

Council for Outbreak Response:
Healthcare-Associated Infections and
Antimicrobial-Resistant Pathogens



Winter 2024 Member Call

02/12/2024

Meeting Summary

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Meeting Notes

CORHA Winter Member Call 2024

Monday, February 12, 2024

3:30 – 5:00 pm ET, Remote/Zoom

Attendance

1. Akila Simmons (CSTE – CORHA Staff)
2. Alex Sundermann (SHEA - Alternate)
3. Amy Valderrama (CDC)
4. Andrea Flinchum (CSTE)
5. Andrew Clark (American Society for Microbiology)
6. Bonnie Herring (CDC)
7. Cau Pham (CDC)
8. Christina Baum (NACCHO – CORHA Staff)
9. Dawn Terashita (NACCHO – Voting Member)
10. Elizabeth Mothershed (CDC)
11. Erin Epton (CSTE – Voting Member)
12. Grace Lee (ASTHO – CORHA Staff)
13. Irene Halferty (NACCHO – CORHA Staff)
14. Jackie Abramson (NACCHO – CORHA Staff)
15. Jeremy Goodman (CDC)
16. Joe Perz (CDC – Voting Member)
17. Julia Madaras (FDA - Alternate)
18. Kevin Spicer (CDC)
19. Kim McCullor (APHL)
20. Kiran Perkins (CDC – Voting Member)
21. Kris Ehresmann (ASHTO – Voting Member)
22. Kristie Johnson (SHEA)
23. Lauren Weil (CDC)
24. Linda Greene (APIC – Voting Member)
25. Lindsay Jordan Pierce (CSTE – CORHA Staff)
26. Mary Alice Lavin (APIC - Alternate)
27. Moon Kim (NACCHO)
28. Natasha Badgasarian (ASTHO – Voting Member)
29. Nicholas Moore (APHL)
30. Paige Gable (CDC)
31. Richard Martinello (SHEA)
32. Richard Stanton (CDC)
33. Richard Wild (CMS)
34. Sara Podczerviski (CSTE)
35. Scott Harris (ASTHO)
36. Scott Steffen (FDA)
37. Tracy Stiles (APHL – CORHA Staff)
38. Valerie Deloney (SHEA)
39. Waleed Javaid (SHEA)
40. Wendy Vance (CDC)
41. Will Fritch (CSTE – CORHA Staff)

Notes

Opening Remarks

- Erin Epton (CSTE) began the meeting, welcoming attendees and introducing each of the CORHA Governance Committee members.
- A formal roll call was not conducted.

CORHA Announcements and Updates

- 2024 CORHA Spring Meeting
 - Will Fritch (CSTE) shared that a save the date has been disseminated for 5/21/24 – 5/22/24, the selected dates for the 2024 CORHA Spring Meeting. The plan is for the meeting to be held in Greater Atlanta, targeting a familiar venue. Final venue determination to be shared following enactment of a contract.
 - Will shared that Kelly Walblay (CSTE) has assumed CSTE's vacant voting member position on CORHA and hopes that she will be in attendance at the Spring meeting.
- CORHA Product & Workgroup Updates
 - Detection & Response Workgroup
 - Linda Greene (APIC) shared that D&R recently launched an [Environmental Fungi \(Molds\) resource page](#). A draft viral respiratory pathogens page and blog post are in development. The workgroup has also started to explore adapting resources to aid in communicating public health authority during outbreak response.
 - Laboratory Workgroup
 - Kim McCullor (APHL) shared that the Lab Workgroup recently revised a table in Chapter 6 of the P&P and is developing a complementary resource addressing situations in which interpretation of phenotypic and genotypic test results is challenging (e.g., discordant results).
 - Policy Workgroup
 - Moon Kim (NACCHO) shared that the Policy Workgroup released a [one-pager](#) summarizing the Patient Notification Framework. They will be expanding upon the Framework to include recommendations on public data reporting by submitting a manuscript for journal publication. The Workgroup has also been engaged in discussions and activities regarding access to electronic health information during HAI outbreaks.
- Communications Task Force Updates
 - Christina Baum (NACCHO) shared slides with recent Communications updates including engagement metrics, partner outreach, and website redesign progress.
 - *See attached meeting materials*

Member Organization Resource Sharing

- Will facilitated a report out of recent and relevant resources from each of the member organizations. The items shared included:
 - **APHL** – Report out by Kim McCullor
 - [Testing Playbook for Biological Emergencies](#)
 - **APIC** – Report out by Linda Greene
 - [IPC for Shelters During Disasters](#)
 - [Measles Playbook](#)
 - [Patient Hand Hygiene Toolkit](#)
 - **ASTHO** – Report out by Grace Lee
 - How Can Health Agencies Support HAI/AR Programs – Video Series
 - [Video 1 – Program Alignment and Structure Reassessment](#)

- [Video 2 – Recruitment and Retention](#)
 - *Pending/In-Development* – Policy statement on supply chain vulnerabilities
- **CDC** – Report out by Joe Perz and Lauren Weil
 - [Healthcare Outbreak Response Training Course](#) – based on CORHA P&P; initial modules now available
 - [The McKnight Prize for Healthcare Outbreak Heroes](#) – accepting nominations through 3/1/2024
- **CMS** – Report out by Rick Wild
 - [Joint CMS/White House Press Release on Nursing Home Ownership Transparency](#)
 - [ASPE Analysis of Nursing Home Ownership Structures and Quality of Care](#)
- **CSTE** – Report out by Will Fritch
 - *See attached meeting materials* – CSTE Surveillance Policy Subcommittee Public Comment – submitted in response to CMS/ONC information blocking rule
 - [CSTE/APHL Publication on CIDT Considerations in Exclusion from Sensitive Settings](#)
 - *Pending/In-Development* – CSTE Water Management Plan Evaluation Tool – intended to serve as a reference for health department staff reviewing facility WMPs
- **FDA** – Report out by Scott Steffen
 - [Ongoing Town Hall Series on Ethylene Oxide Sterilization](#)
- **NACCHO** – Report out with slides by Christina Baum
 - *See attached meeting materials*
 - [2024 Certification in Infection Control Scholarship](#)
 - [MDRO Containment Strategy Update Webinar Recording](#)
 - [NHSN Data Utilization for LHDs Webinar Recording](#)
 - [Primer on MDROs Blog Post](#) – includes fact sheets, decision trees, and other resources
 - *See attached meeting materials* – NACCHO/PHIL Evaluation of LHD Data Use During HAI Outbreak Response
 - [IPC Essential Skills Training](#)
 - *Pending/In-Development* – Project Firstline IPC Quick Start Guide
 - *Pending/In-Development* – BUILD HAI/AR Demonstration Site Project
- **SHEA** – Report out by Waleed Javaid and Valerie Deloney
 - SHEA Spring Meeting – April 16 – 19, 2024, Austin, TX
 - [Pending/In-development] There are several SHEA publications pending or in-development related to HAI/AR topics

Electronic Health Information Access Discussion Session

- Dawn Terashita (NACCHO) & Moon Kim (NACCHO) provide an update on the Policy Workgroup's recent activity related to public health access to electronic health information (EHI).
- Dawn provided an overview of a letter developed in the Policy Workgroup and submitted (individually due to MO approval challenges) by James Lewis (NACCHO).
 - *See attached meeting materials*

- The Policy Workgroup developed an abstract for a discussion session on this topic and submitted to the 2024 CSTE Annual Conference – acceptance determination pending
 - *See attached meeting materials*
- Dawn led a discussion with the group focused on extending connections with the Policy Workgroup to continue work on this topic.
 - [to Policy WG] Will noted that solicitation of potential SME(s) has begun within CSTE's Surveillance Policy Subcommittee; other relevant surveillance subcommittees being considered.
 - [from Policy WG] Will indicated that he would follow-up with Dawn regarding getting the Policy WG invited to relevant subcommittees to present this work.
 - [from Policy WG] Linda Green (APIC) noted that it would be helpful to have a written overview of the Policy WG's activities/priorities/asks in this space, for sharing with relevant MO policy committees.

Attached Meeting Materials

Included in this section (see following pages):

Winter 2024 Member Call Slides

CSTE Surveillance Policy Subcommittee Letter on Information Blocking Rule

NACCHO/PHIL Evaluation of LHD Data Use During HAI Outbreak Response

Policy Workgroup Member Letter on Information Blocking Rule

Policy Workgroup Discussion Abstract for 2024 CSTE Annual Conference



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4:25 – 4:45	Electronic Health Information Access • CORHA member letter to CMS • Discussion session abstract to CSTE Annual Conference • Considerations regarding future CORHA work on this topic	Policy Workgroup Co-Leads
4:45 – 5:00	Wrap up and Closing • Next Steps	CORHA Co-Chairs



CORHA Newsletters

CORHA Insider

- Internal Members – 1x/6 weeks

CORHA Correspondence

- External Members – 1x/month
- Includes outbreak news, CORHA products, relevant updates



CORHA Communications- Recent Updates

➤ Spotlight Series

- Leadership spotlight: Jennifer Jones, 2023 McKnight Prize for Healthcare Outbreak Heroes Recipient
- November 2023 Fall Meeting Recap

➤ Recent Publications

- Updated COVID-19 Investigation/Reporting Thresholds and Outbreak Definitions in Healthcare Settings
- CORHA's Framework for HAI Outbreak Notification One Pager
- P&P: Final Chapters 6 and 8
- Updated Viral Hepatitis resource

➤ News Items

- If you come across relevant articles related to HAI/AR outbreaks, please share to info@corha.org!
- Lean heavily on SHEA and APIC journals for content

➤ New Website Pages

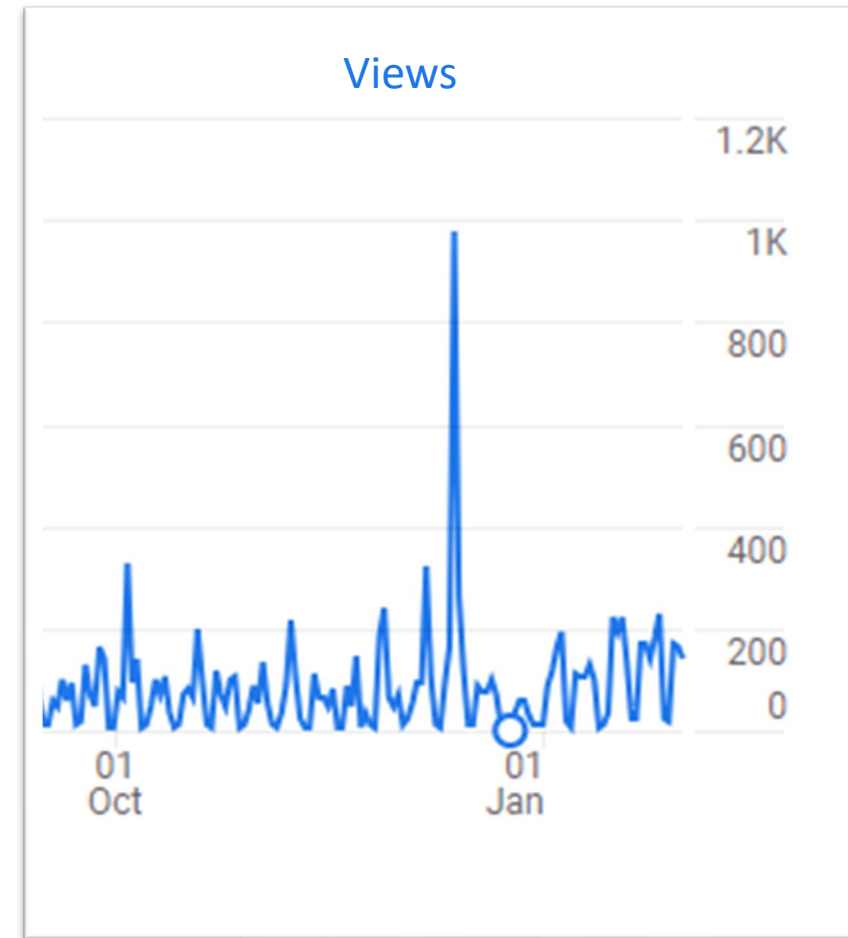
- Environmental Fungi (Molds)
- Group A Streptococcus (GAS)



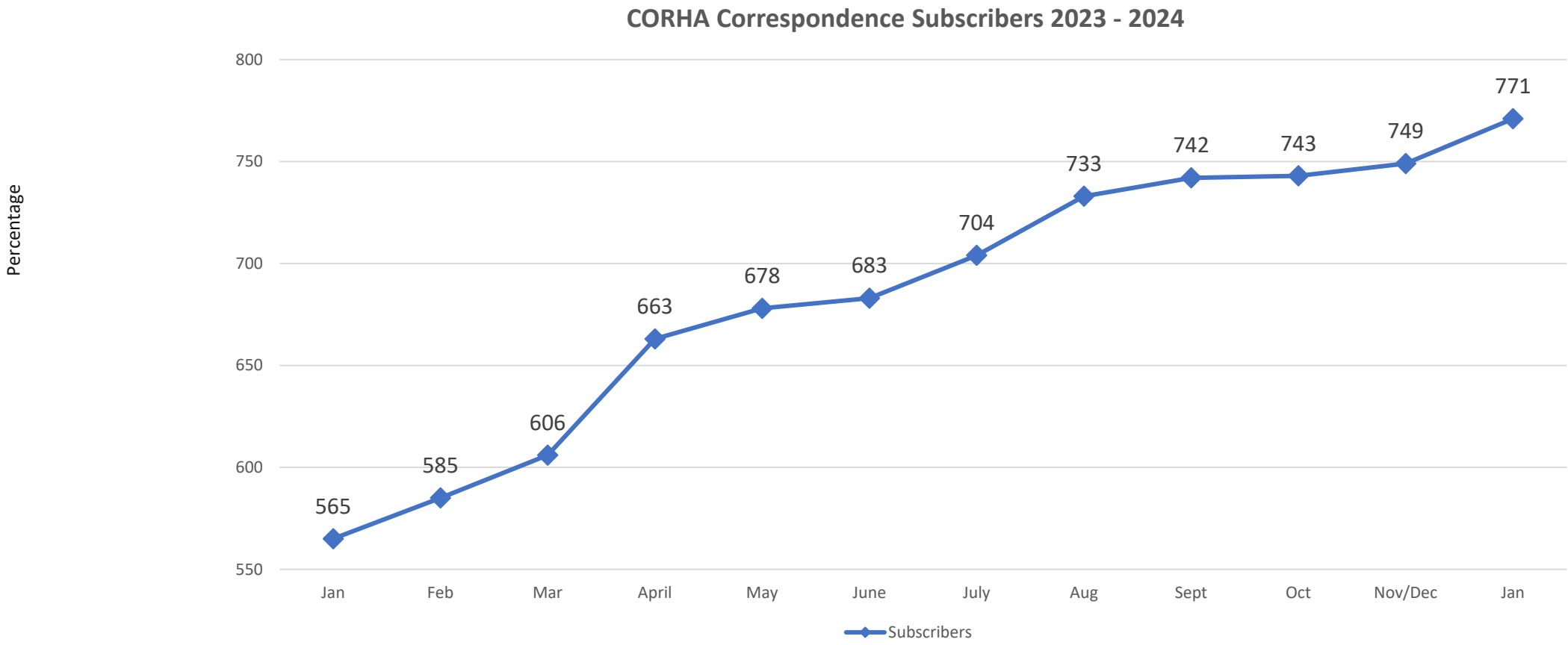
CORHA.org Traffic (Sept 2023 - Jan 31, 2024)

Top Pages Accessed:

- Resources and Products (30.5%)
- Home | CORHA (20%)
- Investigation/Reporting Thresholds and Outbreak Definitions for COVID-19 in Healthcare Settings | CORHA (10%)
- CORHA Principles and Practices for Healthcare Outbreak Response (9.9%)
- Mission, Vision, and Membership | CORHA (3.9%)



CORHA Correspondence Newsletter Metrics



26.7% increase in subscribers between Jan 2023 and Jan 2024



CORHA Communications- Your Involvement

Partner Outreach

- The goal is to leverage the CORHA network to spread the word
- We identified the best POCs for each organization (e.g., org reps, org communication specialists)
- Sample language is shared to promote CORHA resources
 - Included in Insider for ALL to share with your networks as relevant
 - Organization specific POC's sent language for organization wide outreach



CORHA Communications- New Initiatives

Website Updates & Re-design

- NACCHO is working with Astriata to increase the website's usability and implement a website re-design & migration
- Timeline: Anticipated new website launch - April 2024
- Creating a CORHA graphic intro video for the website
- More information to come during our Spring Meeting!
- Thank you to those who have volunteered and helped inform the process through user experience surveys and/or interviews!



