare system by service type among individuals who have been tested for or diagnosed with COVID-19
- 2. Positive Cases – Hospitalizations (Inpatient Encounters)** – Demonstrates the utilization and type of hospitalizations among individuals who have been tested positive for or diagnosed with COVID-19
- 3. Positive Cases – Demographic Information** – Demonstrates the demographics among individuals who have been tested positive for or diagnosed with COVID-19



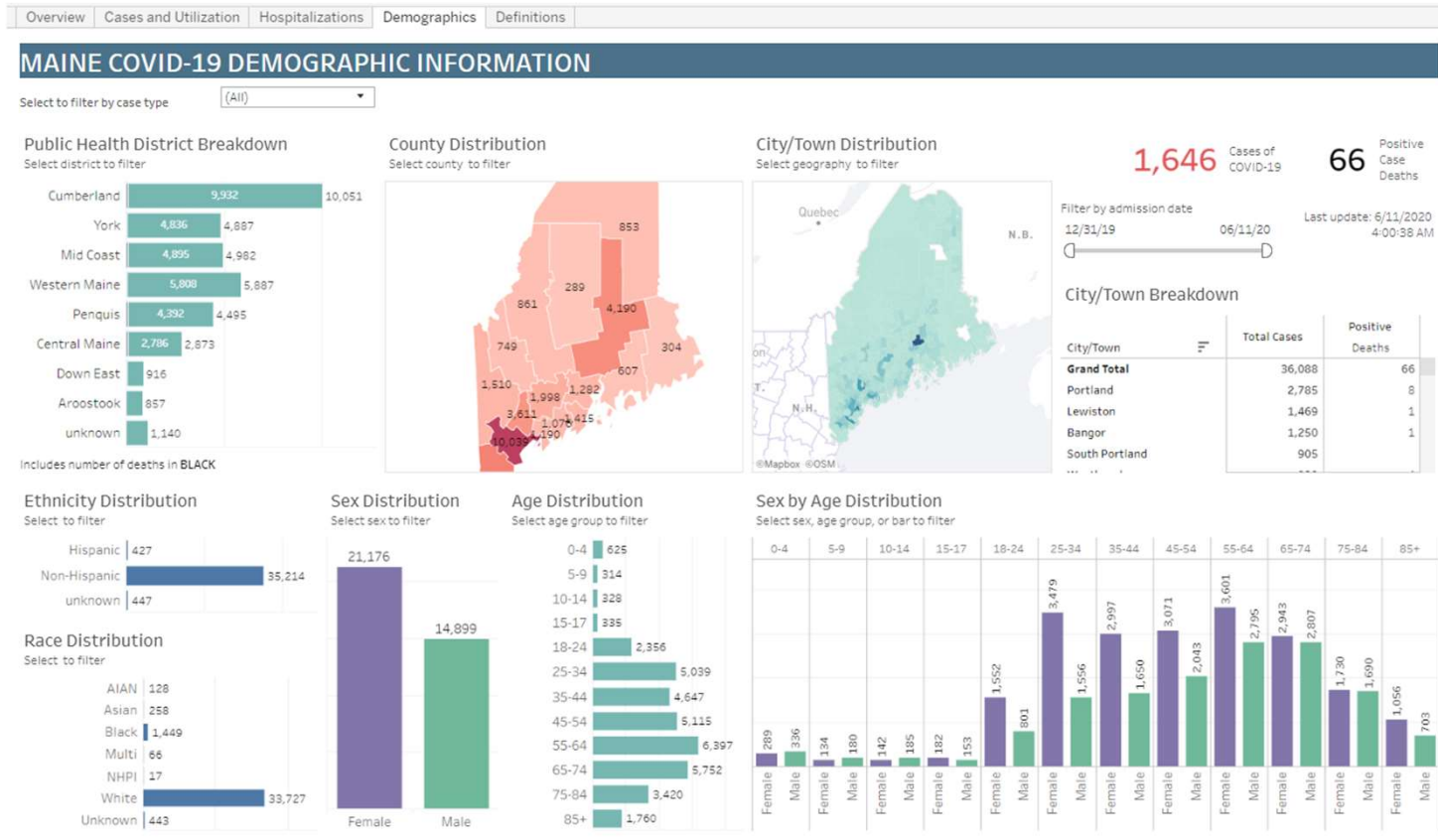
COVID-19 Reporting Dashboards (cont.)



COVID-19 Reporting Dashboards (cont.)



COVID-19 Reporting Dashboards (cont.)



Reporting Efforts Next Steps

- Iteratively incorporate from State Epidemiologists and health system experts in order to refine and develop additional visualizations and analyses of the HIE's COVID-19 data
 - Expanded views of Critical Care/ ICU use and length of stay (completed)
 - Race / Ethnicity Filters (completed)
 - Patient-level drill down for patients associated with facilities (coming soon)
 - Direct linkage back to HIE portal (coming soon)
- Connect the HIE to the Maine Health and Environmental Testing Laboratory (HETL) in order to report on a more comprehensive picture of COVID-19 cases (in process)
- Continue convening health system CIOs and CMIOs in a COVID-19 Taskforce to support a singular statewide data response statewide





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Health Information Exchange in Rhode Island

