A MITRE RESPONSE TO THE NOVEL CORONAVIRUS OUTBREAK (COVID-19)
DELIVERING AN ENDURING NATIONAL RESOURCE FOR DISEASE CONTAINMENT AND MITIGATION

National Association of Local Boards of Health (NALBOH) Town Hall

October 1, 2020
Today’s Speakers

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Chief Medical Advisor
Sara Alert™ Project Leader
MITRE

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Chief of Programs and Services
National Association of County and City Health Officials (NACCHO)
Who we are

NACCHO is comprised of nearly 3,000 local health departments across the United States with a vision of optimal health, equity, and security for all people in all communities.

Our mission is to improve the health of communities by strengthening and advocating for local health departments.
The NEW 10 Essential Public Health Services

- Equity
  - Build and maintain a strong organizational infrastructure for public health
  - Assess and monitor population health
  - Investigate, diagnose, and address health hazards and root causes
  - Communicate effectively to inform and educate
  - Strengthen, support, and mobilize communities and partnerships
  - Create, champion, and implement policies, plans, and laws

- Policy Development
  - Enable equitable access
  - Use legal and regulatory actions

- Assurance
  - Improve and innovate through evaluation, research, and quality improvement
  - Build a diverse and skilled workforce

- Assessment
  - Communication
  - Utilize legal and regulatory actions

- Policy Development
  - Evaluate
  - Utilize legal and regulatory actions
Local Health Departments

Local health departments promote and protect the health of people and the communities where they live and work.
Our Universe

Percent of U.S. population served by LHDs

- Small (<50,000): 10% (62%)
- Medium (50,000–499,999): 33% (39%)
- Large (500,000+): 6% (51%)

Source: National Association of County and City Health Officials (NACCHO) 2016 National Profile of Local Health Departments

N=2,533

RI was excluded from the study
N=2,459
Early Public Health

In 1799, the first health department in America was formed (Boston Board of Health) to fight an outbreak of cholera. Its first President was Paul Revere.

In order to save lives, health officials posted signs on lampposts, held meetings and led an early-day public information campaign to reduce deaths.

Their authority also included penalties & fines.
Disease Reporting Norms

Notifiable Disease Reporting

- Anaplasmosis
- Amebiasis
- Animal bites for which rabies prophylaxis is given
- Anthrax
- Arboviral infection
- Babesiosis
- Botulism
- Brucellosis
- Campylobacteriosis
- Chancroid
- Chlamydia trachomatis infection
- Cholera
- Coronavirus (severe or novel) 2019 Novel Coronavirus (COVID-19)
- Severe Acute Respiratory Syndrome (SARS)
- Middle East Respiratory Syndrome (MERS)
- Cryptosporidiosis
- Cyclosporiasis
- Diphtheria
- E.coli O157:H7 infection
- Ehrlichiosis
- Encephalitis
- Foodborne Illness
- Giardiasis
- Glanders
- Gonococcal infection
- Haemophilus influenzae (invasive disease)
- Hantavirus disease
- Hemolytic uremic syndrome
- Hepatitis A
- Hepatitis A in a food handler
- Hepatitis B (specify acute or chronic)
- Hepatitis C (specify acute or chronic)
- Pregnant hepatitis B carrier
- Herpes infection, infants aged 60 days or younger
- Hospital associated infections (as defined in section 2.2 10NYCRR)
- Influenza, laboratory-confirmed
- Legionellosis
- Listeriallosis
- Lyme disease
- Lymphogranuloma venereum
- Malaria
- Measles
- Melioidosis
- Meningitis
- Aseptic or viral
- Haemophilus
- Meningococcal
- Other (specify type)
- Meningococcemia
- Monkeypox
- Mumps
- Pertussis
- Plague
- Poliomyelitis
- Psittacosis
- Q Fever
- Rabies
- Rocky Mountain spotted fever
- Rubella (including congenital rubella syndrome)
- Salmonellosis
- Shigatoxin-producing E.coli (STEC)
- Shigellosis
- Smallpox
- Staphylococcus aureus (due to strains showing reduced susceptibility or resistance to vancomycin)
- Staphylococcal enterotoxin B poisoning
- Streptococcal infection (invasive disease)
- Group A beta-hemolytic strep
- Group B strep
- Streptococcus pneumoniae
- Syphilis, specify stage
- Tetanus
- Toxic shock syndrome
- Transmissible spongiform encephalopathies (TSE)
- Trichinosis
- Tuberculosis current disease (specify site)
- Tularemia
- Typhoid
- Vaccinia disease
- Vibriosis
- Viral hemorrhagic fever
- Yersiniosis
Workforce
Volunteers
Training
Capacity
Distribution
Supports & Services
MITRE Operates Federally Funded Research and Development Centers
Solving problems for a safer and healthier world

MITRE is a private, independent, not-for-profit organization, chartered to work in the public interest

- Created by government to address complex problems
- Analyzes problems with objectivity
- Does not develop commercial products or compete with industry

Mission of the Health FFRDC is to accelerate health and human services innovation by:

- Connecting people and data to reinvent health systems
- Enhancing the care experience
- Protecting and promoting the health and well-being of all Americans

Dedicated to solving the complex health and human services problems

- Objectivity and independence
- Special access to sensitive data
- Deep expertise in health policy and IT
- Stakeholder convener
- Broad alliance of private-sector resources

MITRE internal research funds were used to develop Sara Alert

Sara Alert is free to public health organizations
How it all began...
Sara Alert™ Principal Partners