CORHA Communications- Thank you!

If you have additional feedback or questions related to any communications updates, please email info@corha.org



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4:45 – 5:00	Wrap up and Closing • Next Steps	CORHA Co-Chairs



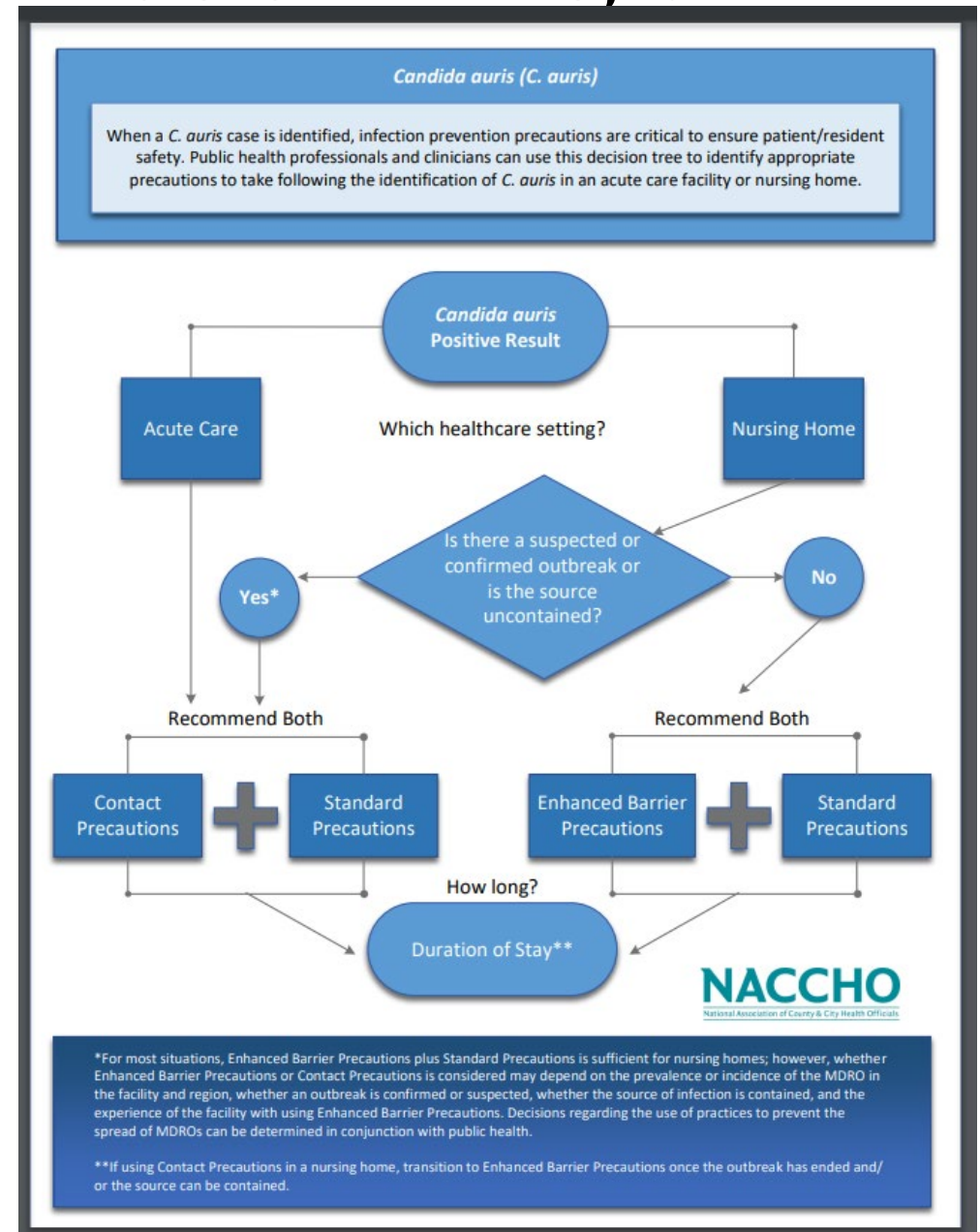
Recent Relevant Resources

NACCHO Updates

Christina Baum, MPH

MDRO-Specific Fact Sheets, Decision Trees, and Webinars

- <https://rb.gy/s7bzhv>
- Fact Sheets and Decision Trees on *c.Auris*, CRAB, CRE, ESBL
- Decision Trees on: Transmission-Based Precautions for Acute Care Facilities and Transmission-Based Precautions for Nursing Homes
- Webinar Resources
 - Full Webinar Zoom Recording: Multi-drug resistant organisms: a primer on CRE/CP-CRE, C.Auris, ESBL & CRAB
 - Slides: Multi-Drug Resistant Organisms: a Primer on CRE-CP-CRE, C. auris, ESBL & CRAB
 - Slides: Introduction to MDRO's, c.Auris, CRAB, CRE, ESBL, Addressing MDROs Next Steps



Fact Sheet: *Candida auris* (*C. auris*)

WHO	Identify which patients and/or residents <u>have</u> or <u>potentially have</u> <i>Candida auris</i> .	✓ Patients/Residents who have a positive test result for <i>C. auris</i> or history of <i>C. auris</i>. ✓ Patients/Residents with a known exposure to a <i>C. auris</i> case. ✓ Patients/Residents who were hospitalized in a foreign country or another part of the country with high <i>C. auris</i> burden. ✓ Patients/Residents who have received healthcare in a long-term care hospital or nursing home providing high-acuity care, such as ventilator-capable nursing homes.
WHAT	Define what additional measures need to be implemented for the actual or suspected cases in addition to hand hygiene, Standard Precautions, and cleaning/disinfection.	✓ Recommend Contact Precautions for patients in acute care. ✓ Recommend Contact or Enhanced Barrier Precautions in nursing facilities (SNF) depending on the situation or public health concern. If <i>C. auris</i> is new to the facility or to the jurisdiction, Contact Precautions are recommended. However, if the facility has more experience with Enhanced Barrier Precautions, then this may be the best approach. ✓ Recommend screening for contacts of <i>C. auris</i> cases, i.e., roommates, patients on the same ward prior to identification. ✓ Recommend using products on Environmental Protection Agency (EPA) List P.
WHEN	Determine when additional infection prevention measures are needed.	✓ <i>Candida auris</i> active infection and/or colonization is suspected.
WHERE	Decide where patients and/or residents should be housed once they are identified as colonized or infected with <i>C. auris</i> .	✓ A single patient room is preferred to prevent further transmission. In acute care or SNFs, single patient rooms are preferred when Contact Precautions are used. A single person room is not required for Enhanced Barrier Precautions. ✓ If a limited number of single-patient rooms are available, then cohorting is preferred for people at higher risk of pathogen transmission (e.g., those with secretions or excretions, acute diarrhea, draining wounds). ✓ Cohort with Other <i>C. auris</i> patients/residents or create a dedicated room with dedicated staff.
HOW	Establish how long the additional infection prevention measures remain in place for the patients and/or residents.	✓ Contact Precautions apply for the duration of healthcare stay. In nursing homes, if Contact Precautions are being used, they should continue during duration and transition to Enhanced Barrier Precautions. ✓ Routine reassessment of colonization is not recommended.

What is *Candida auris*?

Overview

Candida auris (*C. auris*) is a drug-resistant fungus that can cause serious infection in patients/residents in healthcare facilities, including bloodstream and other invasive infections. More than 1 in 3 patients die within a month of being diagnosed with an invasive *C. auris* infection. Since its discovery in 2009, it has been reported in dozens of countries, including the United States. According to data from the Centers for Disease Control and Prevention (CDC), there have been thousands of cases identified in multiple states since tracking began in 2016.

Candida auris can be misidentified as other types of fungus unless certain laboratory methods are used. Correct identification is one of the most important mitigation strategies.

Transmission and Most Affected Patient Populations

Just like other multidrug-resistant organisms, such as carbapenem-resistant Enterobacterales (CRE) and methicillin-resistant *Staphylococcus aureus* (MRSA), *C. auris* can be transmitted between patients in healthcare settings via contaminated surfaces and contact between patients and workers, which can lead to an outbreak. It can persist in the environment and withstand some commonly used healthcare facility disinfectants. For this reason, only disinfectants approved to kill this type of fungus should be used when cases are identified. These products have a claim from the Environmental Protection Agency (EPA) for *C. auris* (List P).

High-risk patients/residents include those who have been in a healthcare facility for a prolonged period of time, have a central venous catheter or other lines or tubes, or have previously received antibiotics or antifungal medications. Patients or residents infected or colonized with carbapenemase-producing bacteria, i.e., CP-CRE, are also at higher risk for acquiring *C. auris*. Patients and residents can be colonized with *C. auris* for many months or years.

Prevention & Treatment

Standard Precautions plus Contact Precautions are indicated as protocol in acute care facilities. Enhanced Barrier Precautions may be used in nursing homes when Contact Precautions do not apply. Decisions regarding the use of practices to prevent the spread of MDROs, including when to use Enhanced Barrier Precautions or Contact Precautions, can be determined in conjunction with public health. These strategies may differ depending on the prevalence or incidence of the MDRO in the facility and region and the experience of the facility with using Enhanced Barrier Precautions. Implement a method to identify cases at future admissions, such as flagging the chart so appropriate precautions are implemented immediately upon admission. Communication is key for any patient transfers as well. Cleaning and disinfection should be performed at least

Webinar Recordings

MDRO Containment Strategy Update

- October 23, 2023
- CDC provided an overview of the MDRO containment strategy, highlighting recent updates made this year and discussing its implementation at the local level.

<https://www.naccho.org/blog/articles/webinar-mdro-containment-strategy-update>

NHSN Data Utilization for Local Health Departments

- September 12, 2023
- CDC's NHSN team covered the benefits of LHD access to NHSN data regarding HAI and AR prevention work and also discussed NHSN capabilities and functionalities geared toward local jurisdictions.
- This webinar also highlighted a few LHDs that have utilized NHSN and shares what steps they took to gain access to NHSN system data.

<https://www.naccho.org/blog/articles/nhsn-data-utilization-for-local-health-department-webinar-recording>

Essential Skills Training Series

- Combination of virtual and in-person training opportunities for LHD staff involved in supporting healthcare IPC activities.
- The training series will include five key areas of concentration:
 - relationship and collaboration,
 - communication,
 - emotional intelligence,
 - cultural competency with an equity focus,
 - and creating the environment (safe, inclusive, and innovative).
- Webinar recordings and upcoming events available here:
<https://www.naccho.org/blog/articles/essential-skills-training-series-virtual-and-in-person-training-opportunities-for-lhd-staff>

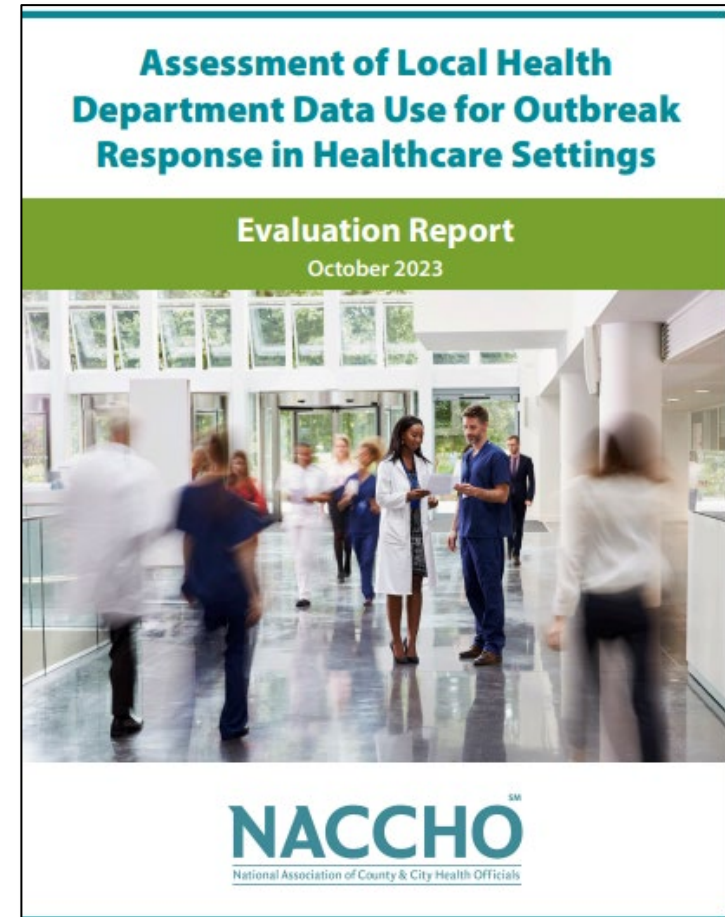
Funding and TA Opportunities for LHDs

- BUILD HAIAR Demonstration Site Project:
 - <https://www.naccho.org/blog/articles/naccho-awards-1-29-million-to-address-healthcare-associated-infections-and-antimicrobial-resistance-prevention-and-response>
- CIC Scholarships:
 - <https://rb.gy/0iccth>
- IPC Learning Collaborative and Mentorship Program:
 - <https://www.naccho.org/blog/articles/request-for-applications-infection-prevention-and-control-learning-collaborative>



Assessment of LHD Data Use for Outbreak Response in Healthcare Settings

- Small, qualitative study done with Population Health Innovation Lab (PHIL)
- This evaluation aimed to achieve the following goals:
 1. Assess LHD awareness of data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
 2. Assess LHD access to data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
 3. Assess LHD use of data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
 4. Provide recommendations for how NACCHO can support LHDs to increase their use of infection and health equity data when responding to HAI outbreaks.