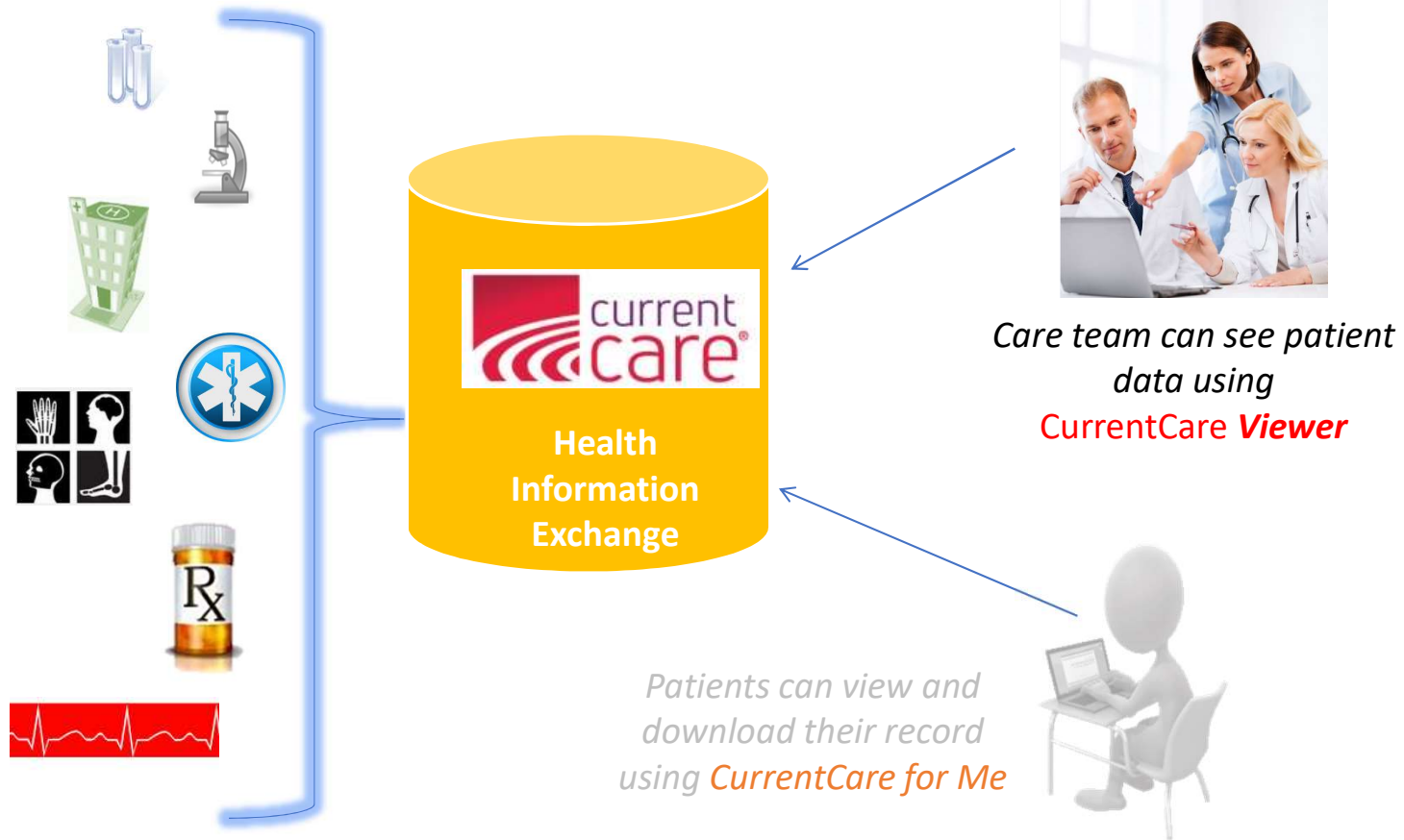
Neil Sarkar, PhD, MLIS, FACMI
President & Chief Executive Officer

June 24, 2020

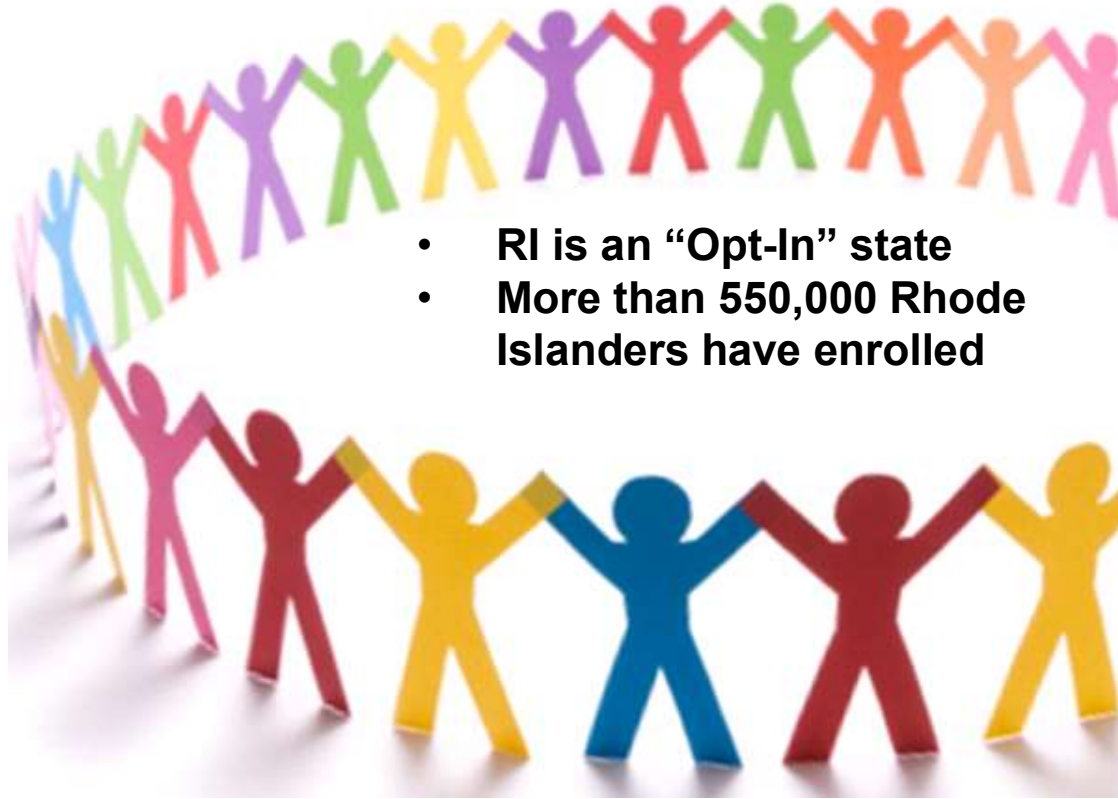
HIE - CurrentCare

- Rhode Island's state-wide Health Information Exchange (**HIE**)
- Operated by the Rhode Island Quality Institute (**RIQI**)
- A secure repository - protected under HIPAA and the RI Health Information Exchange Act of 2008
- Available to HIPAA-covered organizations; no cost to providers or patients
- Patients must enroll ("Opt-in")

HIE - CurrentCare



Patients Decide to Enroll...



- RI is an “Opt-In” state
- More than 550,000 Rhode Islanders have enrolled

Be your own healthcare advocate



CurrentCareRI.org

One, two, three, then add a designee!

