



Healthcare-Associated Infections: The Evolving Role of Local Public Health in Promoting Safe Healthcare

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Introduction

These days, stories about healthcare-associated infections (HAIs) seem to be a recurring theme in the news. Methicillin-resistant *Staphylococcus aureus*, *Clostridium difficile*, and *Candida auris* offer just a few examples of infections patients are at risk of contracting while receiving care for other health concerns. While the magnitude of the problem is difficult to fully measure, CDC estimates that approximately 1 in 25 U.S. patients will contract an infection while receiving care in a hospital. Fortunately, facilities are increasingly becoming engaged with state and local public health agencies to control and proactively prevent the spread of infections, which can decrease the rates of HAIs by over 70%.¹

Local health departments (LHDs) can play an active role in protecting their communities from healthcare-associated infections. At the individual facility level, LHDs often provide quality improvement reviews to assess infection prevention practices, investigate outbreaks of infections, and recommend control measures to contain and curb outbreaks. LHDs are also well-positioned to serve as a coordinator and liaison among multiple facilities. They can provide education on infection prevention, support the analysis of regional data to inform decision making, and bring healthcare partners together to increase communication among facilities.

This article explores two examples of LHDs that – despite being very different in size and structure – have both been successful in their efforts to engage in HAI prevention and response activities that range from leveraging existing partnerships to conducting assessments of infection control practices.

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Eau Claire City-County Health Department

Two years ago, the Infectious Disease Committee in Eau Claire, Wisconsin, convened a quarterly meeting to share information on updates and trends in disease. For more than 10 years, the Eau Claire City-County Health Department (ECCCHD) has led this Infectious Disease Committee to promote consistency among hospitals, clinics, and the health department. Eau Claire is home to several regionally- and nationally-renowned healthcare organizations, and ECCCHD has a long history of partnering with these competing organizations to address current infectious disease issues, solve problems, and initiate change.

By request of committee members – who include physicians, infection preventionists, and nurses from hospitals, clinics, home health, and public health – this meeting's agenda was devoted to discussing a growing concern with *C. difficile* (*C. diff*) infections. Although *C. diff* is a common HAI, the hospitals were concerned that they were experiencing an increase in patients admitted with *C. diff* acquired outside of the hospital setting.

Because ECCCHD has built a reputation as a neutral convener, partners were asking the health department to help address HAIs as a community-wide issue. Partners recognized a gap in the ability to track *C. diff* data at a county level. As a result, the three participating hospitals offered to compile *C. diff* data and send them to the health department to monitor. In Wisconsin, HAIs are not reportable diseases, so this was ECCCHD's first experience delving into prevention and control of HAIs, a high priority for CDC and the state.

A few months after this pivotal Infectious Disease Committee meeting, ECCCHD applied for and was awarded a *Lessons in Infection Control* (LINC) grant from NACCHO. This funding enabled the health department to increase internal expertise in data surveillance and build an HAI Coalition that could address the committee's

C. diff surveillance needs, while also concentrating on other HAIs, multidrug-resistant organisms (MDROs), and emerging infectious diseases.

HAI Coalition membership began with a subset of representatives from the Infectious Disease Committee, co-chairs from ECCCHD, and a healthcare partner. Coalition members quickly identified the need to engage stakeholders from other healthcare roles to fully understand the complexity of HAIs. As a result, a diverse team of individuals was recruited from a variety of healthcare roles, some of which are not often represented on committees (e.g., lab technicians, hospital pharmacists, allied health professionals,



long-term care infection preventionists).

The community-clinical linkages have been instrumental to the success of the Coalition, with the health department bringing a population health perspective and healthcare providing expertise on patient-centered outcomes. The complementary roles of public health and healthcare create a strong coalition infrastructure and provide an interdisciplinary understanding of and approach to HAI prevention and control. In fact, healthcare partners report that public health helped them gain an awareness of what is happening beyond their walls, and encouraged them to think about the environments patients encounter after discharge (i.e.,

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“Despite differences in size, funding, and other jurisdictional characteristics, Eau Claire City-County Health Department and Houston Health Department were both able to collaborate with healthcare partners and increase their involvement in HAI prevention and response to better protect their communities from the threat of HAIs.”

independent living, assisted living, and long-term care) and how infection control measures can vary significantly across such settings.

When the Coalition began to pool *C. diff* data, it took both the knowledge of healthcare and the insight of public health to determine how to differentiate community-onset *C. diff* data from healthcare-associated *C. diff* data. Hospitals are required to report healthcare-associated data to the National Healthcare Safety Network, making healthcare data clearly defined. Figuring out a way to pull out community-onset data proved more challenging. Hospital infection preventionists and lab technicians met with ECCCHD, and together they were able to determine how to collect data representative of community-onset *C. diff*.

With common *C. diff* measures defined, competing hospitals continue to send *C. diff* data to ECCCHD – a clear public health success. Long-term, the HAI Coalition foresees that the data will help them to understand how HAIs are spread within healthcare and across the community, ultimately improving decision making and reducing *C. diff* rates.