Assessment of LHD Data Use for Outbreak Response in Healthcare Settings: Sample Findings

How and to what extent are different types of data and systems used to inform strategic decisions, including equitable processes and outcomes, for outbreak response in healthcare settings?

- Several common themes emerged regarding the use of different types of data and systems to inform strategic decisions in outbreak response within healthcare settings among LHD respondents:
 - Data-driven decision-making (8);
 - Structured data collection (6);
 - Timely and efficient data dissemination (5); and
 - Continuous assessment and improvement (3).

What types of data and systems do LHDs use to target outbreak response in healthcare facilities?

- Several LHDs listed various ways in which they used the following data and systems in their outbreak response:
 - Electronic disease reporting and surveillance systems (6);
 - Spreadsheets and line lists (5);
 - Phone calls and emails (5);
 - REDCap (4); and
 - Online databases (2).

Assessment of LHD Data Use for Outbreak Response in Healthcare Settings: Next Steps

- Strategic Collaboration decision-making guide for LHDs to build outbreak response infrastructure through effective partnerships.
- Equity Framework and Intervention resource to provide LHDs the evidence of why it matters for outcomes and provide matrix to operationalize this framework.
- Data Management and Utilization resource to provide Local Health Departments with case studies showcasing data solution approaches employed by various LHDs.

Questions? Comments?
Want to see the full report (not public, not for dissemination)?
cbaum@naccho.org

Thank you!

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Council of State and Territorial Epidemiologists

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Deputy Director, Center for Infectious
Diseases
California

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Janet Hamilton, MPH

January 2, 2024

Micky Tripathi, PhD, MPP

National Coordinator for Health Information Technology
Office of the National Coordinator for Health Information Technology
U.S. Department of Health and Human Services
Mary E. Switzer Building, Mail Stop: 7033A
330 C. Street SW
Washington, DC 20201

Re: 21st Century Cures Act: Establishment of Disincentives for Health Care
Providers That Have Committed Information Blocking Proposed Rule

Dear Dr. Tripathi:

The Council of State and Territorial Epidemiologists (CSTE) offers our input on the Centers for Medicare & Medicaid Services (CMS) and Office of the National Coordinator for Health Information Technology (ONC), Department of Health and Human Services (HHS) request for comment on establishing disincentives for committing information blocking. CSTE appreciates the value of collecting the public health agencies' perspectives on the proposed disincentives and how they may impact the exchange of vital public health surveillance data.

CSTE is an organization of member states and territories representing all states and territories and 3,300 applied public health epidemiologists. CSTE's mission is to promote the effective use of epidemiologic data to guide public health practice, improve health, and advocate for epidemiologic capacity, resources, and scientifically based policy. CSTE provides a national voice and support for state and local health departments to conduct surveillance, outbreak investigations, laboratory testing, and prevention of diseases and conditions of public health importance. Public health action by CSTE member states has led to improvements in clinical practice, medical procedures, surveillance, detection and control of public health threats, and the ongoing development of evidence-based disease control policies and prevention successes, including multiple position statements to standardize national surveillance efforts. CSTE and all epidemiologists at federal, state, and local public health agencies (PHAs) are vested in optimizing data collection through interoperable health information technology for public health action.

We greatly appreciate the opportunity to comment on the proposed rule. Public health activities are enhanced through the efficient exchange of electronic health information. CSTE strongly supports interoperability between public health and clinical partners in the areas of immunization, syndromic surveillance, vital records, laboratory and case reports, disease and clinical registries, and others.

Given the current definition of a healthcare provider, as defined in 45 CFR 171.102, certain public health authorities (PHAs) may be impacted by the disincentives outlined in this rule. PHAs often function as hybrid organizations under HIPAA. State, tribal local, and territorial (STLT) jurisdictions operating a clinic or similar service that delivers clinical services to individuals, or similar clinics operated on behalf of the PHA under contract, grant, or other financial arrangements, would be considered a provider under the proposed definition. It also remains unclear if registries or other public health data systems that exchange data for clinical purposes may be considered health information exchanges (HIEs) within the proposed definition of actors.

Underfunding for public health infrastructure has been and remains a major barrier to effective public health data exchange. PHAs continue to adapt to the COVID-19 pandemic acute response phase while leveraging new data modernization funding to advance interoperability; however, public health needs time to modernize our systems and infrastructure, processes, and workforce. As such, **we recommend that any proposed disincentives not apply to public health agencies at a time when many have not been able to be staffed, annually funded or prepared for interoperability**, nor should they apply to the non-clinical care public health data systems (e.g. surveillance, immunization, cancer, and vital statistics registries).

Critical public health functions, including disease surveillance and control, outbreak identification management and control, characterization of health conditions, and prevention efforts, may also be negatively impacted by hospital, provider, and/or HIE practice of information blocking, preventing a PHA from obtaining data that the PHA has authority to access under existing regulations. The pandemic highlighted that many healthcare providers were not sending essential, and often legally mandated, data to public health, as well as reinforced the need for interoperability. CMS recognized these deficits and strengthened the Promoting Interoperability Program of certified electronic health record (EHR) systems to be able to send standards-based reports to public health in the areas of electronic laboratory and electronic case, syndromic surveillance, and immunization registries. As electronic reporting to public health expands, rapid access to information contained in EHRs in order to respond to disease threats will support PHAs ability to reduce morbidity and mortality. **We strongly urge ONC and CMS to specifically call out in the final rule that a failure to report to public health for surveillance (acute, chronic or emerging threats) or participation in a registry (e.g. immunization, cancer, birth defects, vital statistics) is information blocking and that disincentives would be applied.** ONC has already laid out that failure to report as required to public health would likely be seen as information blocking in the Frequently Asked Questions (FAQ) accompanying the proposed rule (<https://www.healthit.gov/faqs?f%5B0%5D=subtopic%3A7016>); the final rule should make that explicit and clear. This approach will also align with other rules (e.g. HIPAA) where specific public health exemptions are explicitly stated.

Further,

1. *Appropriate Agency – Proposed definition of appropriate agency*

CSTE agrees that CMS would be the appropriate agency within HHS to which the Office of Inspector General (OIG) would refer a healthcare provider to be subject to enforcement. Given the large percentage of providers participating in the CMS Medicare Promoting Interoperability Program, the Merit-based Incentive Payment System (MIPS), and the Medicare Shared Savings Program, with CMS being the agency running these programs and the disincentives all being CMS-specific, CMS is well-placed to be the appropriate agency.

2. *Appropriate Disincentives – Proposals to establish disincentives in section 11.c of the proposed rule*

CSTE agrees that a healthcare provider should be subject to appropriate and applicable disincentives established through notice and comment rulemaking. CSTE also agrees that imposing cumulative disincentives, where applicable, would further deter healthcare providers from engaging in information blocking. As providers and PHAs further engage in interoperability efforts, it is critical to reinforce that HIPAA explicitly recognizes and allows for disclosing protected health information to PHAs without consent for public health activities. Despite this, and jurisdictional law and regulations, significant and known challenges remain with provider reporting to PHAs in terms of both completeness and timeliness of reports. Thus, alignment with HIPAA to fully support electronic disclosure of data to public health for surveillance purposes should be explicitly supported as electronic data sharing expands (e.g. failure to support electronic data sharing for public health surveillance is considered information blocking). Delays in information sharing limits PHA ability to respond efficiently and quickly and protect the public from diseases.

3. *Anticipated Priorities – Whether other issues specific to information blocking by healthcare providers should warrant changing these priorities or adding others*

OIG stated that its information blocking Civil Money Penalties (CMP) enforcement priorities will include practices that: (i) resulted in, are causing, or have the potential to cause patient harm; (ii) significantly impacted a provider's ability to care for patients; (iii) were of long duration; (iv) caused financial loss to Federal healthcare programs, or other government or private entities; or (v) were performed with actual knowledge.

While CSTE recognizes the rule-making limitation to finalizing only proposed details, we note that information blocking practices may limit or prevent public health's access to data that can have negative population impacts beyond those stated above. CSTE encourages the inclusion of a provider's impact on populations and public health prevention or response actions, and not limiting harm and impact only to the clinical care of individual patients.

4. *Transparency for Information Blocking Determinations, Disincentives, and Penalties – Whether OIG should publicly post additional information (and why) about health care providers, health IT developers, or health information networks/health information exchanges that have been determined by OIG to have committed information blocking.*

Patients, their designated family members, and proxies should have access to their clinical care records without challenge or issue. CSTE believes a website that publishes the details of entities that OIG has determined committed information blocking will provide transparency into the event's details and the process itself. CSTE also supports a provider's rights to existing review processes available to them before any publication. The transparency provided by this posting will provide actionable information for providers, hospitals, health IT vendors, and the general public.

5. *Proposals – The application of a disincentive for OIG determinations that found that information blocking occurred in multiple years and whether there should be multiple disincentives for such instances*
CSTE agrees the scope of a violation should be considered. If the underlying information blocking is a systematic issue that has not yet been corrected, then multiple disincentives could be considered. Note that tightly coupling such disincentives to a “year,” be it a calendar year, fiscal year, or licensure year, will itself introduce complexities when events occur late and early in a year. If the disincentive program is confusing and even gives the appearance of being arbitrary and capricious, it may fail to live up to its promises and instead be seen as an additional provider burden.

6. *Additional appropriate disincentives – Should consider in future rulemaking, particularly disincentives that would apply to health care providers who are not implicated by the disincentives proposed in this rule*

CSTE members expressed an interest in ensuring that correctional healthcare systems and laboratories be considered in future rulemaking. CSTE recommends HHS collaborate with public health associations representing governmental public health when reviewing future possibilities for disincentives. Public health maintains a unique position in the healthcare system and needs to ensure that information blocking does not negatively impact its emerging data exchange capabilities under public health data modernization.

As a member organization representing applied public health epidemiology practice, CSTE welcomes the opportunity to facilitate further conversations between members, CMS, and ONC to elaborate on our responses or coordinate listening sessions. We would be happy to address any questions or concerns by email or phone (si@cste.org or 770-458-3811), and we look forward to continued partnerships with CMS and ONC in the future.

Sincerely,



Janet Hamilton, MPH
Executive Director
Council of State and Territorial Epidemiologists

01/02/2024

From: **James Lewis, MD, MPH**, Health Officer Snohomish County, WA 3020 Rucker Avenue, Ste 206 | Everett, WA 98201 | desk: 425.339.8718 | cell: 425.422.2049 | fax: 425.339.8702 | james.lewis@co.snohomish.wa.us

To: Centers for Medicare & Medicaid Services (CMS), Office of the National Coordinator for Health Information Technology (ONC), Department of Health and Human Services (HHS)

Re: RIN 0955–AA05, Proposed Rule: 21st Century Cures Act: Establishment of Disincentives for Health Care Providers That Have Committed Information Blocking

To Whom it May Concern:

We are writing regarding the proposed rule identified by RIN 0955–AA05, particularly disincentivizing information blocking of appropriate access to relevant electronic health information (EHI). Access to EHI as outlined under the proposed rule should be further clarified to cover public health authorities. Public health use falls under the authorized and permitted uses of EHI (as recognized under HIPAA) and should be explicitly protected under the information blocking provisions in the proposed rule.

Earlier this year, the HHS Office of Inspector General (OIG) released a final rule establishing the statutory penalties created by the 21st Century Cures Act information blocking requirements. On page 42820 of the HHS OIG final rule, the rule describes how information blocking “*poses a threat to patient safety and undermines efforts by providers, payers, and others to make the health system more efficient and effective.*” We agree. Public health agencies are foremost among the ‘others.’ Moreover, as noted in this proposed CMS rule, *section VI. Regulatory Impact Statement*, Executive Order 12866 dictates that the regulatory approach should maximize benefits which extend to ‘*public health and safety effects.*’ To help CMS and ONC meet this directive, we offer the following considerations.

Giving public health officials access to EHI plays a crucial role in improving their ability to respond quickly and efficiently to outbreaks of communicable diseases in healthcare settings and communities. Timely access to such information not only aids in reducing communicable disease transmission but can also contribute to decreasing related morbidity and mortality.

When public health cannot quickly access relevant medical records or EHI when an outbreak or case of a reportable disease is identified, appropriate public health response actions are severely delayed. As public health experts, we have experienced delays and resistance that could have hindered our response to protect the public from an outbreak due to challenges in access to EHI.

In Snohomish County, Washington, the local health department has actively worked to increase access to electronic health record systems in the healthcare organizations within that area. As a result, the department has improved the efficiency of both patient care and reportable disease investigation. We have reason to believe these improvements have led to a reduction in community transmission of reportable diseases, showcasing the tangible benefits of enhanced collaboration between healthcare organizations and public health entities. Additionally, public health EHI access decreases the resources a healthcare facility needs to respond to requests for medical records. By increasing access to EHI in Snohomish County, healthcare organizations in our jurisdiction have reported a reduced administrative burden on their Health Information Management and Infection Control and Prevention teams.

Many healthcare organizations are under the false assumption that the Health Insurance Portability and Accountability Act (HIPAA) prohibits providing direct EHI access to public health. However, it is essential to note that HIPAA specifically exempts Public Health Organizations as one of the 12 national priority purposes. Specifically, Title 45 of the Code of Federal Regulations permits Disclosures for Public Health Activities under 45 CFR 164.512(b) and establishes, with respect to the definition of Exchange Purposes, a Request, Use, Disclosure, or Response permitted under the HIPAA Rules and other Applicable Law for legitimate public health activities and purposes involving a Public Health Authority. Therefore, there is a strong legal foundation for facilitating such access.

In our experience, this is supported by the fact that some healthcare organizations in the Washington Puget Sound region have provided easy and complete EHI access to relevant public health entities including local health areas their providers serve as well as the Washington State Department of Health.

Considering the significant public health benefits associated with the seamless sharing of health information between healthcare organizations and public health entities, **we request that CMS and ONC revise the proposed rule clarifying public health authorities are entitled to EHI access to respond to reports of communicable diseases or investigate potential outbreaks and that this is covered by the information blocking provisions of the proposed rule.**

We appreciate your attention to this matter and your ongoing efforts to enhance the coordination and efficiency of sharing healthcare information. We would like to propose meeting with you all to discuss this issue further. Please contact James Lewis at james.lewis@co.snohomish.wa.us to arrange a follow-up if agreeable.