1 SIGN UP for CurrentCare

CurrentCare is a *free* service that keeps all of your health records in one place. Save time, money and discomfort from unnecessary x-rays or lab tests, because this information is already in CurrentCare.



2 ADD CurrentCare for Me

Take control of your own healthcare record with CurrentCare for Me. Access your record online 24/7, keep track of your meds, lab tests and more.



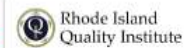
3 GET Peace of Mind

- You can track your own health information and healthcare online 24/7 from anywhere
- Avoid prescription errors and repeat tests



+ Designee

When you sign up for CurrentCare for Me, you can easily designate access to your health record to someone else on your behalf. Just go to: CurrentCareRI.org/Designee and sign up today!



Electronic Health Data Sources



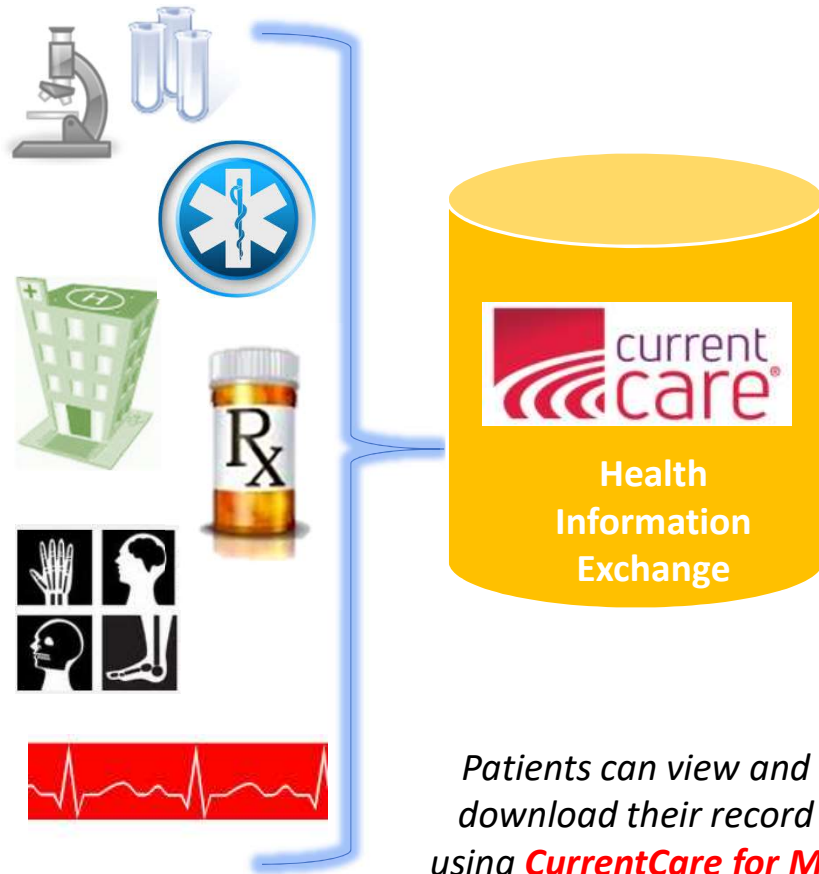
- *Over 520 data sources from:*
 - Hospital Admissions, Discharges, and Transfers (ADTs)
 - Labs
 - Imaging facilities
 - Pharmacies
 - Pharmacy benefit managers
 - Providers' EHRs
 - Urgent Care Facilities
 - Skilled Nursing Facilities

- www.currentcareri.org/guidebook

Privacy and Security

- Controlled Access
 - RI Health Information Exchange Act of 2008
 - A Data Use Agreement must be executed and in place
 - Training is required before each person is granted access
 - Access levels assigned based on role at the practice
- Audit Processes
 - Checks for user looking up own record, family member, or co-worker

CurrentCare for Me



- Download record and take to appointment – e.g., to a new provider
- Results from tests ordered *by all providers*
- Monitor certain tests, e.g. A1C levels over time
- Enable engagement in care
- Designees can receive alerts when enrollees are admitted to or discharged from acute care hospitals in RI and some skilled nursing facilities



Be your own healthcare advocate

CurrentCareRI.org



One, two, three, then add a designee!

1

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+

Designee

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CCAC/RIe 123+



What is a Designee?

With CurrentCare for Me, you can select one or more designees to help with your care.

- A designee with **Full Access** can view your CurrentCare for Me record, make modifications to your account and receive Designee Alerts.
- A designee with **Alerts Only Access** can receive Designee Alerts, but cannot view your CurrentCare for Me record or make modifications to your account.

What are Designee Alerts?

Designee Alerts are email and/or text notifications that will be sent to your Designee(s) when you are admitted to or discharged from a participating hospital or long-term care facility.

Getting Designee Alerts is Easy

- Complete the CurrentCare for Me Designee Form at CurrentCareRI.org/Designee
- Select level of access for each Designee
- Activate Alerts for your Designees by logging into your CurrentCare for Me Account and clicking on the "Manage Designees" tab

Questions?

CurrentCareRI.org/Designee
888-858-4815

Enable ALERTS to notify:

Spouse

Adult Children

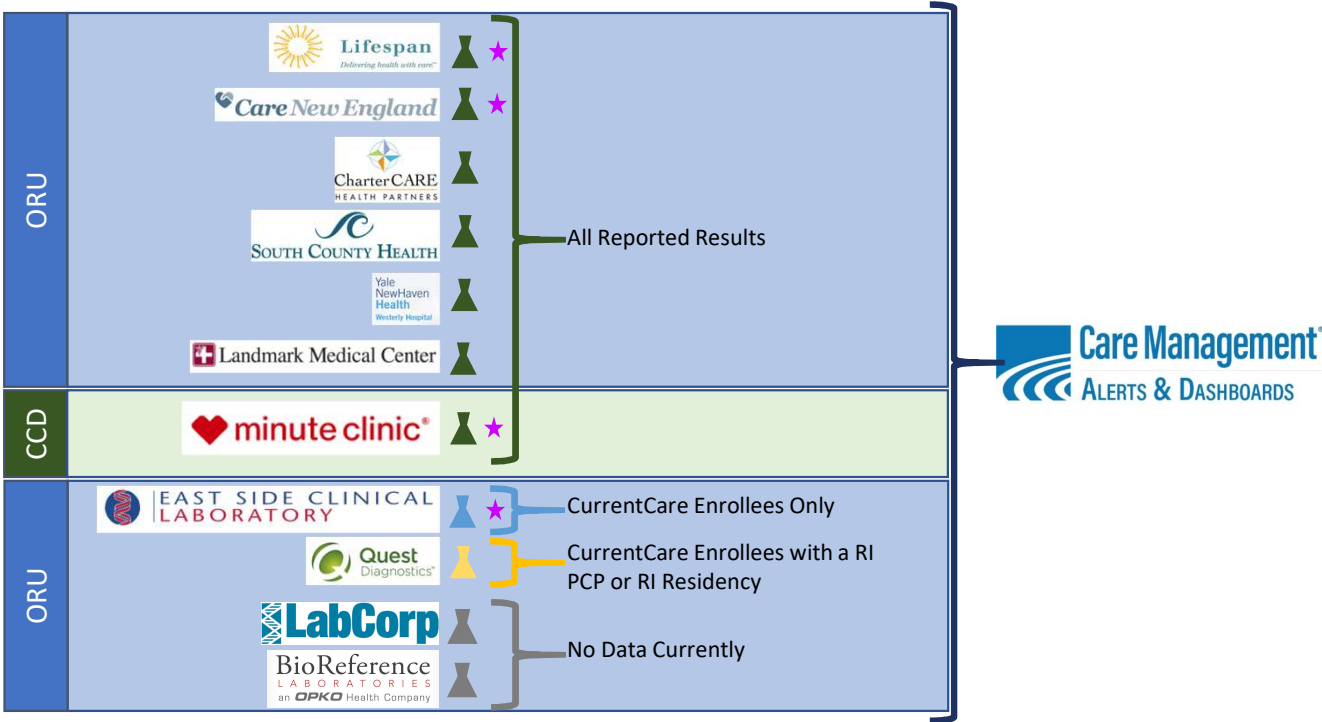
Primary Caregiver

Legal Proxy

Relatives

Friends

COVID-19 Results in Dashboards



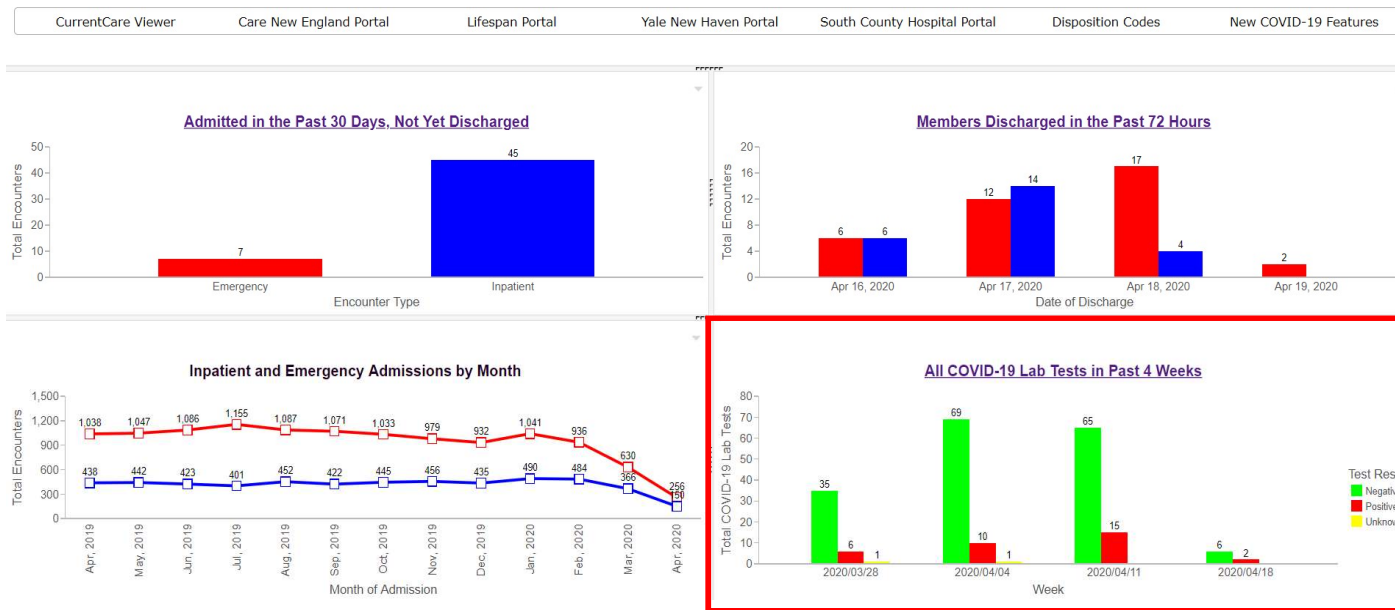
Identifying Possible COVID-19 Encounters

Possible COVID-19 Encounter	Admission Reason
	Painful Urination
	alcohol withdrawal uncomplicated
Yes	Low back pain fever
	RASH
	Chest Pain
	Sprain
Yes	Flu Like symptoms
	Vertigo
Yes	Shortness of breath
	DA/IOL 38.6wks gest diab

COVID-19 Lab Test Results for Patient Panels

MPIID	First Name	Middle Name	Last Name	COVID-19 Risk Factors	COVID-19 Result	ResultTime	Test Source	Test Code	Test Description	Ordered By
100001	Joe		Patient	1	Positive	2020/04/10 18:36	CVSMC	94534-5	Covid-19 Result	Provider, Test
100002	Mike	A	Test	1	Positive	2020/04/16 08:05	CHARTERCARE	5099-7	Coronavirus Ab Ser-aCnc	Provider, Test
100003	Bill		Patient	3	Negative	2020/04/17 13:45	LIFESPAN	94309-2	SARS-CoV-2	Provider, Test
100004	Harry	R	Patient	0	Positive	2020/04/18 10:35	LMK	1230170102	SARS-COV-2 BY PCR	Provider, Test
100005	Mary		Test	0	Negative	2020/04/13 09:46	CVSMC	94534-5	Covid-19 Result	Provider, Test
100006	Jan	A	Sample	5	Negative	2020/04/20 15:55	CVSMC	94534-5	Covid-19 Result	Provider, Test
100007	Nancy	A	Test	2	Negative	2020/04/20 20:15	LIFESPAN	94309-2	DOH SARS-CoV-2 rRT-PCR	Provider, Test
100008	Dylan		Patient	6	Negative	2020/04/17 16:33	CARENE	Special Pathogen Result	Special Pathogen Result	Provider, Test
100009	Sam	N	Sample	5	Positive	2020/04/20 17:12	CARENE	Special Pathogen Result	Special Pathogen Result	Provider, Test
100010	Alex	A	Person	4	Negative	2020/04/19 01:05	LIFESPAN	94309-2	SARS-CoV-2	Provider, Test

