Summit 2: Data Modernization
January 25, 2022 • 11:00 AM–2:00 PM ET
Welcome and Opening

Judy Monroe, MD, President and CEO, CDC Foundation
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The Pew Charitable Trusts
Setting the Stage

Daniel Jernigan, MD, MPH, U.S. Centers for Disease Control and Prevention
Micky Tripathi, PhD, U.S. Department of Health and Human Services
CDC’s Data Modernization Initiative: Thinking Differently... Together

Daniel B. Jernigan, MD, MPH
CDC Deputy Director for Public Health Science and Surveillance

CDC Foundation "Lights, Camera, Action" Summit
January 25, 2022
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*
We are in a different place than we were before the pandemic

Electronic Case Reporting
Automated case data to reduce burden on providers
Healthcare Facilities Reporting: From 187 to 10,300

COVID-19 Vaccination Data Flow
Advanced data pipelines to inform action
Vaccine Dose Data Tracked: From none to over 530M

CELR Laboratory Data Flow
Streamlined lab data from state health departments to CDC
COVID Lab Results to CDC: From none to over 1.5M per day
Information as of January 20, 2022
We are listening and connecting
DMI Priorities

Build the right foundation
Accelerate data into action
Develop a state-of-the-art workforce
Support + extend partnerships
Manage change + governance

DMI Strategic Implementation Plan (cdc.gov)
Build the Right Foundation

Provide the new information infrastructure and automated data sources for response-ready data sharing.

**Automated real-time data collection**
- eCR, ELR, Syndromic, Vitals, Immunizations
- Reduce burden and allow data providers to “turn off their fax machines”

**Cloud-based services**
- Streamline the way we process, store, and visualize data

**“North star” architecture**
- Create a collaborative vision to improve STLT access to actionable intelligence

**Reduced silos**
- Migrate stand-alone systems to a common architecture at CDC and STLTs
Create faster, more integrated use of data for real-time situational awareness and forecasting.

**Rapid outbreak response**
Build on COVID-19 “Common Operating Picture” platforms and prepare pandemic-prone programs to scale up in emergencies.

**Forecasting and outbreak analytics**
Use data in new ways to mitigate problems earlier and direct resources more effectively.

**Linking and opening data**
Link and integrate data from diverse sources for more actionable insights.

**Connected public health and healthcare data**
Adopt interoperability standards and create hubs for data exchange while protecting privacy and security.
Develop a State-of-the-Art Workforce

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

**Recruitment**
Attract a diverse, qualified public health science workforce

**Training**
Build the skills of the current and future workforce through team-based programs and fellowships

**Forecasting workforce needs**
Modernize and expand the use of public health workforce data to identify future needs

**State + local support**
Build a public health workforce that represents the communities in which they work
Engage with state, territorial, local, tribal, and other partners to address policy challenges and solve problems.

**Support + Extend Partnerships**

**Policies**
Support the exchange and use of data between CDC, STLTs, partners, and data providers

**Transparency**
Increase access to modernization plans and progress for better alignment

**Data Use Agreements**
Reduce the burden for accessing, sharing, and using CDC data

**Collaboration**
Innovate with research, academic, and public and private partners
Provide the necessary support for modernization and adoption of unified technology, data, and data products.

**Governance**
Approve strategic and efficient IT and data investments

**Monitoring + Evaluation**
Measure progress for accountability and continuous improvement

**Change management**
Encourage a culture of innovation, collaboration, inclusion, and adaptability

**Procurement**
Make acquisition processes more efficient and effective
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
Interoperability to Support the Data Modernization Initiative

January 25, 2022

Micky Tripathi, PhD MPP
National Coordinator for Health Information Technology (ONC)
HHS Office of the Secretary
Office of the National Coordinator for Health IT

Founded in 2004 by executive order, established in statute in 2009

ONC is charged with formulating the federal government’s health IT strategy to advance national goals for better and safer health care through an interoperable nationwide health IT infrastructure