Thank you for your consideration.

Sincerely,

James Lewis

Council for Outbreak Response: Healthcare-Associated Infections and Antimicrobial Resistant Pathogens (CORHA) – Data Sharing and Access to Electronic Health Information (EHI) to Support HAI/AR Outbreak Response

Presenting Author(s): *Moon Kim and Dawn Terashita*

Non-Presenting Co-Authors: *Rebecca Fisher and James Lewis*

Session Type: Roundtable Discussion

Topic: Infectious Disease> Healthcare Associated Infections

Key Objectives:

1. Discuss the importance of timely access to electronic health information (EHI) and how this access can lead to a more efficient and improved response to healthcare facility-based outbreaks.
2. Identify and review successful experiences from jurisdictions in implementing EHI access in support of HAI/AR outbreak response.
3. Discuss opportunities for collaboration with the Council for State and Territorial Epidemiology (CSTE) and similar groups involved in the data modernization initiative (DMI) on how to advocate for HAI/AR response needs with respect to EHI access.

Brief Summary:

In this interactive Discussion Session, representatives from the Council for Outbreak Response: Healthcare-Associated Infections and Antimicrobial Resistant Pathogens (CORHA), will lead a group discussion on data sharing and accessing EHI data. Over the past year, CORHA has been exploring gaps and needs regarding access to EHI data in support of HAI/AR outbreak response. Electronic health records and other information systems are nearly ubiquitous in healthcare facilities, and they contain many important data elements that can facilitate HAI outbreak response; however, the infrastructure and processes to enable exchange of EHI from healthcare to public health has not yet been established at scale. Delays in access to relevant medical records or EHI access at the time an outbreak or case of a reportable disease is identified lead to days or even weeks in delays in appropriate public health response actions. Nonetheless, some jurisdictions have been very successful in leveraging health information exchanges (HIEs) to query EHI data, and more healthcare agencies are participating in HIEs. Additionally, healthcare facility benefits include shifting infection control resources towards outbreak control rather than reporting to and responding to record requests from public health. Furthermore, the recent adoption of Trusted Exchange Framework and Common Agreement (TEFCA) Version 1.1, inclusion of public health as one of the six authorized exchange purposes, and the establishment of the first network of Qualified Health Information Networks (QNIHs) establishes a framework for network architecture to enable nationwide HIE interoperability. As TEFCA adoption scales, it is critical that public

health agencies are enabled to adopt and benefit from the authorized public health exchange purpose to support HAI/AR outbreak and case investigation.

Word Count: 355/400

Assessment of Local Health Department Data Use for Outbreak Response in Healthcare Settings

Evaluation Report

October 2023



Acknowledgements

The [Population Health Innovation Lab](#) (PHIL), a program of the Public Health Institute (PHI), conducted the evaluation of local health department (LHD) data use for outbreak response in healthcare settings through the Monitoring, Evaluation, Research, and Learning Innovations (MERLIN) team in partnership with the National Association of County and City Health Officials (NACCHO) Infectious Disease team.

The authors appreciate the support from NACCHO with developing the evaluation goals and questions. We are especially grateful for the LHDs who shared their perspectives with us through interviews and focus groups to expand our understanding of what types of information, data, systems, and decisions they use to target their outbreak response in healthcare settings.

The PHIL study team includes:

- Sue Grinnell, Director of PHIL—Program Director/Principal Investigator (evaluation report reviewer)
- Dr. Stephanie Bultema, Director of MERLIN—Principal Investigator (evaluation report reviewer)
- Seun Aluko, Research Scientist—Evaluation Lead (evaluation report lead author)
- Beverly Bruno, Research Assistant—Evaluation Support (evaluation report co-author)
- Dr. Kendra Piper, Lead Research Scientist—Evaluation Support (evaluation report reviewer)
- Katie Christian, Communications Coordinator—Evaluation Support (evaluation report co-author)
- Max Chavez, Research Assistant—Evaluation Support (evaluation report co-author)
- Esmeralda Salas, Research Associate—Evaluation Support (evaluation report co-author)
- Becca Fink, Communications Manager—(evaluation report review and design)
- Rebecca Williams, Program Administrator—(administrative support)

For questions about this evaluation report, please contact PHIL's MERLIN team at research@pophealthinnovationlab.org.

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Executive Summary

The National Association of County and City Health Officials (NACCHO), with support from the Centers for Disease Control and Prevention (CDC) Division of Healthcare Quality Promotion, supports local health departments (LHDs) in enhancing their infection prevention and control (IPC) activities. This support involves building the capacity of LHDs to respond to outbreaks at healthcare facilities, including those related to healthcare-associated infections (HAIs) and emerging infectious diseases. NACCHO aims to develop and strengthen relationships between LHDs, healthcare facilities, and public health partners; improve implementation of IPC in high-risk facilities; and reduce rates of and negative outcomes associated with COVID-19, HAIs, and antimicrobial resistant pathogens in those facilities.

This evaluation aimed to achieve the following goals:

1. Assess LHD awareness of data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
2. Assess LHD access to data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
3. Assess LHD use of data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
4. Provide recommendations for how NACCHO can support LHDs to increase their use of infection and health equity data when responding to HAI outbreaks.

Through August and September 2023, the Population Health Innovation Lab (PHIL) evaluators gathered data through interviews and focus groups from LHDs across the United States (U.S.). The PHIL evaluation team interviewed eight participants from six LHDs and conducted one focus group with five representatives from five LHDs. In total, 13 individuals representing 11 LHDs contributed evidence to inform evaluation findings. Key themes and insights were identified using thematic analysis to understand LHDs context and their processes for outbreak response in healthcare settings.

This evaluation reveals challenges and opportunities in LHDs' use of data for outbreak responses in healthcare settings. Insights into LHDs' operations, communication, partnerships, and equity-oriented efforts shed light on their data-driven response methods, and the vital role data plays in enabling timely and efficient responses. LHDs employ various systems and multi-channel communication for outbreak management yet face challenges like data coordination and system access in managing outbreaks. LHDs made significant progress, especially during the COVID-19 pandemic to strengthen their outbreak responses by leveraging electronic surveillance systems and varied reporting channels, emphasizing the crucial role of data. However, smaller and rural LHDs often face budget and staffing constraints, necessitating increased support for effectively managing disease outbreaks. LHDs face various barriers in responding to outbreaks which include system training difficulties, data coordination with healthcare facilities, and high staff turnover. Equity in outbreak response varies; larger LHDs often prioritize at-risk populations using diverse data, but smaller LHDs lack equitable frameworks. There's a pressing need to enhance LHDs access to reporting and surveillance systems, provide adequate training, and ensure equity is central to outbreak strategies. Future endeavors should focus on boosting the capacity of smaller LHDs and embedding equity in outbreak response, ensuring LHDs are prepared to respond and prevent healthcare outbreaks effectively.

Lessons learned from this evaluation were used to provide the following recommendations for NACCHO and State Departments of Health's (DOHs) work on how to support LHDs:

1. Strengthen Partnerships

To bolster partnerships, NACCHO should support expanding collaborative networks by actively initiating and nurturing connections among LHDs, state health departments, local partners, and healthcare facilities. This creates a synergized approach toward managing outbreak responses. Initiating regular forums or meetings can promote open dialogue, shared learnings, and the co-creation of strategies among varied stakeholders in health management and outbreak response. Moreover, it is crucial to coordinate response strategies by assisting LHDs in developing and deploying joint outbreak response plans that leverage the collective capabilities, insights, and resources of both LHDs and healthcare facilities. This multifaceted approach to strengthen partnerships ensures a united and robust front in navigating the challenges posed by public health crises.

2. Expand LHD Capacity

NACCHO should facilitate targeted support to LHDs by providing essential resources, such as funding, technology, and expertise, to strengthen their mechanisms for managing outbreak responses. Simultaneously, it is pivotal to enhance personnel capacity through the creation and funding of programs designed to expand and equip smaller LHDs with skilled staff to help ensure effective management of outbreak responses. Smaller LHDs are often resource-constrained and lack technical staff and expertise. These approaches collectively aim to fortify the operational capabilities of LHDs, particularly smaller LHDs, enabling them to navigate and manage public health crises with proficiency and resilience.

3. Support Improvement of State-Level Disease Surveillance Systems

To improve outbreak response capabilities, NACCHO should support state DOHs to improve the user experience of their electronic disease surveillance and reporting systems. This can include encouraging regular review and update of their user end training materials to align with any changes or updates in data systems. This will better enable LHDs to navigate and utilize these systems. NACCHO can also organize a repository for states' point of contact for LHDs to inquire about guidance, resources, facilitations, or training. This repository will be specifically targeted towards smaller and rural LHDs.

4. Address Access Barriers

State DOHs should implement processes to simplify and expedite processes to access essential data portals and systems. This action is crucial for reducing time lags and enhancing the timely retrieval and management of data. Ensuring that users can quickly and efficiently navigate and utilize data systems improves the ability to make informed, timely decisions in responding to outbreaks. State data systems need clear documentation and frequently asked questions (FAQs) on how to gain access to all outbreak response software. Documentation should include training material that outline the needed steps (e.g., signing data use agreements) for LHDs to access a system. This optimized accessibility not only facilitates smoother operational workflows but also strengthens the overall outbreak response mechanisms.

5. Facilitate Training

NACCHO should facilitate diverse trainings encompassing workshops that focus on a multitude of areas, such as outbreak response strategies, utilization of data systems, and integration of equity-focused approaches into interventions. Moreover, offering supplementary resources—such as guides, toolkits, and online courses—complements these sessions by further supporting the learning and application of the skills acquired during training sessions. This multifaceted approach to training ensures that LHDs are equipped with a broad spectrum of skills and knowledge, enhancing their capacity to effectively respond to and manage various challenges presented during outbreak response.

6. Emphasize Equity

NACCHO should support LHDs to develop an equity-driven response that places equity at the forefront of outbreak policies, and ensuring interventions and resources are distributed in a way that acknowledges at-risk populations. By leveraging data (e.g., census data, social vulnerability indexes, and other demographic and facility level data) to pinpoint underserved and at-risk populations, interventions can be tailored to ensure these groups receive appropriate resources and care. Leveraging data and focusing on equity not only addresses the unique needs and challenges an LHD faces during healthcare outbreaks but also reinforces a commitment to use of data to ensure an inclusive and equitable outbreak response strategy.

Introduction

Background

HAIs are infections people acquire while receiving care in healthcare facilities.¹ In 2021, one in 31 hospital patients and one in 43 nursing home residents became infected with an HAI each day in the U.S. In addition, on any given day, 50% of hospital patients and one in 12 nursing home residents receive an antimicrobial medication.² Evidence suggests that a growing number of HAIs are caused by antibiotic-resistant (AR) pathogens. More than 2.8 million AR infections occur in the U.S. each year, and more than 35,000 people die as a result. These infections and deaths result in billions of dollars annually in healthcare costs.³

The HAI and AR activities conducted by LHDs vary widely. For example, LHDs may engage in anything from strike team and infrastructure support for nursing homes to infection prevention control education and training. The activities LHDs conduct depend on factors such as staff capacity and expertise, governance structures, public health authorities, prevalence of emerging HAI/AR diseases, types and organization of healthcare facilities in the jurisdiction, population demographics, local relationships, and collaborations with the state HAI/AR program.¹ LHDs' unique role in relationship building in their local community and being well-positioned to respond to population health needs make them important players in the prevention and control of HAI/AR infections.

Increased funding and support to improve local capacity and staff knowledge of infection control activities has helped LHDs and other healthcare organizations to reduce the spread of HAI and AR threats. However, there is still more that needs to be done to ensure LHDs are best equipped to respond to outbreaks in healthcare settings. Local, territorial, and state health departments have a critical role in coordinating, implementing, leveraging regional HAI and AR prevention and response efforts, and ensuring an equitable outbreak.³

Evaluation Context

NACCHO, with support from the CDC Division of Healthcare Quality Promotion, supports LHDs in enhancing their infection prevention and control activities by building their capacity to respond to outbreaks at healthcare facilities, including HAIs, ARs, and emerging infectious diseases.

Evaluation Need

LHDs have reported barriers to addressing HAI outbreak investigations due to capacity concerns, competing priorities, and lack of training and tools.¹ Using data to inform and target public health action is also critical for successful outbreak response and addressing health equity. Developing a deeper understanding of the barriers and facilitators impacting LHDs' abilities to use data to address outbreaks in healthcare settings will inform NACCHO's LHD capacity building efforts.

Evaluation Goals

This evaluation qualitatively assessed LHD data use for outbreak response activities in healthcare settings. The evaluation had four goals:

- Goal 1: Assess LHD awareness of data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
- Goal 2: Assess LHD access to data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
- Goal 3: Assess LHD use of data, including infection and health equity data, for preventing and responding to outbreaks in healthcare facilities.
- Goal 4: Provide recommendations for how NACCHO can support LHDs to increase their use of infection and health equity data when responding to HAI outbreaks.

Evaluation Purpose

This evaluation increased NACCHO's understanding of LHDs' awareness, access, and use of data for outbreak response in healthcare settings. Findings from this evaluation will be used to develop tools and resources that can:

- Strengthen relationships between LHDs, healthcare facilities, and public health partners;
- Increase LHD use of data to inform strategic decisions;
- Support LHDs to develop data practices that lead to more equitable outcomes in outbreak response in healthcare settings; and
- Decrease rates of HAIs in healthcare facilities.

Intended Users

The primary intended users of evaluation findings include NACCHO, CDC, LHDs, healthcare facilities, and other public health partners that conduct or support outbreak response activities in healthcare settings.

Intended Uses

Intended users and evaluation stakeholders may leverage these evaluation findings to:

- Develop programs, tools, and resources to address gaps in HAI outbreak investigation processes;
- Advocate for or strengthen LHD access to data systems;
- Support LHD capacity to use electronic disease reporting surveillance systems; and
- Clarify LHD roles in HAI outbreak investigation response.

Stakeholder Engagement

Evaluators at PHIL worked closely with NACCHO throughout the evaluation. Weekly check-in meetings were scheduled, and additional communication occurred as needed. LHDs were engaged throughout the evaluation process through key informant interviews and focus groups.

Methodology

Evaluation Design

PHIL's Monitoring, Evaluation, Research, and Learning Innovations (MERLIN) team, in partnership with NACCHO, designed and implemented an evaluation of LHDs' data use for outbreak response in healthcare settings. This evaluation used a non-experimental, qualitative design. The evaluation population included representatives from LHDs who conduct outbreak response activities in healthcare settings. Data were collected from representatives of a purposive sample of LHDs selected by NACCHO and MERLIN to inform answers to evaluation questions. Primary data were collected through a focus group and semi-structured interviews to gain an in-depth understanding of how LHDs use infection data and health equity information to respond to HAI outbreaks.