Testing Volume Visualization for Patient Panels



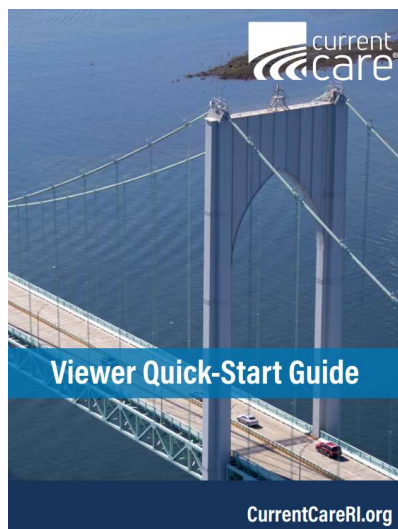
Screenshots contained in this document do not contain Protected Health Information (PHI).
All data presented here has been randomly generated from databases of fictitious data.

Summary of HIE in Rhode Island

- **CurrentCare**
 - Enables provisioning of appropriate care and avoids repeat testing
 - Enables providers give exceptional care because they can see your healthcare data from other participating providers and organizations, all in one place
 - Supports coordination of care across complex healthcare ecosystem
- **Additional HIE Services**
 - Assigning designees
 - Dashboard services to support care coordination
 - Providing timely data in an actionable format

Learn more at CurrentCareRI.org/knowledgecenter

CurrentCare Viewer Quick-Start Guide – features and functions of the CurrentCare Viewer.



CurrentCare Guidebook – listing over 517 data sources



CurrentCare Knowledge Center:
<http://CurrentCareRI.org/knowledgecenter>

Viewer Resources

Getting Started

Top Tips

Microlearning

Workflow How-Tos

My CurrentCare Story

Library

FAQs

Check for periodic emails and notifications on the Viewer log in screen to keep you informed of new features, data sources, and changes to the CurrentCare Viewer.

Poll

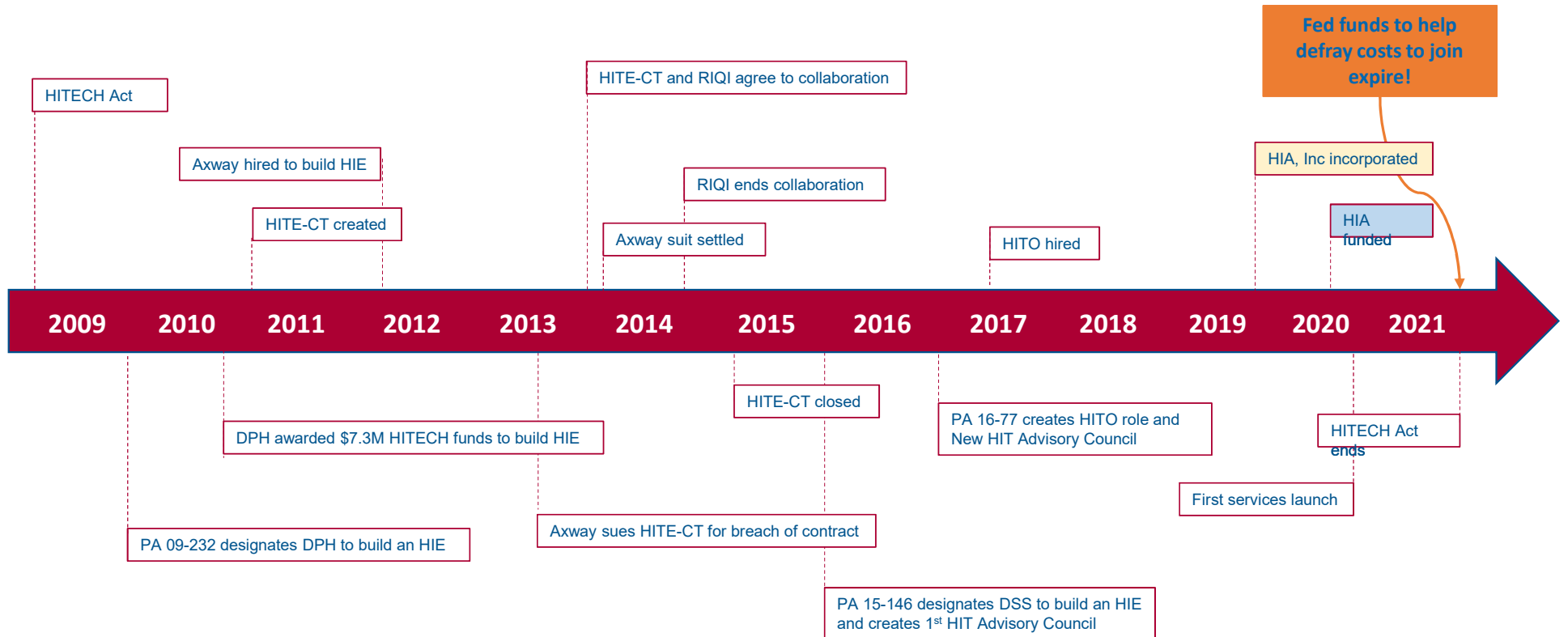
How are HIEs addressing current and future COVID-19 health data needs?