Laying the foundation of EHRs across the industry

- $40B CMS investment to subsidize EHRs for hospitals and ambulatory providers
- ONC certification of EHR systems to support CMS and public health programs

Using EHRs to get better health care, population health, and public health

- Prohibits providers, technology developers, and health information networks from “information blocking” (“preventing, discouraging, or interfering with access, exchange, or use of information”)
- Requires access to information through APIs “without special effort”
- Requires nationwide governance for health information exchange networks – Trusted Exchange Framework and Common Agreement
Health IT ecosystem advances

ONC Levers Supporting Public Health

Public health access to interoperability networks
- Query capability to request records
- Core infrastructure to support exchange including FHIR APIs (security certificates, common data use agreement, endpoint directory, record location)
- Consolidate public health reporting over time

Information-blocking rule
- Supports public health reporting
- Not sharing information that is required by law (such as public health reporting) is an “interference”

Standard FHIR API
- Lightweight, modern connectivity
- Required in certified EHR systems
- Ability to “push” and “pull” data with the same interface
- Ability to build more complex interactions using the same APIs such as: standardized questionnaires with automated response aggregation; subscribe to data based on pre-determined criteria; deeply integrated decision support with passively triggered software hooks
CDC-ONC joint activities to leverage health IT ecosystem advances

Newly launched FHIR Accelerator with HL7
Rapidly design, test, and scale FHIR-based solutions for high-priority public health use cases

ONC collaborative initiative to advance public health data model based on US Core Data for Interoperability (USCDI) standards required in certified EHRs
Align data sets, standards, and implementation specifications with similar efforts underway within and beyond public health and adopt on a national scale
Support advancement to EHR certification

Work with public health stakeholders to build standard operating procedures (SOPs) and implementation guides for public health use cases in TEFCA
Develop use cases and policy/technical requirements for integration of health care delivery and public health systems

Assist CDC and public health community with infrastructure approaches to ease burden and increase effectiveness of public health data systems and applications
Improve STLT access to actionable intelligence

USCDI+ for Public Health

TEFCA

“North Star” Architecture
Architecture to improve STLT access to actionable intelligence

“North Star” cloud-based service model

Collaborative Governance
• CDC & STLT governance of platform and data-sharing

Hosted STLT infrastructure
• Separate environments for hosted STLTs
• Consolidated and standardized data ingestion APIs

Shared tooling and applications
• Platform for access to SaaS tools & applications
• Includes STLT and industry-developed solutions
• API access for hosted and non-hosted STLTs

Shared data repositories
• Aggregated datamarts for specific use cases
• Data inclusion, access, and use determined by collaborative governance process
• API access for hosted and non-hosted STLTs

Provide the benefits of common cloud platform while preserving STLT control of data and data use
Conclusion

CDC and ONC closely collaborating to create better foundation for data management and data sharing to support local and national needs

Many opportunities to leverage advances in health IT to better integrate health care delivery and public health systems

Cloud-based, open architecture infrastructure will reduce resources needed to collect data and increase ability to analyze and act on data
Poll Question 1

The recent multi-billion dollar investment to modernize public health data systems offers unprecedented opportunities to generate real-time, complete, and actionable data to prevent disease, promote wellness and assure prosperity. What concrete actions would you prioritize during the next 1-3 years to help assure those investments translate into long-lasting improvements to the health data system?

a) Scaling solutions that enable real-time transfer of data across jurisdictions.

b) Improving capacity within the workforce.

c) Linking diverse datasets across public health, healthcare and non-health sectors.

d) Developing analytics for better decision making.

e) Ensuring governance to guide what data can or should be shared.

f) Building equity throughout data systems.

g) Other (please enter in chat)
Coming Attraction: CDC’s Center for Forecasting and Outbreak Analytics (CFA)

Dylan George, PhD, U.S. Centers for Disease Control and Prevention
Center for Forecasting and Outbreak Analytics (CFA)
Better Data, Better Analytics, Better Response

January 2022
Disease outbreaks are becoming more frequent and more disruptive.