Evaluation Questions

The evaluation questions guiding this evaluation included:

Background

- What processes do LHDs use for outbreak response in healthcare settings?
- How do different partnerships support LHDs' outbreak response in healthcare settings?
- What characterizes existing partnerships (relationship type [data exchange, resource exchange, coordination], partner type [other LHDs, community-based organizations (CBOs), state departments of health (Department of Health (DOH)), etc.], level of formality [are memorandums of understanding (MOUs) used?])?

Awareness

- What types of information, data, and systems are LHDs aware of to target outbreak response in healthcare facilities?

Access

- What types of information, data, and systems do LHDs have access to for targeting outbreak response in healthcare facilities?
- What are barriers to accessing information, data, and systems?
- What are facilitators to accessing information, data, and systems?

Use

- What types of information, data, and systems do LHDs use to target outbreak response in healthcare facilities?
- Are there existing infrastructures to collect and process HAI data?
 - What type of infrastructures exist?
- How and to what extent are different types of information, data, and systems used to inform strategic decisions, including equitable processes and outcomes, for outbreak response in healthcare settings?
- What are barriers to using information, data, and systems for informing strategic decisions in HAI outbreak investigations?
- What are facilitators to using information, data, and systems for informing strategic decisions in HAI outbreak investigations?
- What does equity in outbreak response in healthcare settings mean to LHDs?
- What information, data, and systems are used to promote equitable approaches in outbreak response?
 - How are they used?

Population and Sampling

NACCHO identified a diverse sample of 31 LHDs as potential evaluation participants. From this list of LHDs, PHIL's MERLIN team, in collaboration with NACCHO, selected 10 LHDs to invite to participate in key informant interviews and 16 LHDs to invite to participate in focus groups. LHDs were selected so that the sample had diverse representation by census region, degree of urbanization, governance, population category, and jurisdiction. There was no overlap between interview and focus group samples. The sample size for each data source is outlined in Table 1.

Table 1. Sampling Approaches Across Data Sources

Data Source	Sample	Sample Size
Key Informant Interviews	Purposive sample of LHDs representative of NACCHO's network of LHDs	Eight total participants from six unique LHDs
Focus Group	Purposive sample of LHDs representative of NACCHO's network of LHDs	One focus group with five total participants from five unique LHDs

Key Informant Interviews

Eight individuals representing six LHDs participated in a 60–90-minute key informant interview conducted over Zoom. Semi-structured interview guides were developed and used by the MERLIN team to engage in discussions intended to provide detailed insight into evaluation questions. Interview questions emphasized deepening the understanding of 1) LHD outbreak investigation processes; 2) awareness of data available, including infection and health equity data, in responding to an HAI outbreak; 3) access to data, including infection and health equity data, in responding to an HAI outbreak; and 4) use of data, including infection and health equity data in responding to an HAI outbreak. A detailed interview guide can be found in Appendix C.

Focus Group

A diverse sample of LHD representatives participated in one focus group with five unique LHD representatives. The focus group was conducted over Zoom and scheduled for 90 minutes. The focus group guide was developed and used by the MERLIN team to engage discussion on the facilitators and barriers to the awareness, access to, and use of infection and health equity data when responding to and mitigating HAI outbreak. A detailed focus group guide can be found in Appendix D.

Data Processing and Analysis

Focus group and interview recordings were first transcribed with Otter.ai. Evaluators reviewed interview transcripts for accuracy. Finalized transcripts were then uploaded into ATLAS.ti for qualitative analysis. The codebook was developed with a mixed approach of deductive/inductive reasoning. The first version of the codebook was developed prior to data collection and was informed by the literature and previous NACCHO evaluation reports on HAI, AMR, and AMS initiatives. The codebook was further refined after four interviews to ensure that codes were contextually appropriate to the sample of LHDs. The final codebook was applied to both interviews and focus group samples. The codebook structure can be found in Appendix F.

Coders ensured inter-rater reliability in coding through routine consensus meetings and reviewing the codes applied to the same portion of transcripts until there was full team consensus. Once coding concluded, evaluators exported applied codes and corresponding quotations into an Excel table for each evaluation question. Themes were identified for each evaluation question, using the LHD as the unit of analysis when assessing strength of themes.

Evaluators used classical content analysis and thematic analysis to assess LHDs' awareness, access, and use of data in HAI outbreak investigation, alongside facilitators and barriers to LHD data use.^{4,5} This involved excerpting relevant quotes, applying pre-defined and/or manifest codes to excerpts, counting the number of times codes appeared in interview and focus group transcripts, and developing major themes. Evaluators systematically organized the data into themes according to conceptual similarity and relationship to evaluation questions. Results from classical content analysis were used to assess strength of themes, shedding light on the most prominent patterns that emerged related to each evaluation questions.⁵

Results

Participants

Table 2 shows characteristics of each LHD represented in the study sample.

Table 2. Characteristics of LHD Participants

State	Population Category	Governance	Jurisdiction	Census Region	Degree of Urbanization	Participation
CA	2	Local	City	West	Urban	One focus group participant
CA	1	Local	County	West	Rural	One focus group participant
CT	2	Local	Multi-city	Northeast	Urban	One focus group participant
IL	3	Local	City	Midwest	Urban	Two interviewees
MA	1	Local	City	Northeast	Urban	One Interviewee
NE	2	Local	Multi-city	Midwest	Urban	One Interviewee
NY	2	Local	County	Northeast	Rural	One Interviewee
NY	2	Local	County	Northeast	Urban	One focus group participant
NY	3	Local	County	Northeast	Urban	One focus group participant
SC	3	Local	Multi-city	South	Urban	One Interviewee
WA	2	Local	Multi-city	West	Urban	Two interviewees

Table notes: <50,000 population size is population category 1; 50,000–499,000 population size is population category 2; and 500,000+ population size is population category 3.

What processes do LHDs use for outbreak response in healthcare settings?

LHDs engage in various processes for outbreak response in healthcare settings, including:

- Collaboration and partnership (9);
- Facility monitoring; Outbreak investigation assessment (7);
- Education and capacity building (6);
- Data management and reporting (6); and
- Feedback and improvement processes (3).

LHDs collaborate and partner both within their LHD and externally with various stakeholders, including healthcare facilities, state health departments, and community organizations to assist in outbreak response. LHDs partner with state health departments for guidance and resources such as surveillance and report systems, with healthcare facilities to obtain facility outbreak information, and with local partners such as community organizations that can provide temporary healthcare staff during large outbreaks.

LHDs engage in facility monitoring to track and identify potential outbreaks within healthcare facilities through regular communication (i.e., email, phone calls) with healthcare settings (e.g., long-term care facilities, hospitals, dialysis centers, dental practices, surgical centers) and active monitoring of outbreaks (e.g., flu, coronavirus disease (COVID-19)). These processes help LHDs monitor for signs of general symptoms, specific illnesses, and record any activities related to potential outbreaks.

LHDs also conduct outbreak investigation assessments to determine the source and extent of an outbreak and assess the infection control processes within the facility. LHDs describe performing structured patient interviews with standardized tools, conducting infection control assessment and response (ICAR) for large or challenging outbreaks, and evaluating and comparing reported infection control practices with on-site practices to identify potential discrepancies. One urban LHD representative commented on the importance of using ICAR to conduct outbreak investigation assessment stating, *"We also go in and conduct ICARS, which is an infection control assessment tool that we use to evaluate what [healthcare facility's] infection control practices are. And after each ICAR, we talk to [the healthcare facility] about where they're lagging."*

Additionally, LHDs engage in education and capacity building activities during outbreak responses to enhance the knowledge and readiness of healthcare facilities and other institutions in managing outbreaks. LHDs conduct on-site infection prevention educational sessions and disseminate education materials to healthcare facilities and other institutions that may be part of a larger outbreak, such as schools, to educate on best practices for hand hygiene, transmission-based precautions, and aseptic techniques. One LHD representative demonstrated this saying, *"We've started doing educational service sessions like in-services at facilities... they get all their staff and... we teach hand hygiene, transmission-based precautions, environmental services, and then we also go through aseptic [...] technique inside of facilities."*

Data management and reporting play a pivotal role in outbreak response in healthcare settings. LHDs employ a range of data systems to report, track, and manage outbreak information, ensuring consistent documentation and reporting of outbreak data. Systems ranged from informal to formal systems, such as:

- Exchange of line list information between healthcare facilities and LHDs;
- Internal tracking spreadsheet for potential outbreak information received via phone call from facilities;
- Disease reporting and surveillance systems, such as, the California Reportable Disease Information Exchange (CalREDIE), the Health Information Exchange of New York (HIXNY), or CDC's National Healthcare Safety Network (NHSN); and
- Case investigation platforms (i.e., REDCap [Research Electronic Data Capture]).

LHDs also incorporate continuous feedback and improvement processes based on their experiences in responding to outbreaks. One LHD interviewee said, *"We provide facilities with a post-assessment report where we identify gaps in infection control practices and identify potential discrepancies between policy and actual practice. We also work with the facilities to provide feedback on how we can better support them for outbreak management."*

How do different partnerships support LHDs' outbreak response in healthcare settings?

Different partners support LHDs' outbreak response in healthcare settings including those with:

- State DOH (8);
- Community organizations (6);
- CDC (5);
- Public health labs (2); and
- Other LHDs (2).

State DOH provide essential resources, act as liaisons, and offer support to LHDs. State DOHs provide LHDs with electronic disease surveillance systems and share data with LHDs. Talking about partnerships with state health departments, an LHD said, *"We also work with the state... And so that's an important partnership as well, because they're the ones who have the data that we need... they can get information that I possibly might not have access to."*

Community organizations provide LHDs with additional resources during outbreaks, such as staffing or extra personal protective equipment (PPE). One LHD interviewee said that *"firefighters donated extra masks to a facility in our jurisdiction during a large outbreak;"* another LHD representative shared, *"local healthcare staffing agencies were vital during the pandemic for us to support facilities with temp staff when providers had to isolate due to an outbreak."*

The CDC offers LHDs invaluable guidance for LHDs to respond to various outbreaks. The CDC offers both ad-hoc and continuous guidance during disease outbreaks. The continuous guidance includes routine recommendations for disease prevention, surveillance, response protocol, and best practices for healthcare facilities; whereas ad-hoc guidance is typically used for more specific guidance on a specific or emerging infectious disease that is new to the LHD. An LHD representative said, *"The CDC has been helpful in terms of providing us guidance, especially when responding to an organism that we don't have a lot of experience responding to, or a situation that we're maybe unable to get under control, and not sure why."*

Public health laboratories provide essential support by processing materials for testing within healthcare facilities. For example, one LHD representative stated, *"Another [partnership] would be Wisconsin's Regional Laboratory. They help us do a lot of our testing for point prevalence surveys."*

Another key partner for smaller LHDs during outbreak response are other nearby and larger LHDs. Larger LHDs, with their extensive staff and technical resources, share tools that aid smaller jurisdictions in their response. A focus group participant from a smaller LHD said, *"My LHD is sandwiched between two very large jurisdictions in California; they have a lot more staff and expertise and can process a lot more technical things... it was really instrumental when they developed our REDCap forms for us and they always share different ways to collect data with us and we just have to then customize it for our department."*

What characterizes existing partnerships?

Characteristics of existing partnerships include:

- The foundational role of state-level support in outbreak response (8);
- The informal nature and varying durations of partnerships (8); and
- Diverse approaches to data sharing through information and resource exchange mechanisms (6).

State-level supports are foundational to outbreak response processes by providing essential resources to LHDs, such as staff to lead outbreak response efforts and electronic disease surveillance systems. In certain smaller jurisdictions, the state DOH also leads the local outbreak response efforts in healthcare facilities while keeping the LHD informed on findings. One LHD representative shared how in their state, *“The DOH [will go] into [the healthcare facility] to mitigate [disease spread] and implement measures so that we don’t go out there. They have a specialized team for that, that we don’t.”*

The LHDs’ outbreak response partnerships are predominantly characterized by their informal nature and varying durations. Many of these collaborations have been established over an extended period, forming a solid foundation for collaborative efforts. However, some partnerships, such as community organizations and healthcare facilities, were established during the COVID-19 pandemic. These partnerships have been foundational for LHDs to continue outbreak response activities. LHDs also stated that the relationships built during the COVID-19 pandemic have resulted in an easier process and a more informal partnership for conducting outbreak response activities with facilities in their jurisdiction. When speaking about the formality of their partnerships, one evaluation participant described their partnerships as *“Very informal, just passive communications;”* another interviewee said, *“I just call up the supervising nurse anytime I need information on outbreaks we’re working on.”* This lack of formality has helped small, rural LHDs that lack an electronic disease surveillance infrastructure work in a timelier manner with healthcare facilities than before COVID.

LHDs report diverse approaches to data sharing across partnerships as part of their outbreak response. Informal approaches to data sharing include relying on communication methods such as phone calls and emails. In LHDs with informal approaches to data sharing, line lists and disease incident information are shared with LHDs via weekly updates or reports via phone call or email. Moreover, formal communication among facilities, LHDs, and the state DOH is facilitated through electronic disease surveillance and reporting systems. Notably, LHDs described that although they have access to data, there is no centralized system for databases and record-keeping; they usually have to leverage a combination of different types of data (e.g., population data or facility data) related to an outbreak from multiple data sources. Disease incident notifications may be generated through surveillance systems, surveys might be done in REDCap, and facility level information is found in a different system. One LHD representative highlighted the importance of having systems where all of this can be done on one platform and stated, *“The really awesome thing is that the Washington disease reporting system...it pings them, the state and facilities...and we’re able to do all [our outbreak response] activities in one platform.”*

What types of data and systems are LHDs aware of to target outbreak response in healthcare facilities?

LHDs reported awareness of data and systems ranging from population data, facility data, to systems developed by their state’s DOH for electronic disease reporting. Systems identified through this evaluation include:

- Electronic surveillance and reporting systems (8);
- Facility level data (5);
- Centers for Medicare and Medicaid Services (CMS) data (2);
- Hospital discharge data (2); and
- Coding software (2);

Electronic surveillance and reporting systems were commonly reported by LHDs as tools for identifying trends and organizing data from schools, medical centers, and other facilities. Many of these programs are provided to LHDs by their respective state DOH.

Facility-level data from various healthcare facilities and hospitals were also used by LHDs. One participant explained that facilities *“can directly enter hospital information related to cases”* that can be accessed by the LHD. Data entered by facilities details population characteristics, such as insurance rates of the patients being served at the facility. The larger LHDs shared having access to facility level data through access to facility electronic health record (EHR) system. However, smaller LHDs described avenues to access facility level data, through phone calls or an encrypted email sharing facility level data.