Overall, shared learning has been the largest success of this coalition and the catalyst to all other successes. Through the Coalition, public health and healthcare partners created a common language, a shared understanding of individual needs, and a shared understanding of community impact. This interdisciplinary learning has had a noticeable effect on the relationship between ECCCHD and its healthcare partners. Increased respect is evident among individual coalition members and facilities. In the end, a diverse group of healthcare professionals working toward a common goal has increased the available resources for all.

Houston Health Department

The City of Houston has the largest medical center in the world, with one of the highest densities of clinical facilities for patient care. In addition, Houston is home to two international airports

and the Port of Houston, and also ranks highly in international commerce – all factors that increase its vulnerability to emerging infectious diseases. The Ebola outbreak response efforts in 2015 underscored the importance of increasing Houston Health Department’s (HHD’s) capacity to detect, assess, and respond to HAIs and outbreaks. At the time of the Ebola outbreak, very few resources were available at HHD to prepare healthcare facilities for HAIs and outbreak response. The supplemental funding received through the Epidemiology and Laboratory Capacity (ELC) Domestic Ebola supplemental grant afforded HHD the ability to perform targeted assessments, identify gaps in infection control practices, and implement strategies to reduce disease transmission in healthcare settings.

In the past, HHD has relied on electronic lab reports, faxed disease incident forms, and incoming phone calls to investigate reported cases of Texas notifiable conditions. However, the lack of a complete listing of facilities led to delays in contacting the appropriate individuals in a timely and efficient manner. Funding from the ELC grant enabled HHD to create and develop a comprehensive healthcare facility directory in coordination with the Texas Department of State Health Services (DSHS). This directory includes facility name, type, and contact information for all acute care hospitals, long-term care facilities (LTCFs), dialysis centers, and ambulatory surgical centers in the City of Houston’s jurisdiction. HHD reviews and updates this list annually. Following the development of the directory, geographic information system (GIS) mapping was used to illustrate the geographical locations of the healthcare facilities in Houston by facility type. The GIS maps and comprehensive directory allow the department to readily reach out to facilities and their contacts, especially in the event of an outbreak.

HHD also offers onsite assessments for healthcare facilities. These assessments are designed to provide an opportunity to collaborate, share

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best practices, and identify gaps in infection control. Conducted with hospital leaders, the assessments – which involve direct observation of facility practices – cover multiple domains of infection control programs and antimicrobial stewardship programs (ASP). A debriefing is provided at the end to summarize findings, determine next steps, and provide resources to assist facilities with addressing gaps. In some instances, follow-up assessments are also performed.

With much of the focus on LTCFs, it is notable that antibiotic stewardship is in its infancy for LTCFs in the City of Houston. Utilizing “CDC’s Core Elements of Antibiotic Stewardship for Nursing Homes” checklist, HHD identified that only 20% of LTCFs provided education pertaining to ASP to staff and residents. In addition, only 60% of LTCFs had access to drug expertise (i.e., infectious disease-trained pharmacist or physician) and only 60% are tracking at least one process measure and outcome for antibiotic use within the facility. Results from these assessments were presented to HHD’s Antimicrobial Stewardship Executive Committee and the Center for Antimicrobial Resistance and Microbial Genomics Symposium in 2017. Discussions from these presentations eventually led to the establishment of a subcommittee around Transitions of Care.

This process strengthened HHD’s relationships with DSHS and the Association for Professionals in Infection Control and Epidemiology. HHD was also able to assess and improve HAI outbreak reporting and response by building electronic questionnaire packages within the Houston Electronic Disease Surveillance System. These packages have increased HHD’s ability to track MDROs such as Vancomycin-intermediate *Staphylococcus aureus*/Vancomycin-resistant *Staphylococcus aureus*, Carbapenem-resistant Enterobacteriaceae, and multidrug-resistant *Acinetobacter*.

Ultimately, the ELC funding has allowed HHD to identify, target, and mitigate gaps in infection control practices, and the data collected has been



used by the department to inform actions and responses. These actions were implemented in alignment with the City of Houston’s goal of addressing patient safety issues through a multifaceted approach and coordinated participation from the healthcare community, public health, and other stakeholders.

Conclusion

Despite differences in size, funding, and other jurisdictional characteristics, Eau Claire City-County Health Department and Houston Health Department were both able to collaborate with healthcare partners and increase their involvement in HAI prevention and response to better protect their communities from the threat of HAIs. 📧

To learn more about how your health department can engage in similar activities, go to NACCHO’s HAI webpage or visit the NACCHO Toolbox to download NACCHO’s free HAI toolkit, developed in coordination with demonstration sites from NACCHO’s LINC program.

References

1. Centers for Disease Control and Prevention. 2014 National and State Healthcare-Associated Infections Progress Report. Published March, 2016. Available at <https://www.cdc.gov/hai/surveillance/progress-report/index.html>