The nation lacks data, analytical systems to identify and respond quickly, effectively.

The U.S. must improve these systems and develop capabilities for producing forecasts and analytics that leaders can use to make timely, informed decisions about how to best prepare for and respond to infectious disease threats.

Models and analytics need to be responsive to concerns of underserved communities, and address issues of health equity directly.
INNOVATE

• Support research and development to improve outbreak forecasts and analyses
• Create translational tools, products, enterprise enhancements to make analyses of pandemic data flexible, fast, and scalable for STLT authorities

INFORM

• Communicate modeling results to meet the needs of decision-makers
• Share timely, actionable information with the Federal government; STLT leaders, and the public
• Coordinate early warning efforts between CDC subject matter experts and USG interagency

PREDICT

• Generate forecasts and analyses to support outbreak preparedness and response efforts
• Establish and maintain CFA data architecture
• Respond to needs of Federal, State and local leaders for analytical, forecasting results
CDC’s DMI Accomplishments are Critical to CFA

**Longstanding Problems**

**Siloed Information**
-Disconnected and/or proprietary disease systems

**Outdated Skills**
-Workforce needs training to utilize today’s technology

**Point-to-Point Data Transmission**
-Providers are burdened with sending data to many places in many ways

**Outdated Technologies**
-Antiquated systems at health departments
-Manual data entry
-Lack of cloud infrastructure

**DMI Solutions**

**Integrative Data Solutions**
-**Syndromic Surveillance**
  -Continuous monitoring of ER visits to detect outbreaks
-**Vital Records**
  -Real time reporting of death data from multiple sources

**Creating a State-of-the-Art Workforce**
-Implement data science upskilling program
-Enhance training available to employees

**Enhanced Interoperability**
-Allow data to be easily shared among public health and healthcare systems
-Notifiable Disease Reporting
  -Reduced burden on states for reporting notifiable diseases

**Expanded Data Sharing & Cloud Infrastructure**
-Build and expand upon the foundational infrastructure for data to be shared
-Electronic Case and Laboratory Reporting
  -Real time, automated reporting from EHR to public health departments
  -Automated reporting of lab test results as soon as they are available
Advancing weather forecasting capabilities took decades.

Needed ingredients:
- Data
- Models
- People
- Computational Power
- Specific Use Cases
- Sustained Funding

Diseases forecasting, analytics still in early stages.
Questions?
Shifting the System—Data as a Common Good for the Public’s Health

Les Becker, MBA, PMP, Washington State Department of Health
Shifting the System—Data as a Common Good for the Public’s Health

**Aneesh Chopra, MPP**
CareJourney

**Gail Christopher, DN, ND**
National Collaborative for Health Equity

**Ethan Berke, MD, MPH**
United Health Group

**Les Becker, MBA, PMP**
(moderator)
Washington State Department of Health
Real-Time Data for Public Health Action—What is Actionable Intelligence?

Annie Fine, MD, Council of State and Territorial Epidemiologists
Real-Time Data for Public Health Action—What is actionable intelligence?

Abigail Echo-Hawk, MA
Urban Indian Health Institute

Dylan George, PhD
U.S. Centers for Disease Control and Prevention

Jim Daniel, MPH
Amazon Web Services

Annie Fine, MD (moderator)
Council of State and Territorial Epidemiologists
A recent Robert Wood Johnson Foundation national commission report on equity-centered data noted “we have an opportunity now to create a data infrastructure that is centered on equity and that creates fair and just opportunities for everyone.” What do you consider the single biggest challenge to achieving an equitable data infrastructure?

a) Missing data on key demographics such as gender, race, sexual identity and other sub-groups.
b) Connecting local data to local communications on health and wellness.
c) Sharing data between healthcare and public health.
d) Assuring timeliness of data.
e) Accessing social determinants of health data that live outside of public health.
f) Fostering authentic engagement of communities in the generation, use or interpretation of health data.
g) Other (please enter in the chat)
Spotlight: Actionable Intelligence from the Field

Bryant Karras, MD, Washington State Department of Health
Spotlight:
Actionable Intelligence from the Field: Exposure Notification

Bryant T. Karras MD, Chief Medical Informatics Officer
Office of Innovation and Technology
What is WA Notify?