LHDs also reported awareness of CMS data. CMS data includes information on staff immunization status, case reports, and training resources. One evaluation participant explained how CMS *“is responsible for patient transfer data”* and can help to inform when *“they share patients with a high burden facility which helps prepare for outbreaks.”*

Smaller LHDs expressed the desire for easier access to hospital discharge datasets, coding software such as Python, and a centralized database that could better connect data from healthcare facilities with case investigation data and that could be accessed by the state to improve their outbreak response process. One evaluation participant shared that *“It was nice when we had staff that were skilled enough to pull all this data together...[it] made it easier for us to make sense of it all.”* This further underscored the desire for integrated data systems in small LHDs.

What types of data and systems do LHDs have access to for targeting outbreak response in healthcare facilities?

LHDs shared common responses for the data and systems they can access. These included:

- Electronic surveillance and reporting systems (9);
 - State reporting systems (8);
- Survey data (6); and
- CDC resources (5).

Multiple LHDs reported access to their state DOH reporting system, such as the Massachusetts Virtual Epidemiologic Network (MAVEN), Washington Disease Reporting System (WDRS), Illinois National Electronic Disease Surveillance System (I-NEDSS), and Nebraska State Immunization Information System (NESIIS). One LHD interviewee explained the role of their state disease reporting system: *“We get most of our information [from] the State Department of Public Health... And that puts out all of the infectious diseases in the areas that I have control of. So, then I can investigate... I’m able to get the information that I need.”*

LHDs used survey software such as REDCap to obtain data from local facilities. REDCap was used by LHDs to develop case report forms and inform them of possible outbreaks in facilities. One evaluation participant explained the data they could pull from REDCap surveys: *“Our health district was able to notify the members of our long-term care team that we had notifiable conditions that were being reported. We could go to that survey and all of the information was there.”* LHDs also accessed additional data from facilities through phone calls, emails, and line lists categorizing outbreaks.

National surveillance systems such as the National Healthcare Security Network (NHSN) were accessed by various LHDs, and several LHDs also reported access to resources from the CDC. LHDs listed access to CDC's Foodborne Illness reporting system, CDC's COVID-19 data tracker dashboards, and CDC's Epidemic Information Exchange (Epi-X). LHDs accessed NHSN to utilize its comprehensive data on HAIs, enabling them to monitor, manage, and mitigate outbreak risks more effectively and enhance their response capabilities by leveraging a standardized approach to measure progress on prevention efforts. One LHD representative reported that *"this access helps them support evidence-based decision-making."* The various CDC resources facilitated targeted interventions and promoted collaborative efforts among healthcare facilities and public health entities to safeguard healthcare quality and safety at the local level.

What are barriers to accessing data and systems?

Barriers reported by LHDs regarding data access fell into the following categories:

- Data and/or system access authorization (5);
- Insufficient LHD staff and/or staff turnover (5);
- Insufficient training on data systems for LHD staff (5);
- Lack of LHD infrastructure (3); and
- Delays in receiving information from facilities (3).

Many state reporting systems require authorizations for use, and several LHDs described these authorizations as barriers to accessing data. Most state reporting systems require authorization for every individual who needs access. The authorization process for many LHDs can be lengthy due to submitting approval requests to the state DOH and having to wait until requests are processed. LHDs revealed delays in the state's approval process to be a barrier in accessing necessary data. Delays were due to length of time to process access requests when there was lack of clarity on requirements for LHDs and a lack of outlined process from state DOH; one LHD interviewee reported that *"it took almost two years before we finally received access to [our state's health information exchange]."*

LHDs reported lack of staff due to high staff turnover as barriers to maintaining processes related to outbreak investigations. LHD staff are spread across multiple tasks due to a lack of staff, which results in difficulties focusing only on outbreak and disease investigation. High staff turnover means LHDs lack consistent staff with expertise to access and use some electronic disease reporting and surveillance systems, leading to delays in conducting outbreak investigation activities.

LHD staff also pointed to a lack of sufficient training in using state systems and other data sources (e.g., facility level or population data) as a barrier to accessing data. According to one LHD representative, *"The [state's] training guides are frequently outdated and they don't match the current version of the software... They're showing pictures of old stuff... So, there's really a lot of lack of training. It's more of like, who had done this before in your health department, can you teach us how to do it now?"* A lack of guidance on using state systems forced LHD staff to crowdsource information from one another, but staff turnover and lack of time to train other staff resulted in further delays in learning the necessary data systems.

Inadequate LHD infrastructure surfaced as another barrier to accessing data. Many LHDs reported lacking the budget to purchase desired software or technological resources to manage outbreak response data for outbreak investigation activities. A representative from a small rural LHD reported lack of internet access as a major barrier to accessing data and systems. They explained that *"There was a time not too long ago when some health departments didn't even have internet... There are some remote little towns that don't have the budget to have the staff or the access to internet."*

Most of the data received by LHDs comes from their local healthcare facilities, which means there can be delays in receiving accurate and updated information if facilities do not have the capacity to routinely send data to the LHD. A focus group participant elaborated: *"The only barrier involves the facility filling out this information for the patients and so if they take a long time to fill it out, or they ignore our request to fill it out, we might not have as accurate of data."* A second LHD shared that their REDCap survey presented a challenge for facilities to complete due to its length, and so the LHD does not *"always get as much information as [they] want"* and must conduct additional follow-up with the facilities to fill in the gaps.

What are facilitators to accessing data and systems?

The following were reported as facilitators to data and systems access:

- Relationship building and coordination with partners (4);
- Having a clear process for gaining permission to systems (4); and
- Collaboration across health department divisions (3).

Building relationships and coordinating with facilities are facilitators to receiving access to case reporting data and getting responses to LHD REDCap surveys. Maintaining points of contact with staff at healthcare facilities, the state DOH, and the CDC was helpful in ensuring LHDs receive the information they needed for outbreak response in healthcare settings. A coordinated response means that LHDs are better suited to respond to outbreaks in facilities as quickly as possible. LHDs have been able to outreach to state DOH or CDC points of contacts to grant access, and it reduced wait time on securing access to electronic disease surveillance and reporting systems.

Developing clear processes and streamlining access to software and systems is another facilitator to accessing data and systems within LHDs. One evaluation participant described how it was easy for their information technology (IT) department within their LHD to follow instructions on their state DOH's website to get local staff access; *"[It was easy] to ensure [that] access permission was controlled, to make sure that only those people who needed to have access were provided the access."* Another LHD representative stated that *"It was easy to get access to our state reporting system... we just fill out a form online and the state works with us to provide personnel access."* Clearly documented processes for different data and platforms makes collaboration between LHD and state DOH easier and facilitates the process of getting approval to data systems.

Collaborating across departments within the LHD offers benefits in the form of system training, facilitating access to needed software, and creating dashboards and reports. One evaluation participant shared the impact of collaborating with other staff: *"Having highly skilled data personnel in [department, even though they are not on the outbreak team], has been helpful because they are able to dedicate time towards learning data platforms and know how to do all the good technical things that I would love to know how to do, but don't currently."*

What types of data and systems do LHDs use to target outbreak response in healthcare facilities?

Several LHDs listed various ways in which they used the following data and systems in their outbreak response:

- Electronic disease reporting and surveillance systems (6);
- Spreadsheets and line lists (5);
- Phone calls and emails (5);
- REDCap (4); and
- Online databases (2).

State electronic disease reporting and surveillance systems are used by LHDs to gain information, learn new outbreak response guidance, report data, and access health information otherwise unavailable to them. One LHD representative explained that data from the state provided them the granularity to understand *“whether or not the patient was hospitalized, whether the patient died, and... what kind of resources the resident needed.”* Being able to filter the data down to the city or county level was instrumental for a better target response.

LHDs reported using spreadsheets and line lists to collect, monitor, and report outbreak infection data to and from local facilities. LHDs use line lists from facilities to gain information on individual cases and categorize outbreaks. Spreadsheets and line lists are important systems used to target outbreak response since they are understandable and accessible across LHDs, requiring minimal training and specialized knowledge to be used effectively.

Phone calls and emails from facilities are also used to gather information on positive cases and exposure history of associated individuals. While not the most secure format for outbreak information sharing, many smaller LHDs shared that they’ve engaged in phone calls and emails from facilities for as long as the LHD has had a relationship with the healthcare facility. This informal method of information sharing was the most real-time data transfer of information from facilities to LHDs. LHDs could get information immediately and did not have to wait for data processing and transfer that occurs with more formal electronic reporting systems.

REDCap is another system used by LHDs to gather data needed to effectively target outbreak response in healthcare facilities. Surveys developed using REDCap have been sent out to facilities on a weekly basis to gather data, which helps alert LHDs to potential outbreaks and any other related information. While a few LHDs still relied on conducting case interviews over the phone with, many LHDs used REDCap to develop facility-specific surveys that could better support them in assessing a facility’s outbreak response.

Online databases such as the Extensively Drug Resistant Organisms Registry in Illinois, CMS data, and population-level data sources such as the American Community Survey were utilized by LHDs to query patients on previous exposures, understand patient transfer networks, and assess facility populations. An LHD interviewee elaborated on how health equity data were used in their work: *“So we use census data, like American Community Survey type data to get at the population around our facilities... we come up with our own scoring system along with that to try to get at what might be our most vulnerable facilities.”*

Are there existing infrastructures to collect and process HAI data? What type of infrastructures exist?

Various types of infrastructures were shared by LHDs collecting and processing data:

- State DOH electronic disease reporting and surveillance systems (8);
- Informal infrastructure (6); and
- Formal infrastructure (4);

Many LHDs reported collecting data from their respective state DOH reporting and surveillance systems. Systems such as MAVEN, INEDSS, CalREDIE, and WDRS allow LHDs to access case report data, receive infection control response and assessment visit data, store and analyze infectious disease data, and identify and track infection outbreak locations. Once processed, LHDs can automatically report data back to the state through these systems. National systems such as the CDC’s Epi-X, NHSN, and the National Electronic Disease Surveillance System were also identified as ways for LHDs to collect data.

Informal infrastructures with state DOH also support HAI data collection and processing. One evaluation participant described their supportive relationship with the state DOH, explaining, *"The epidemiologists at the state level have our information and if it's something that's of urgent nature, they would call me directly or vice-versa."* LHDs also reported collecting and processing HAI data through informal processes between themselves and the facilities they serve. For example, one evaluation participant said that data from local facilities was often shared *"via email or phone conversation, because that is the most straightforward [for the facilities]."* Facilities also share information and line lists with outbreak data to their LHD through informal methods such as email or phone call. LHDs reported analyzing this data and tracking it through their own spreadsheets and other internal databases.

LHDs also employ multifaceted approaches and combined centralized data management, data utilization, and proactive outbreak management for outbreak response in healthcare settings. LHDs use different surveillance tools (i.e., MAVEN WDRS, INEDSS) for efficient data collection, analysis, and tracking on disease incidents, which has improved ease of outbreak management. The formal systems also provide LHDs with access to health records that were beneficial to streamline outbreak identification and response.

How and to what extent are different types of data and systems used to inform strategic decisions, including equitable processes and outcomes, for outbreak response in healthcare settings?

Several common themes emerged regarding the use of different types of data and systems to inform strategic decisions in outbreak response within healthcare settings among LHD respondents:

- Data-driven decision-making (8);
- Structured data collection (6);
- Timely and efficient data dissemination (5); and
- Continuous assessment and improvement (3).

The integration of detailed data about affected populations highlights the pivotal role of data-driven decision-making in outbreak responses. Information from diverse sources informs testing strategies, resource allocation, and immunization efforts, enabling precise and informed decisions regarding outbreak responses and infection control measures. LHDs also highlighted the use of outbreak reporting and patterns to assess the effectiveness and inform the design of interventions. One LHD interviewee stated, *"We perform ICARs, which is like an assessment that we do at the facility level to kind of assess their practices in infection control and use that data to form recommendations for the facility in order to prevent any further spread of these infections."*

Numerous LHDs reported the importance of structured data collection through surveillance systems like MAVEN or WDRS to record facility data, which includes reports from infected individuals and comprehensive demographic information such as racial demographics, Medicaid eligibility, and poverty statistics. Leveraging standardized data management tools improves comprehension and enables precise tracking of outbreak patterns, timing, and the scope of infections within healthcare settings. For example, one LHD employs the Crest database, a reporting and surveillance tool that compiles detailed information from WRDS, covering aspects such as contact tracing, medical conditions, vaccine records, hospitalizations, fatalities, and other essential resources for patient care into a more manageable contact tracing platform. One LHD representative described the effectiveness of Crest, explaining, *"I was able to go into Crest and answer all the specific questions that pertain to contact tracing, pre-existing diseases, and vaccine data. It also looked at whether or not the patient was hospitalized, where the patient died, and what kind of resources the resident needed."* Another LHD referenced utilizing CalConnect, a contact tracing platform, to manage outreach to potential close contacts during an outbreak investigation.

Tools that facilitate structured data collection also support timely dissemination of information, such as the Health and Homeland Alert Network. While several LHDs have adopted more automated communication and reporting methods between healthcare facilities and LHDs, such as moving from line list emails to gaining access to electronic reporting and surveillance systems, other LHDs are satisfied with more informal notification methods of *“just calling the supervising nurse”* since this perfectly meets their level of technical expertise.

What are barriers to using data and systems for informing strategic decisions for outbreak response in healthcare settings?

When asked about barriers to using data and systems for informing strategic decisions in HAI outbreak investigations, the following themes were most frequently cited by individual LHD respondents and focus group participants:

- Staffing shortages and high turnover (5);
- Time constraints, including related to the complexity in accessing and navigating data systems (3).

LHDs report staffing shortages and high turnover as challenges in effectively using data systems for HAI outbreak investigations. Continuous staff turnover disrupts the training of new employees, diminishing institutional knowledge and consistency in data management protocols. Inadequate staffing can also result in heavier workloads for existing employees, causing delays in accurate data reporting and hampering responses to HAIs.

Challenges arising from staffing shortages and high turnover are exacerbated by the time-consuming nature of individual training processes. One focus group participant stated, *“Sometimes, it’s having training programs that people are expected to run through on their own time or have limited time, and they have competing demands, so it’s difficult to actually be able to sit through, and pay attention, and absorb everything.”* Moreover, numerous LHDs reported complicated and lengthy procedures for accessing and navigating data and state surveillance systems such as the INEDSS. One LHD mentioned the burden of extensive data collection forms that may be difficult to complete promptly. Even after gaining access to specific platforms, some LHDs have encountered usability issues, disrupting the efficient utilization of data essential for decision-making during outbreak investigations. One evaluation participant stated, *“The National Electronic Disease Surveillance System... is very difficult to navigate.”*

What are facilitators to using data and systems for informing strategic decisions in HAI outbreak investigations?

Two themes were identified when LHDs were asked about facilitators to using data and systems for informing strategic decisions in HAI outbreak investigations:

- Training and data expertise (6);
- State collaboration (4).