- a) Enhanced access to patient medical records regardless
- b) Increased availability of public health data
- c) Opportunity for enhanced collaborative care
- d) All of the above

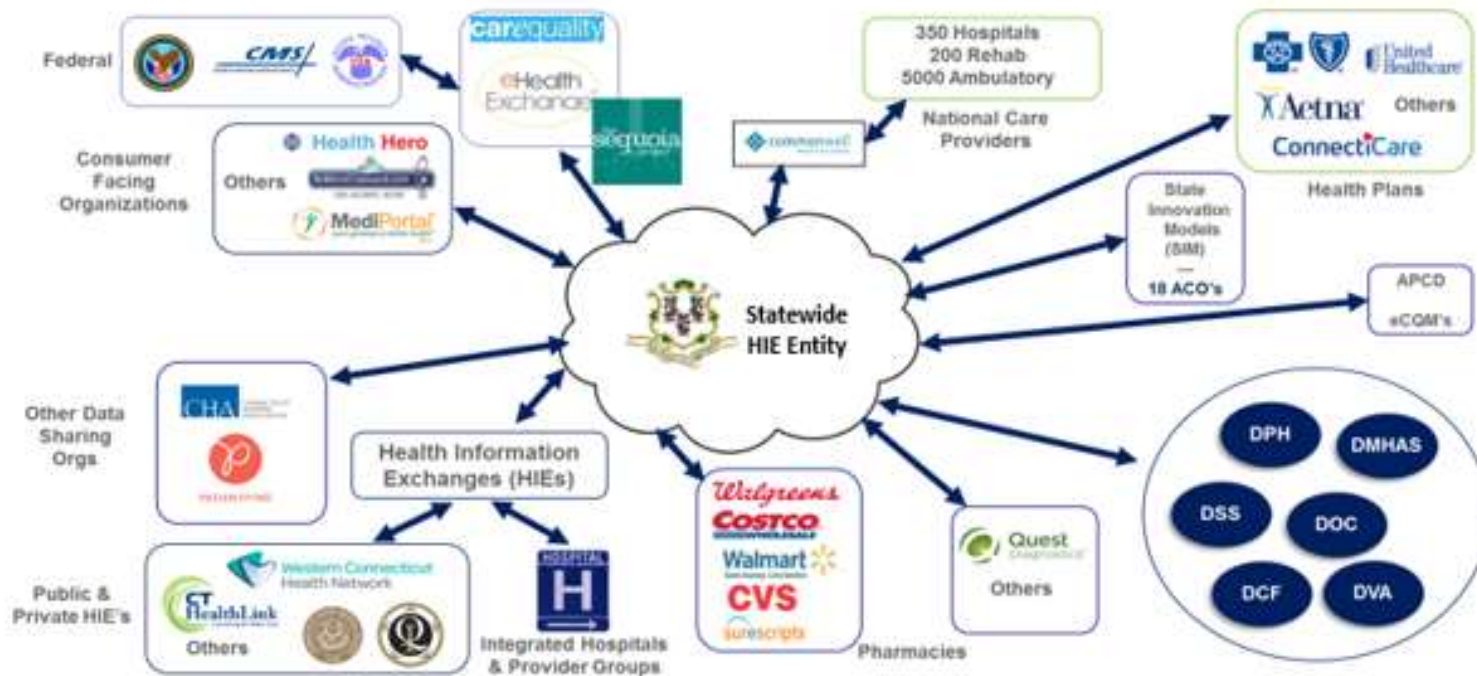


- Connecticut's Non-profit Legislatively mandated HIE
- Incorporated as Health Information Alliance Inc. in 2019
 - BOD – majority private with state agency representation
- Federal and State funding through HITECH
- NOW - Initial on-boarding occurring for healthcare organizations, state agencies, insurers and others

History of HIE in CT



CT Vision for HIE – “Network of Networks”



Key objective: facilitating a robust and entrepreneurial ecosystem to drive better health outcome, informed research and economic development

Vision for CT HIE – Nonprofit Public Good Entity

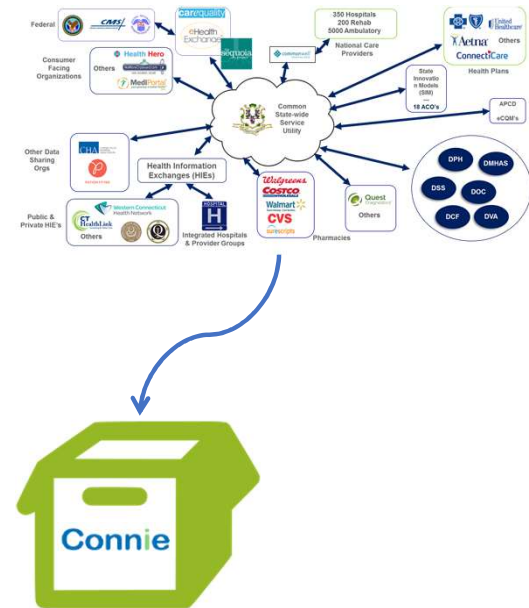
Health Information Alliance, Inc.
d/b/a Connie

Statewide stakeholder engagement identified the need for trust:

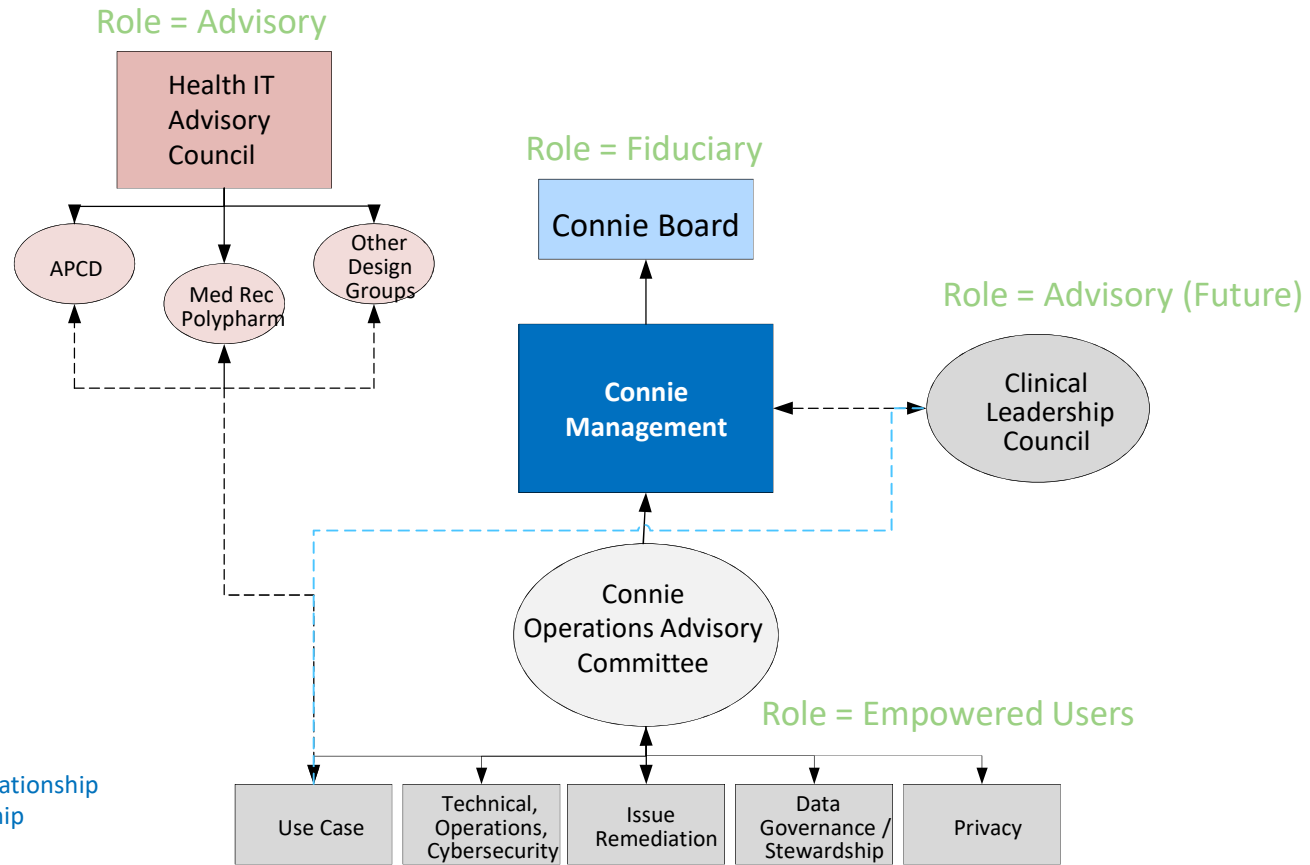
- “Neutral” – no participant in the services is advantaged over any other
- “Trusted” – the services are overseen by representatives reflective of the participants

Incorporated a non-governmental entity to ensure stakeholder buy-in:

- Non-profit, public good entity
- Will deliver the core services to manage identity and facilitate health data exchange
- Adapting a trust framework that sets forth stakeholder engagement



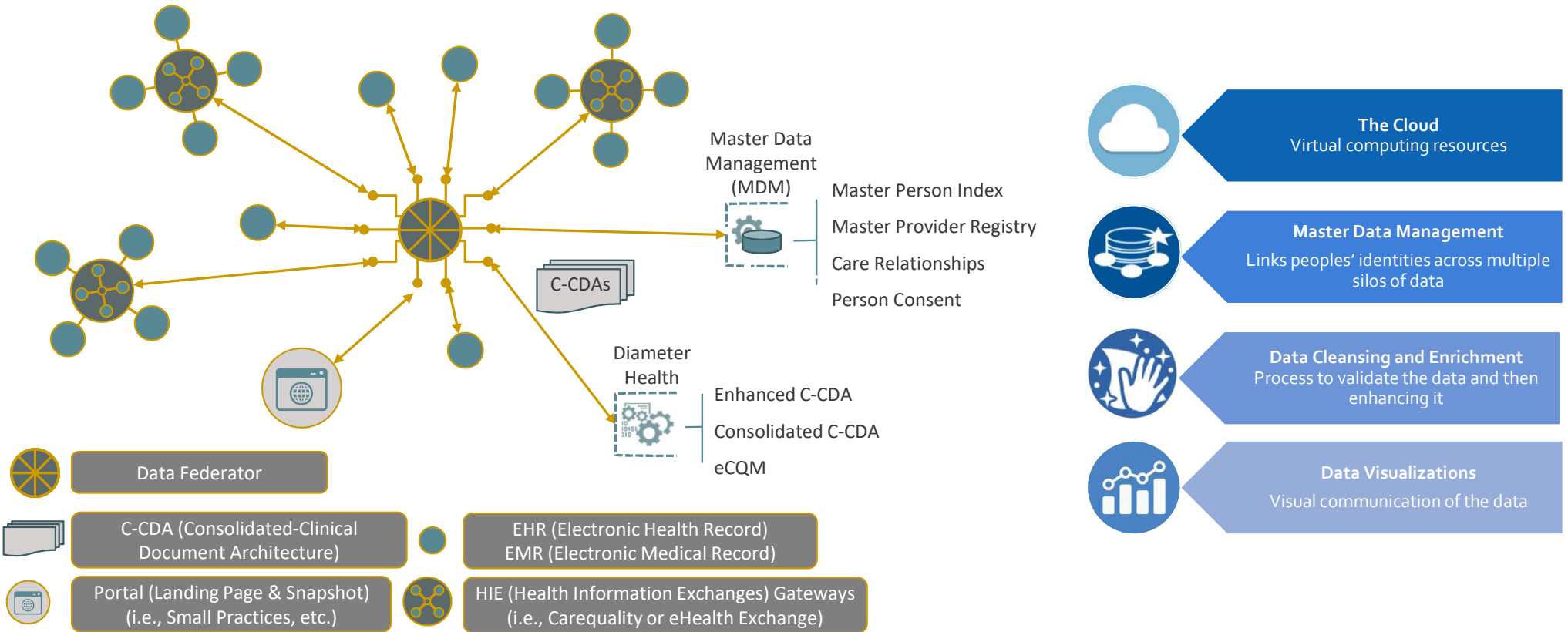
HIE/HIT Governance Structures



Solid line = Legal or Statutory Relationship
Dotted line = Advisory Relationship



HIE Services – Architectural Overview



Initial and Proposed Use Cases

- Empanelment
- Clinical Care Summary
- Lab orders / results
- Quality measurement (clinical and cost)
- Medication Reconciliation
- PDMP Query
- e-Consultation/ e-Referral
- Immunizations
- Advance Directives
- Telehealth
- Electronic case reporting
- Mental health encounter alerts