• Association of State and Territorial Health Officials (ASTHO)
• National Association of County and City Health Officials (NACCHO)
• Council of State and Territorial Epidemiologists (CSTE)
• Association of Public Health Laboratories (APHL)
• Center for Disease Control Foundation (CDCF)
The Journey to Build Sara Alert

10 days to Develop Concept
(January)

10 weeks to Build
(March/April)

12 State & Local Health Depts.

5 Public Health Associations

3 Federal Health Agencies

4 Non-profits

And Many More…

For Public Health

Over 600 Jurisdictions

8 States

1 Tribe

11 Locals

2 Territories

1 Freely Associated State

Launched
April 3rd

• Add in # briefings
An Enduring National Resource to Contain Disease

Automates monitoring of exposed and infected individuals

- Disease-independent
- Developed in partnership with key public health partner organizations
- Secure and scalable

Force multiplier directing resources where they are needed most
Automates Monitoring of Exposed And Infected Individuals

ENROLL case into isolation workflow

DAILY SELF-ASSESSMENT Sent By Sara Alert™

SARA ALERT™ Automatically Partitions Monitorees into Line Lists

Case Investigation

Contact Identification

Contact Notification

Discontinue Isolation

Discontinue Quarantine
**SARA ALERT™ USAGE**

By the numbers *(as of 9/30/2020)*

- **554,022** Total Cumulative Monitorees  
  *(12% increase from prior week)*
- **7,139** Public Health Users  
  *(5% increase from prior week)*

- **639** Total Jurisdictions including  
  - **15** States, **4** Tribes, **2** Territories,  
  - **1** Freely Associated State, **over 300** Locals, and more

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**Monitoree Flow Over Time**

<table>
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<tr>
<th></th>
<th>Last 24 Hours</th>
<th>Last 14 Days</th>
<th>Total</th>
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<tbody>
<tr>
<td><strong>INCOMING</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>New Enrollments</td>
<td>10,214</td>
<td>111,662</td>
<td>554,022</td>
</tr>
<tr>
<td><strong>OUTGOING</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Closed</td>
<td>7,233</td>
<td>96,364</td>
<td>450,668</td>
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<tr>
<td><strong>ACTIVE MONITOREES</strong></td>
<td></td>
<td></td>
<td>103,354</td>
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</tbody>
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**Total Cumulative and Active Sara Alert™ Monitorees**

- **554,022** Total Cumulative Monitorees  
- **103,354** Active Monitorees

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**Total Number of Sara Alert™ Public Health Users**

- **7,139** Public Health Users
Built with Public Health for Public Health
Agile development enables rapid implementation of users’ priorities

▪ **Public Health users have made important contributions**
  – Isolation workflow
  – Household monitoring logic
  – Language translations

▪ **Public Health is driving advanced features**
  – Advanced search and filter needs
  – Manual enrollment of cases
  – Bulk record updating
  – "Assigned User" feature for monitoree records
  – Continuous monitoring capability
  – Customized branding, questions, and symptoms

“The partnership between ADH and Sara Alert™ has been enlightening and beneficial.”

“It has been so exciting to participate in the Feature Review calls each week. It is exhilarating to participate in a discussion about new features one week and see them in action in the system the next week. Thank you for taking feedback into consideration so quickly!”

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Welcome to the Sara Alert™ Forum

- Share expertise, resources, ideas, and experience using Sara Alert™
- Discuss ways to use or connect Sara Alert™ with existing tools and systems
- Brainstorm ideas for strengthening Sara Alert™ for future public health needs
Appendix
Sara Alert™ Protects Data Privacy

- Collect only what is needed to support public health operations
- Data encrypted at rest and in flight
- Data stored only during monitoring period, then purged from the system
- Data invisible to MITRE, access controlled by the jurisdiction
- Application provides two-factor authentication process
- AIMS Platform is FISMA-Moderate compliant
- Amazon Cloud is FedRAMP compliant

Example Data Access Hierarchies

USA, State X

- USA, State X, County 1
  - University, K-12, etc.
  - Health Facility
  - Elderly Services

USA, State Y

- USA, State Y, County 1
- USA, State Y, County 2

- Users have role-based access to records for their monitorees
- Administrators credential users in their own jurisdiction
- Users cannot see data for other jurisdictions
- Only top-level users have access to all data for their jurisdiction (e.g., USA, State X)
Sara Alert™ Reduces Public Health Workload

- Enables individuals to provide daily reports on symptoms
  - Text, Email, Web, Robo calls
- Automatically partitions the data into categories, allowing public health officials to focus where needed
  - Symptomatic
  - Non-reporting
Sara Alert Roles

**Enroller**
- **Enrolls**
- **Views Dashboard**

**Public Health**
- **Monitors**
- **Views Dashboard**

**Public Health Enroller**
- **Monitors**
- **Views Dashboard**

**Analyst**
- **Views Dashboard**
Use Cases

Monitoring Communities

Public Health Jurisdictions
- Public health officials monitor individuals in a county or state

Educational Institutions
- Administrators monitor students and faculty at a school

Vessels at Sea
- CDC and USCG monitor passengers and crew members

Monitoring the Workforce

Healthcare Professionals
- Hospitals monitor healthcare professionals

Troop Status
- Armed forces monitor troop health

Employee Health
- Employers monitor employee health
HL7 FHIR API

- Fast Healthcare Interoperability Resources
- FHIR v4.0.1 (Normative ANSI Standard)
- The basic building block in FHIR is the Resource
  - e.g. Patient, Observation, Questionnaire Response, etc.
  - Resources and data are encoded as JSON
- FHIR uses HTTP verbs for interactions
  - GET – read and search
  - POST – create
  - PUT – update
  - DELETE - delete