LHDs highlighted the significance of skilled data professionals who grasp the complexities of data platforms, can operate the systems proficiently, and are capable of training other staff. LHD staff with the needed data and technical expertise encompass roles such as data analysts and data management professionals; these staff were not common in the smaller LHDs sampled. Skilled data professionals offered their LHD’s communicable disease division the essential expertise and assistance for navigating and using surveillance and reporting platforms. One focus group participant highlighted the tangible advantages of having highly technical staff at the health department, saying *“People outside of our team help us process data and make sure we’re responding timely to our cases. So, for our whole division, which covers five programs, we have a dedicated triage team.”*

Collaboration with state IT departments supports LHDs in data navigation while also ensuring secure and controlled access to data systems, which helps maintain data security and integrity. An LHD interviewee emphasized the advantages of support from the state's DOH IT division, explaining, *"You have to be trained. And there's an IT department on the state DOH level that will train you and allow you access to the towns that you're covering."* LHDs with local IT branches also reported a greater ease of collaborating with the state to ensure a secure outbreak response data infrastructure; this was not a finding for most rural LHDs.

What does equity in outbreak response in healthcare settings mean to LHDs?

Most LHDs interviewed lack a formal equity framework for outbreak responses in healthcare settings. Nevertheless, numerous LHDs mentioned diverse strategies aimed at fostering equity in outbreak responses, including:

- Prioritization of vulnerable populations (6);
- Equal resource distribution (6); and
- Data-driven decision-making (4).

Numerous LHDs demonstrate a commitment to approaching their work through an equity lens by prioritizing the needs of vulnerable communities within their area. One LHD interviewee recounted, *"Our equity response meant identifying those people in our community who had more challenges and lack of access to health care. And so, those people were the people that we really made concerted efforts to try and get out in the field to identify what needs and resources they had."* Two LHDs focused on prioritizing healthcare facilities with a significant elderly population, acknowledging this population's heightened vulnerability to specific illnesses because of weakened immune systems.

Some LHDs who did not adopt an equity-focus due to having facilities with similar resources adopted an equality-based perspective instead, prioritizing equal attention and resources for all individuals and outbreak activities, regardless of a facility's status or resources. Additionally, LHD discussions centered on the initial focus of internal adjustments within LHDs, such as workforce expansion, to address the demands of multiple facilities in need of emergency support; this highlighted the desire to ensure that LHDs were equipped to serve their whole population of healthcare facilities equitably.

Some LHDs use a variety of data sources, including NHSN outcome data, CMS data, and census data, to guide their decision-making processes and allocate resources to facilities identified as higher priorities. As one LHD interviewee stated, *"We combined [various] metrics to [prioritize] facilities to provide support to."*

What data and systems are used to promote equitable approaches in outbreak response? How are they used?

While a few LHDs implement distinct strategies for utilizing data and systems to ensure an equitable approach to outbreak response, it was common for LHDs to not have formal policies guiding equitable approaches in their outbreak response processes. When asked about equity in their outbreak response, one LHD representative said, *"we respect the right to health of all people and respond to each outbreak with the same priority."* Another LHD representative shared *"That doesn't apply to our LHD since we are very rural, but we do prioritize long-term care residents since they're an older and more vulnerable population."*

Among the three LHDs that intentionally used data and systems to promote equitable approaches in outbreak response, the following were used:

- CMS quality ratings (2);
- Hardship index (1);
- Triage teams (1).

LHDs reported using the CMS quality ratings to decide which facilities should be targeted for intervention or resources. By utilizing the hardship index and the CMS Quality Ratings, LHDs can identify and prioritize facilities based on vulnerability and need, thus ensuring that resources are allocated in a manner that upholds equity in outbreak response.

One LHD utilized a “hardship index,” which incorporates six socio-economic indicators significant to public health. The evaluation participant explained that *“It depends on factors like housing, crowding, or poverty, or age group, or income, or education. And we use this data to map out which facilities in which areas that are more in need of going there and have less resources.”*

One LHD utilized a triage team tasked with combining NHSN outcome data, “infection prevention to bed ratios,” and social vulnerability indexes to develop a scoring system to rank priority facilities for support. The LHD representative detailed their method, stating, *“We look at the surrounding area of the hospital, like the zip code and their social vulnerability index based on census data, to see if it’s just a lower resource kind of area of the city. And so, we combined those types of metrics into a scoring system that we then use to rank what might be our most priority facilities to provide support to. And then we do that for each of those subsets of facilities.”* This type of equity-driven data framework was only seen among the two largest and most resourced LHDs in the sample.

Conclusions

The evaluation of LHDs' use of data for conducting outbreak responses within healthcare settings highlights a spectrum of challenges and opportunities in their response efforts. A comprehensive understanding of LHDs' operational activities, system deployments, communication modes, reporting protocols, partnerships, barriers, and equity-oriented initiatives provides essential insights into how LHDs use data to support outbreak response in healthcare settings. Findings from this evaluation are crucial to understanding and shaping prospective interventions and strategizing future approaches to support LHDs' outbreak response efforts. This evaluation provides evidence that can be used to build and enhance forthcoming public health initiatives and strategic planning.

LHDs navigate various outbreak response activities such as distributing PPE, dispatching adept outbreak teams, and providing guidance to healthcare facilities to safeguard healthcare settings and their larger community. By utilizing systems such as various electronic disease surveillance systems, health information exchanges, and healthcare facility line lists, LHDs demonstrate a commitment to using data in their outbreak response, even amidst notable challenges like data coordination issues and system access hurdles. The use of multi-channel communication and varied reporting systems—ranging from Health Safety Net reports to REDCap survey alerts—further underscores the pivotal role data plays in orchestrating a coherent and timely outbreak response.

Even with significant progress, particularly during the increased outbreak response efforts during the COVID-19 pandemic, more support is needed for smaller and rural LHDs. Smaller LHDs, often with tight budgets and fewer staff, face challenges in managing disease outbreaks effectively due to limited capacity. This highlights a pressing need to strengthen smaller and rural LHDs' workforce capacity.

Across all LHDs, there are various barriers, such as difficulties in using their surveillance systems due to lack of training, issues in coordinating data with healthcare facilities, and other practical challenges like inconsistencies in training materials and high staff turnover. There is a clear desire among LHDs to improve and better connect their data systems, emphasizing the need to make it easier for LHDs to be able to use different state or federal disease surveillance reporting systems.

While some LHDs embed specialized teams to champion equity by combining healthcare facility and demographic data to prioritize lower resourced and marginalized populations in their outbreak response, there is a gap in policies that prioritize and embed equity in the outbreak response for smaller LHDs. LHDs serving larger and urban populations utilized a combination of data sources to prioritize the most at-risk populations and facilities, while smaller and more rural populations lacked equitable frameworks in their outbreak response strategies.

LHDs need to be equipped with access to varying disease reporting and surveillance systems and training on how to effectively use data and systems for responding to outbreaks in healthcare settings. An LHD's ability to invest in efficient surveillance and reporting systems is crucial for increasing LHD capacity for outbreak response. Strengthening communication and reporting, overcoming operational challenges, and ensuring equity in outbreak responses is vital to improve the effectiveness and impact of LHDs' efforts in protecting public health. Future efforts should explore specific actions to increase the capacity of smaller LHDs and develop thorough policies to ensure equity is a central part of outbreak response strategies. This helps LHDs to be well-prepared and strategically positioned to not only respond to outbreaks, but help prevent outbreaks in healthcare settings.

Recommendations

The PHIL team recommends the following to strengthen relationships between LHDs, healthcare facilities, and public health partners; increase LHDs' use of data to inform strategic decisions; support LHDs to develop data practices that lead to more equitable outcomes in outbreak response in healthcare settings; and decrease rates of HAIs in healthcare facilities:

1. Strengthen Partnerships

- NACCHO can actively cultivate partnerships among LHDs, state health departments, and healthcare facilities to create a synergized approach to managing outbreak responses by hosting regular forums between partners. This will help to foster open dialogue, shared learning, and co-creation of strategies among various stakeholders in health management and outbreak response.
- This will support LHDs and local partners to develop and implement joint outbreak response strategies that capitalize on the collective capabilities, insights, and resources of LHDs and healthcare facilities.

2. Expand LHD Capacity

- NACCHO can facilitate targeted support toward LHDs, providing necessary resources such as funding, technology, and expertise to bolster their outbreak response mechanisms; provide smaller LHDs the resources to improve the data security of informal information sharing.
- Create and fund programs aimed at expanding the personnel capacity of LHDs, especially the smaller LHDs, ensuring they are equipped with adequate and skilled staff to effectively manage outbreak responses.

3. Support Improvement of State-Level Disease Surveillance Systems

- NACCHO can support identified state DOHs to improve the user experience of their electronic disease surveillance and reporting systems. This can include encouraging regularly review and update of their user end training materials to align with any changes or updates in data systems. This will better enable LHDs to navigate and utilize these systems.
- NACCHO can organize a repository for states' point of contact for LHDs to inquire about guidance, resources, facilitations, or training. This repository will be specifically targeted towards smaller and rural LHDs.

4. Address Access Barriers

- State DOHs can implement measures to simplify and expedite the process of gaining access to essential data portals and systems, reducing time lags and enhancing timely data retrieval and management.

5. Facilitate Training

- NACCHO should facilitate varied training sessions and workshops that focus on outbreak response strategies, use of data systems, and incorporating equity-focused approaches in interventions.
- NACCHO should also develop additional resources, such as guides, toolkits, and online courses, to further support the learning and application of skills acquired during training sessions.

6. Emphasize Equity

- NACCHO can provide technical assistance (TA) to formulate and implement policies that position equity as a central focus in outbreak responses to promote interventions and resources are targeted in a manner that accounts for disparate needs among populations.
- Additional TA should be provided to LHDs on how to leverage data to identify populations at higher risk of negative health outcomes and how to tailor interventions to ensure they receive prioritized resources and care, addressing their unique needs and challenges during healthcare outbreaks.

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Appendices

Appendix A: Email to Potential Participants for Interview

Greetings,

I am with the [Population Health Innovation Lab](#) (PHIL), a program of the Public Health Institute, contacting you on behalf of the National Association of County and City Health Officials (NACCHO). Thank you for expressing interest in participating in the evaluation of LHD data use for outbreak response in healthcare settings. Findings from this evaluation will be used to develop tools and resources that can:

- Strengthen relationships between LHDs, facilities, and partners.
- Increase LHDs' use of data to inform strategic decisions.
- Support LHDs to develop data practices that lead to more equitable outcomes in outbreak response in healthcare settings.
- Decrease rates of healthcare associated infections (HAIs) in healthcare facilities.

Please respond with available dates and times most convenient for you during the next five weeks (August 17 to September 30, 2023). Please let us also know if you have days of the week that work better for your schedule and what time frame.

Interviews will be conducted via Zoom and will last approximately 90 minutes. They will be recorded with your permission. As a thank you for your participation, health department partners will be entered into a raffle to win a virtual registration to the [2024 NACCHO 360 Conference](#).

Please note that your name and any other identifying details will not be associated with any of your answers in the final report we provide to the grant funders. Your responses will be combined and summarized with other interviews and focus groups.

Thank you in advance for sharing your time, knowledge, and expertise with us!

Appendix B: Email to Potential Participants for Focus Groups

Subject: Focus Group Invitation for the LHD Data use for Outbreak Response in Healthcare Settings Evaluation

Greetings,

I am with the [Population Health Innovation Lab](#) (PHIL), a program of the Public Health Institute, contacting you on behalf of the National Association of County and City Health Officials (NACCHO). Thank you for expressing interest in participating in the evaluation of LHD data use for outbreak response in healthcare settings. Findings from this evaluation will be used to develop tools and resources that can:

- Strengthen relationships between LHDs, facilities, and partners
- Increase LHDs' use of data to inform strategic decisions
- Support LHDs to develop data practices that lead to more equitable outcomes in outbreak response in healthcare settings.
- Decrease rates of healthcare associated infections (HAIs) in healthcare facilities

Focus groups will be conducted via Zoom and will last approximately 90 minutes. They will be recorded with your permission. As a thank you for your participation, health department partners will be entered into a raffle to win a virtual registration to the [2024 NACCHO 360 Conference](#).

Please reply to this email indicating which of the below time slots best works for your focus group participation:

- Time slot 1
- Time slot 2
- Time slot 3
- Time slot 4
- Time slot 5

Please note that your name and any other identifying details will not be associated with any of your answers in the final report we provide to the grant funders. Your responses will be combined and summarized with other interviews and focus groups.

In an effort to make the best of your time, I've attached a preview of the focus group prompts for you to reference in preparing your responses.

Thank you in advance for sharing your time, knowledge, and expertise with us!

Appendix C: Interview Guide

Background

INTRODUCTION

Thank you for accepting our request to participate in this interview. You are being invited to an interview because you are a staff that supports your local health department (LHD) response to outbreaks in healthcare settings. This interview is part of a larger evaluation that will help expand the understanding of LHD's awareness of, access to, and use of different types of data to prevent and respond to outbreaks in healthcare facilities. Findings from this evaluation will be used to develop tools and resources that can:

- Strengthen relationships between LHDs, facilities, and partners*
- Increase LHDs' use of data to inform strategic decisions*
- Support LHDs to develop data practices that lead to more equitable outcomes in outbreak response in healthcare settings.*
- Decrease rates of healthcare associated infections (HAIs) in healthcare facilities*

The [Population Health Innovation Lab](#) (PHIL), a program of the [Public Health Institute](#), is leading the evaluation with support from National Association of City and County Health Officials (NACCHO).

Your participation is voluntary, and you are free to skip any questions that you do not want to answer, for any reason. Your responses will be kept confidential. Your responses will not be shared in an identifiable way outside of the PHIL evaluation team unless you provide express written consent.

We expect the conversation will last about 90 minutes. If you need to stop the interview, please let me know and we can pause or reschedule, as your schedule allows.

1. Are you comfortable with this interview being recorded?

If yes, start recording. If no, take good notes!

2. Do you have any questions before we get started?

****START RECORDING****

Background

To start, I'd like to learn more about you

1. What is your role within your LHD?

2. Tell me about your day-to-day work as a [role, e.g., Data analyst, Epidemiologist, CT/CI, manager, supervisor, resource coordinator]?

- a. Possible probes: What types of work did you do in each week?*

Next, I'd like some background information on your LHDs response to outbreaks in healthcare settings.

3. Please describe the community you serve, and the outbreak response services your LHD provides.

4. Briefly describe the activities your LHDs engages in for outbreak response in healthcare settings?

a. Probes

- i. Does your LHD's outbreak response in healthcare facilities include Antimicrobial Resistance (AMR)?*

i. Describe your Healthcare Associated Infections (HAI) and AMR activities.

- 1. Does your LHD prevent and contain the spread of novel and targeted multidrug-resistant organisms (MDROs)?*

- 2. Does your LHD rapidly respond to other potential HAI outbreaks?*

3. Does your LHD assess infection prevention and control practices, provide recommendations, and provide ongoing assistance until gaps have been addressed?
4. Does your LHD implement data-driven prevention strategies to improve infection control practices in healthcare settings?
5. Does your LHD enhance coordination with key partners in response and prevention activities?

ii. How are you notified about HAI and AMR?