Purple = **Proposed** use cases to determine participation under statute

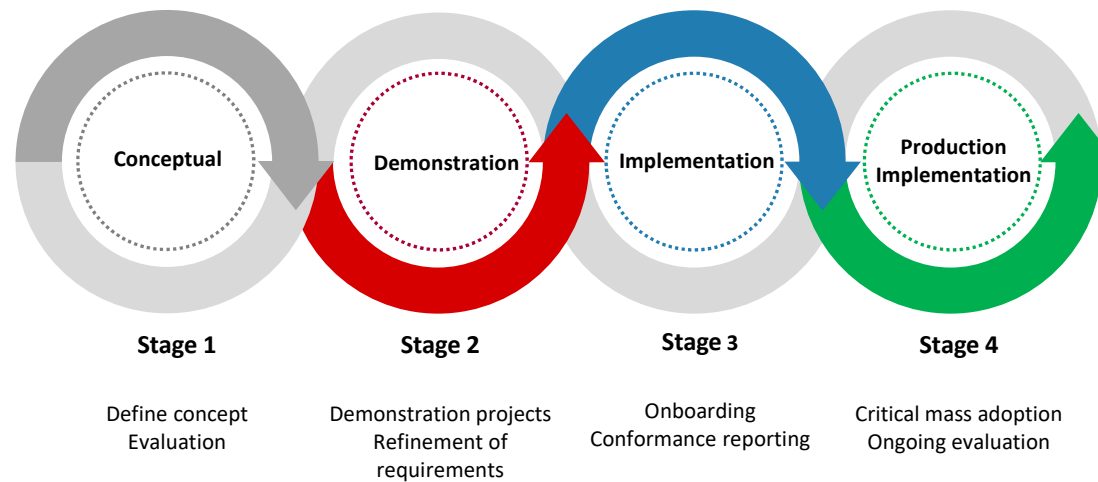
Orange = **Funded and proposed** to be required participation for laboratories

Green = Funded

Blue = Recent Interest



Use Case Factory™ – Prioritizing Interoperability



Pandemic and Early Use of CDAS

- ❑ ***The CDAS infrastructure enabled a quick win on pandemic reporting:***
 - CDAS architecture well suited to rapid aggregation and visualization of data
 - Use of tool validated even while HIE functions are coming online
 - Basic reporting updated daily from various sources”
 - Test counts, cases, presumed and confirmed deaths, hospitalizations

- ❑ ***Gaps still exist in data collection:***
 - Total number of negative test results
 - Patients with COVID-19 on ventilators
 - Patients with COVID-19 being treated in ICUs
 - Data broken down by patients’ pre-existing conditions
 - Hospital capacity
 - Medical data in the format of line lists

Example of Pandemic Reporting

Connecticut COVID-19 Data Tracker

DAILY DATA REPORT
FOR CONNECTICUT
LAST UPDATE: JUNE 18, 2020 | 4:00 P.M. 

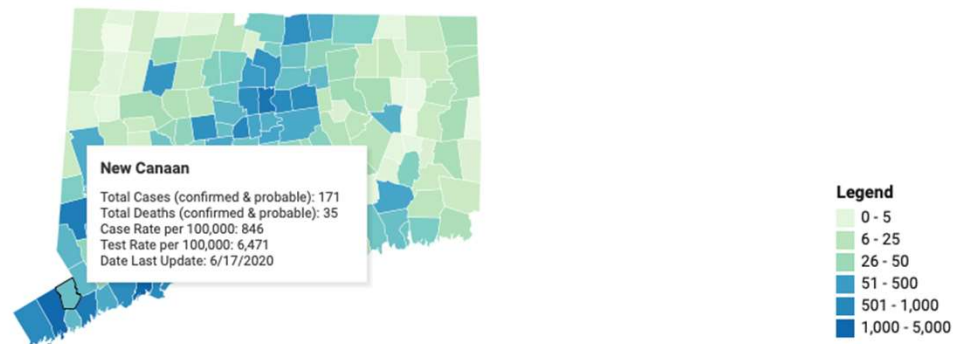
Data on the COVID-19 emergency and response, and supplemental information is provided by [COVID-19 portal](#). All data are also hosted on [data.ct.gov](#), Connecticut's open data portal.

Town Map

Connecticut Towns with Cases of COVID-19

Click town for additional information

Show the previous page



COVID-19 cases and associated deaths include confirmed plus probable.
Source: [CT Department of Public Health](#) · [Get the data](#) · Created with [Datawrapper](#)

Example of Pandemic Reporting

State Summary

Connecticut COVID-19 Summary

Summary for the most recent day of reporting. Total COVID-19 Cases and Associated Deaths include confirmed plus probable.

Measure	Total	ChangeDirection	Change
Total COVID-19 Cases	45,440	+	81
Total COVID-19-Associated Deaths	4,226	+	7
Patients Currently Hospitalized with COVID-19	176	-	10
COVID-19 PCR Tests Reported	370,638	+	4,722

The CT Summary table represents the date the data were reported to the CT DPH. Cases and deaths are cumulative over time. Hospitalization data are collected by the CT Hospital Association.

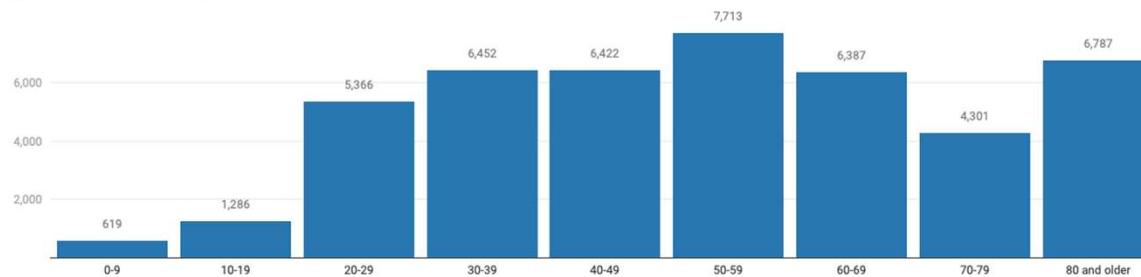
Source: [CT Department of Public Health](#) · [Get the data](#) · Created with [Datawrapper](#)

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Age Group Chart

Number of COVID-19 Cases, Associated Deaths, and Rates per 100,000 by Age Groups

Total Number of Cases



Total COVID-19 cases and associated deaths include confirmed plus probable.

Source: [CT Department of Public Health](#) · [Get the data](#) · Created with [Datawrapper](#)

Poll

What is the model of Health Information Exchange used in Connecticut?

- a) Federated
- b) Centralized
- c) Hybrid

Thank You



Questions

- Contact us for further information /
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 - Ryan Tran at rytran@uchc.edu

Stay tuned for the next event!