- Exposure Notification (EN) tool that works through smartphones to alert users of a potential COVID-19 exposure.
- Completely free, private, and anonymous—it does not know who you are or where you have been.
- Supported in more than 30+ languages.
- Base on the Google | Apple Bluetooth API and a multistate interoperable standard hosted by American Public Health Laboratories (APHL) on the Microsoft Azure Cloud.
How does WA Notify work?

1. When two people using WA Notify on their smartphones are near each other, their phones exchange random codes using Bluetooth. **The code is completely anonymous, with no location tracking or exchange of personal information.**

2. If someone tests positive for COVID-19, public health will contact them via call or text, and provide them with a **WA Notify verification link.** Or now with home testing self-requested verification.

3. The person who tests positive clicks the link to confirm their result in WA Notify – a voluntary, yet essential step in the process.

4. WA Notify users receive a notification that they may have been exposed to COVID-19 if they spent 15 minutes or more near an **anonymous WA Notify user who tested positive in the last 10 days.**

5. Notifications have a link to information about what to do next to protect yourself and others. They do not contain any information about who tested positive or where the exposure may have happened.
Adoption of WA Notify

Since 11/30/2020 launch:

- Currently, more than 3 million activations.
- More than 83,000 codes used.
- More than 580,000 visits to the WA Notify landing page.
Increased Usage

WA Notify Code Issuance and Usage
11/30/2020 - 1/13/2022
Expanding Code Issuance to now allow user self requested codes (Home Testing Kits)

Multiple classifications of notifications are used for differential messaging and enhanced analytics. So we can see if more EN from 30 min or 15 min are eventually becoming positive

Recently, added notifications for subthreshold exposures of less than 15 minutes during a contagious period

Current evaluation work includes estimating “EN Secondary Attack Rate” for exposures <14 min
Increased Engagement

Token Claim Rate per Code Issuance Method
11/9/21 - 1/13/22
Approximate Exposure Notifications

WA Notify EN Webpage Visits
12/5/2021 - 1/13/2022
Digital Notification Alliance: Public-Private-Academic

- Exposure Notification Express (ENx) Began as collaboration between CA, CO, OR, and WA, added HI, NV, NM, MN others.

- Sharing configurations, lessons learned, enhancements, and approaches.

- Better together.
To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.

Bryant Thomas Karras, MD, CMIO
Chief Medical Informatics Officer
Office of Innovation and Technology
How Do We Get to Actionable Intelligence for Public Health?

Kristina Box, MD, Indiana Department of Health
How Do We Get to Actionable Intelligence for Public Health?

Karen Remley, MD, MPH
U.S. Centers for Disease Control and Prevention

Theresa Cullen, MD
Pima County Health Department

Dale Sanders
HealthCatalyst

Kristina Box, MD (moderator)
Indiana Department of Health
Spotlight: Accelerators of Actionable Data

Nirav R Shah, MD, MPH, Sharecare
Accelerators of Actionable Data

LIGTHS | CAMERA | ACTION:
The Future of Public Health National Summit Series

Nirav R. Shah, MD, MPH
Senior Scholar, Stanford University
Chief Medical Officer, Sharecare
Disclosures

- Senior Scholar at Stanford University
- Chief Medical Officer of Sharecare, Inc
- Board Member at STERIS plc, CovidActNow.org, Kinsa
- Advisor to GSR Ventures
- Advisory Committee to the Director of the CDC
- Senior Fellow of the Institute for Healthcare Improvement (IHI)
- Trustee of the John A. Hartford Foundation
- Prior Board Chair, Linux Foundation Public Health
- Prior service as Commissioner, NY State Department of Health, and Chief Operating Officer, Kaiser Permanente in Southern California

All views expressed are my own
What metrics to follow?