1. Probes:

- a. How do you receive data?
- b. How do you respond?
- c. What resources do you use (where, when, how)?

iii. How do you push out information about HAI and AMR?

1. Probes:

- a. With whom do you share information (Facilities, public, state, etc.)?

Next, I'd like to talk about different partnership that support your LHDs' outbreak response in healthcare settings

5. Please identify key partnerships and/or stakeholders for outbreak response in healthcare settings?

i. Probes:

1. Are they local, state, federal agencies?
2. What is the purpose of each partnership?
3. Do you have formal agreements (MOUs)?
4. How long have you been partnering?
5. Do you exchange resources?

i. Data exchange?

6. How have these partnerships/stakeholders influenced the LHDs outbreak response?

i. Probes

1. How effective have partnerships been with supporting outbreak response in healthcare settings?
2. How do you engage with partners and/or stakeholders for healthcare outbreak response activities?

In this next section, I'd like to talk about your awareness of different data and systems.

7. What systems do you know are available for your LHD to conduct outbreak response in healthcare settings?

i. Probes: *Systems includes, but not limited to, Electronic Health Records (EHRs), Health Information Exchanges (HIEs), electronic disease reporting and surveillance systems, syndromic surveillance systems, case investigation and contact tracing systems, tracking systems and spreadsheets, and/or paper-based systems of case reporting used for outbreak response in healthcare settings.*

8. What types of data do you know are available for your LHD to conduct outbreak response in healthcare settings?

i. Probes: *Data includes, but is not limited to, primary, secondary, quantitative, qualitative, descriptive, individual, aggregate, infection, or health equity information used for outbreak response in healthcare settings*

Next, we will ask about your access to and use of each data and system you identified awareness of

9. Does your LHD have access to the following data source/system?

a. Interviewer: Ask about access to each data source/system one at a time. For all data/systems LHD has access to, go to questions 10-13; for all data/systems LHD does not have access to, go to question 14. First ask questions 10-13 for each data/system LHD has access to. Then move on to question 13 for each data/system that LHD does not have access to

Interviewer: Repeat questions 10 to 13 for each data and system that interviewee is aware of that the LHD has access to.

10. What were barriers for ensuring LHD access to this data source/system for your LHD's response to outbreak in healthcare settings?

11. What were facilitators for ensuring LHD access to this data source/system for your LHD's response to outbreak in healthcare settings?

a. Probe: What process made the data or system available for your LHD to use?

12. What is your LHD's process to collect and process Healthcare Associated Infection (HAI) data from this data source/system?

a. How do you receive this data?

b. What information do you push out with this data/system?

i. Who do you share the data with (facilities, public, state, etc.)?

13. How is this data source/system used in your LHD's response to outbreaks in healthcare settings?

i. Probes:

1. Is this a facility specific data source for planning a response?

2. Is this a disease investigation software?

b. What facilitators enable your LHD in using data to inform strategic decisions in HAI outbreak investigation?

c. What barriers impede your LHD in using data to inform strategic decisions in HAI outbreak investigation?

i. What does your LHD need to overcome these barriers?

Interviewer: Repeat question 14 for each data and system that interviewee is aware of that LHD does not have access to specified data/system

14. What are barriers to getting access to this data/system for your LHD to use for responding to outbreak in healthcare settings?

15. Are there other data sources and/or systems that you cannot access that you would like to?

a. What does your LHD need to be able to access other data and systems?

Next, we'll ask about your LHDs equity efforts when conducting outbreak response in healthcare settings.

16. What does equity in outbreak response in healthcare settings mean to you?

17. What data and systems does your LHD use to inform equitable processes and outcomes for your outbreak response in healthcare settings?

i. Probe: Health equity data includes demographic indicators, such as income and health insurance status, community health Assessment data, or social vulnerability indexes.

b. How are each system and data used?

CLOSING

18. Is there anything else you want to share?

19. Do you have any questions for me?

Appendix D: Focus Group Guide

INTRODUCTION

Thank you for accepting our request to participate in this focus group. You are being invited to participate in a focus group because you are a staff person that supports your local health department (LHD) response to outbreaks in healthcare settings. This focus group is part of a larger evaluation that will help expand the understanding of LHD's awareness of, access to, and use of different types of data to prevent and respond to outbreaks in healthcare facilities. Findings from this evaluation will be used to develop tools and resources that can:

- Strengthen relationships between LHDs, facilities, and partners
- Increase LHDs' use of data to inform strategic decisions
- Support LHDs to develop data practices that lead to more equitable outcomes in outbreak response in healthcare settings.
- Decrease rates of healthcare associated infections (HAIs) in healthcare facilities

What to Expect:

- Your participation is voluntary.
- The conversation will last about 90 minutes. You are welcome to take a break or stop the interview at any time.
- If we record this interview (with your permission), the recording will be deleted at the end of the project and will be used only to verify the notes we're taking during the call and to capture any important quotes accurately.

Do you have any other questions before we get started?

Do we have your permission to record this focus group?

****START RECORDING****

WELCOME & MURAL INTRO

Intro.

Let's get started! Thank you all for joining us for this focus group today! We are excited to learn more about your experience using data for outbreak response in healthcare settings.

This conversation will be a bit different from a typical focus group. We will be using Mural, a virtual whiteboarding app, to hold a discussion focusing on the barriers and facilitators of data integration for outbreaks in healthcare facilities.

[share screen]

I'll explain a few things about Mural quickly, then we will get started with a welcome exercise to get some practice using the platform.

Point out:

- Outline
- Navigation Panel (how to move around)
- How to create stickies, change colors, connect points, type in a space

When you enter the Mural room, please do so anonymously. This will be an option when you click the link.

[share welcome Mural link -

To get some practice and learn more about one another's experiences in utilizing data for outbreak response in healthcare settings, we are going to do a welcome exercise called Rose, Thorn, Bud. For this exercise you will put at least one of each – rose, thorn, bud – in response to this prompt: What has been your experience with data, information, and systems for conducting outbreak response in healthcare settings?

The key is over here – explain.

Let's get started! Everyone choose a circle with a flower in it and enter at least one rose, thorn, and bud to answer the prompt – What has been your experience with data and systems for conducting an outbreak response in healthcare settings?

It's important to let us know now if you have any challenges, because we will use Mural for the rest of the focus group and we want to be sure you are able to fully participate.

CONVERSATION MAP

For this focus group we will be doing a Conversation Map in Mural. I will explain this to you in more detail in just a moment. We will do two conversation maps, switching from one to the other after about 15 minutes. If we have time at the end, we will discuss some of the points that came up through the exercises.

A conversation map is a group exercise where we all interact by typing out our thoughts, having a conversation entirely without speaking, on the map. Today we will have two prompts – Barriers and Facilitators. I ask you to think about these prompts in the context of your LHDs access to and use of data for outbreak response activities in healthcare settings as you interact with the conversation map.

Walk through instructions and sample map.

REMEMBER:

- Enter anonymously!
- Please let us know if you have any challenges. The MERLIN team will be here to troubleshoot and help you with anything you need.
- I'll let you know when there are 3 minutes remaining and again at 1 minute.

Any questions?

Let's get started!

[Share Facilitators Mural link -

[Share Barriers Mural link -

DISCUSSION

Now we will discuss each of the conversation map. The goal here is to (1) identify and group key themes and (2) to note anything you think is missing from the map. DO NOT EDIT THE MAP. Write these findings down using stickies in the Themes section.

We will discuss our findings and prioritize the themes by order of importance, as well as recording anything that might be missing from the map.

CLOSING

1. Is there anything else you want to share?

Do you have any questions for me?

Appendix E: Sampling Strategy

This evaluation constitutes of a diverse sample of local health departments (LHDs) provided by National Association of County and City Health Officials (NACCHO). The LHDs were divided into 3 evaluation groups: an interview group and 2 focus groups. LHDs were selected to ensure a diverse representation among the following characteristics in each evaluation group:

- Census region: Midwest, Northeast, South, and West
- Governance
 - Local: An LHD that is an agency of the local government
 - State: An LHD that is a local or regional unit of the state's health department
 - Shared: An LHD that is governed by both state and local authorities
- Jurisdiction: Multi-city, City, City-County, and County
- State
- Population category
 - Small: LHD serves a population less than 50,000
 - Medium: LHD serves a population between 50,000 and 499,999
 - Large: LHD serves a population of 500,000 or more
- Degree of urbanization: Urban and Rural

Ten LHDs will be invited to participate in key informant interviews. Each LHD invited to participate in interviews will be asked to identify 1-2 different staff types (i.e., Disease investigators, Epidemiologists, Public Health Nurses, Contact Tracers, and Data Analysts). 16 LHDs will be invited to refer one staff member to participate in a focus group.

Appendix F: Thematic Analysis Codebook

Evaluation Question	Codes	Code Definitions
What processes do LHDs use for outbreak response in healthcare settings?	LHD Outbreak response Processes	General processes taken by LHD for outbreak response in health care settings that is neither data collection, providing guidance & education, or communication
	LHD Outbreak response Processes: Data Collection	LHD for outbreak response process for data collection including, interviewing, conducting survey, obtaining review line lists,
	LHD Outbreak response Processes: Provide Guidance and Education	LHDs provision of guidance and education to facilities on the needed protocol and steps to mitigate the current outbreak and steps to prevent a future outbreak (i.e., handwashing TA, Catheter care TA, Masking guidelines, etc.)
	LHD Outbreak response Processes: Communication	LHDs communications efforts with healthcare site, infected individuals, or the general public
How do different partnerships support LHDs' outbreak response in healthcare settings?	Outbreak Response Partners	A healthcare outbreak response partner is an entity or organization that collaborates with healthcare institutions to manage and mitigate disease outbreaks. For example, the World Health Organization (WHO) partners with national health departments to tackle global pandemics like COVID-19.
	Outbreak Response Partners: State Department of Health	Referenced partnering with State Department of Health
	Outbreak Response Partners: Local Partners	Referenced partnering with local departments such as firefighters, other healthcare facilities, CBOs, etc.
	Outbreak Response Partners: Federal Partners	Federal Organization supporting LHDs in outbreak response activities
What characterizes existing partnerships (relationship type [data exchange, resource exchange, coordination], partner type [other LHDs, CBOs, state DOH, etc.], level of formality [are MOUs used?])?	Partnership characteristics	General description from LHD on attributes of different partnerships
	Partnership characteristics: Role	Roles of each partner in HAI prevention efforts.
	Partnership characteristics: Information Sharing	Any type of information sharing amongst the partners

Evaluation Question	Codes	Code Definitions
What types of data and systems are LHDs aware of to target outbreak response in healthcare facilities?	Data/System Wishlist	Proxy for LHD data awareness for things they don't have access to
What types of data and systems do LHDs have access to for targeting outbreak response in healthcare facilities? What types of data and systems do LHDs use to target outbreak response in healthcare facilities?	Data system awareness, access, and use	A digital platform designed to efficiently collect, analyze, and equitably disseminate information about disease occurrences and patterns
	Data system awareness, access, and use: Electronic Disease reporting and Surveillance System	Awareness, access and use of an electronic reporting system such as CalREDIE, HIXNY, MAVEN, or other state or federal disease reporting repository
	Data system awareness, access, and use: Surveys system	Awareness, access and use of survey software such as REDCAP for case investigation activities
	Data system awareness, access, and use: Excel Spreadsheets	Creation and use of Excel to manage data collection and tracking in outbreak response. Usually, a manual approach to manual line lists
	Data system awareness, access, and use: Line lists	Awareness, access, and use of line lists containing patient information for those that are infected in an outbreak investigation
	Data system awareness, access, and use: Health Equity Data	Any type of information and data that LHDs share as accessible and used for health equity data
What are barriers to accessing data and systems?	Accessible Data/System Barriers	Barriers to being able to access any information, data, and system used for the LHD to conduct their outbreak response activities
What are facilitators to accessing data and systems?	Accessible Data/System Facilitators	Facilitators to being able to access any information, data, and system used for the LHD to conduct their outbreak response activities
How and to what extent are different types of data and systems used to inform strategic decisions, including equitable processes and outcomes, for outbreak response in healthcare settings?	Data/System Use- Strategic Response	LHDs use of information and data to respond to the outbreak response
	Data/System Use- Strategic Response: Provide Guidance and Education	LHDs use of information and data to provide guidance and education to facilities on the needed protocol and steps to mitigate the current outbreak and steps to prevent a future outbreak (i.e., handwashing TA, Catheter care TA, Masking guidelines, etc.)
	Data/System Use- Strategic Response: Communication	LHDs using information and data to release communications with healthcare site, infected individuals, or the general public

Evaluation Question	Codes	Code Definitions
What are facilitators to using data and systems for informing strategic decisions in HAI outbreak investigations?	Data/System Use-Strategic Response Facilitators	Facilitators to being able to use any accessible information, data, and system used for the LHD to conduct their outbreak response activities
	Data/System Use-Strategic Response Facilitators: Staff Capacity & Expertise	An LHDs ability to use any accessible information, data, and system used for the LHD to conduct their outbreak response activities due to having staff capacity and/or the technical expertise to use systems.
What are barriers to using data and systems for informing strategic decisions in HAI outbreak investigations?	Data/System Use- Strategic Response-Barriers	Barriers to being able to use any accessible information, data, and system used for the LHD to conduct their outbreak response activities
	Data/System Use- Strategic Response-Barriers: Funding	Funding challenges that impede an LHDs ability to use any accessible information, data, and system used for the LHD to conduct their outbreak response activities
	Data/System Use- Strategic Response-Barriers: Staff Capacity & Expertise	An LHDs inability to use any accessible information, data, and system used for the LHD to conduct their outbreak response activities due to lack of staff capacity and/or expertise.
Are there existing infrastructures to collect and process HAI data? What type of infrastructures exist?	Data/System Data Infrastructure	The LHDs organization structure or processes that allow them to be able to make use of HAI data received from healthcare facilities (related to access to information and systems)
What does equity in outbreak response in healthcare settings mean to LHDs?	Equity in Outbreak Response	LHD mention of a formal or informal equity framework in their outbreak response activities; also, LHD mention of a lack of equity framework in their outbreak response activities
What data and systems are used to promote equitable approaches in outbreak response? How are they used?	Data/System Use for Equitable Outbreak Response	Information and systems that LHDs use specifically for ensuring an equitable approach in their outbreak response activities



POPULATION HEALTH INNOVATION LAB

A Program of the PUBLIC HEALTH INSTITUTE

NACCHOSM
National Association of County & City Health Officials

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The mission of the National Association of County and City Health Officials (NACCHO) is to improve the health of communities by strengthening and advocating for local health departments.

1201 I Street, NW • Fourth Floor • Washington, DC 20005

Phone: 202.783.5550 • Fax: 202.783.1583

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