- New infections
- ER visits (A/D/T feeds)
- Hospitalizations
- Beds available in ICUs
- Mortality

AND

- Hospital workers out with COVID
- Wastewater surveillance
- Daily average fever counts
- New data sources
Omicron Is in Retreat

What’s next?

Daily average share of population with a fever

Chart shows 7-day average. | Source: Kinsa
Data delays
Sharecare Community Well-Being Index

State/City/Community Rankings

Proven Outcomes
- Longevity
- Medical & Rx Spend
- Emergency Room Visits
- Hospitalizations
- Bed Days
- Absenteeism
- Presenteeism
- Short-term Disability
- Job Performance
- Intention to Stay
- Voluntary Turnover
- Involuntary Turnover
- PMPM Cost
- S&P 500
- Unemployment
- Consumer Price Index

Community Transformation

Transforming health and well-being one person, one community at a time through people, place, and policy change.

SOHi

Healthcare Access
Food Access
Resource Access
Economic Security
Housing & Transportation

Physical
Community
Purpose
Social
Financial

Well-Being Index
Digital Health Companies
Addiction treatment / opioid use disorder

Digital health’s investments of $37.9 billion in 2021
$793M invested in Substance Use Disorder startups

Bicycle Health
Wayspring
Boulder
Workit
Ophelia
RECoverER

In RECoverER, researchers can perform queries across all institutions participating in the consortium, without any compromises on privacy or security.

Data remains local and private within each participating institution—no records ever leave each institution. Software modules from Onai run at each institution and jointly construct a single aggregate statistical result, without exposing any institution's local results to any other institution. This mechanism enables greater security and speed than traditional approaches.
Lessons Learned & Next Actions

- Measurement needs and reporting needs change in real time
- Communicate about data in ways that the public can receive it
- There’s more than enough data, we have to look for it and accept it from the private sector and others
- Technology can address many privacy and security concerns

What you can do...

- Standardization is Innovation, e.g. for interoperability
  - Why can’t we get immunization records from one state to the next? – Demand APIs from vendors
- Embrace private and nontraditional data
- Support people doing great work: Kenneth Mandl, Rick Hawes, Aneesh Chopra, Bala Hota, Marc Lipsitch/Dylan George/Caitlin Rivers/Rebecca Kahn
Data modernization is a complex and exciting opportunity to improve health and wellness for everyone, everywhere. What area of data modernization feels most critical to your day-to-day role?

a) Strengthening and unifying critical infrastructure for a response-ready public health ecosystem.
b) Accelerating data into action to improve decision-making and protect health.
c) Developing a state-of-the-art workforce.
d) Supporting and extending partnerships.
e) Managing change and governance to support new ways of thinking and working.
f) Other (please enter in the chat)
Why Does Actionable Intelligence Matter to People, Communities, Public Health and the Private Sector?

Jamie Pina, PhD, Association of State and Territorial Health Officials
Why Does Actionable Intelligence Matter to People, Communities, Public Health and the Private Sector?

Kimberly Repp, PhD, MPH
Washington County Public Health

Marlene Wolfe, PhD, MSc
Emory University

Lauren Smith, MD, MPH
CDC Foundation

Jamie Pina, PhD (moderator)
Association of State and Territorial Health Officials
Thank You to Series Co-hosts

astho™

NACCHO
National Association of County & City Health Officials

BIG CITIES HEALTH COALITION

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Together our impact is greater
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The Pew Charitable Trusts
Future Summits

Effectively Financing Governmental Public Health Functions and Strengthening Public Health Law and Governance to Support a Modern System
February 23, 2022

Catalyzing Cross-Sectoral Partnerships and Community Engagement
March 2022 (TBD)
Please complete the brief pop-up survey after we end this Zoom and feel free to add any other feedback in the chat or email us at futureofPH@iphionline.org.

If you received an invitation to the small breakout groups, please find your Zoom link to join us at 2:15 PM ET. If you cannot find your link, please email us at futureofph@iphionline.org.

www.futureofpublichealth.org

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