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Food Safety: Environmental Health Data Matter

Editor's Note: NEHA strives to provide up-to-date and relevant information on environmental health and to build partnerships in the profession. In pursuit of these goals, we feature this column on environmental health services from the Centers for Disease Control and Prevention (CDC) in every issue of the *Journal*.

In these columns, authors from CDC's Water, Food, and Environmental Health Services Branch, as well as guest authors, will share insights and information about environmental health programs, trends, issues, and resources. The conclusions in these columns are those of the author(s) and do not necessarily represent the official position of CDC.

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Introduction

The Centers for Disease Control and Prevention's (CDC) National Environmental Assessment Reporting System (NEARS) (Figure 1) is a surveillance system that captures data collected through the environmental health component (i.e., environmental assessment) of foodborne illness outbreak investigations in retail food establishments (CDC, 2019). These environmental assessment data, typically collected by environmental health staff, can provide valuable information about contributing factors and environmental antecedents to outbreaks.

NEARS data can be used to improve retail food safety prevention efforts. Participating in NEARS can help prevent foodborne ill-

ness outbreaks associated with restaurants, banquet facilities, schools, and other institutions. Recent analysis of 404 outbreaks reported to NEARS by 16 state and local health departments from 2014–2016 found that most of the outbreaks were caused by norovirus and contamination of food by infectious workers contributed to more than half of the outbreaks with contributing factors (Lipcei et al., 2019). These findings are not new—they are consistent with findings from other national outbreak data sets and highlight the role of ill workers in foodborne illness outbreaks (Angelo, Nisler, Hall, Brown, & Gould, 2017). NEARS data showed that many establishments in which outbreaks occurred, however, lacked written

policies about practices that can help prevent norovirus outbreaks caused by infectious workers. These include policies on preventing workers from working while ill and on glove use. NEARS data also showed that many outbreak establishments lacked paid sick leave for workers. These data are novel to NEARS and suggest that these gaps in establishment policies and practices might be antecedents to outbreaks and likely play a role in outbreak prevention.

NEARS also collects data that characterizes outbreak investigation activities and these data can be used to improve outbreak investigations. Analyses of 2014–2016 NEARS outbreaks showed that the majority of environmental assessments in outbreak establishments were initiated the same day the establishment was identified for an outbreak investigation (Lipcei et al., 2019). This finding is encouraging as experts recommend contact with an outbreak establishment immediately (Selman & Guzewich, 2014). Timely environmental assessments are more likely to identify factors contributing to outbreaks, which is an important goal of outbreak investigations (Brown, Hoover, Selman, Hall, & Schurz Rogers, 2017). NEARS data showed, however, that for some outbreaks, environmental assessment initiation took longer—between 3–14 days (7%)—and in a small percentage of outbreaks, more than 2 weeks (1%). These data show a specific need for improvement in outbreak investigation practices.

NEARS data collected and analyzed at the national level can provide data valuable to improving outbreak prevention and investi-

FIGURE 1

The National Environmental Assessment Reporting System



From a National Environmental Assessment Reporting System Pioneer: James Mack

Wisconsin began its participation in the National Environmental Assessment Reporting System (NEARS) when it was piloted in 2007. NEARS became an integral tool in Wisconsin's foodborne outbreak investigation toolbox. Wisconsin has been working to institutionalize NEARS throughout the state. It has been a positive experience for local jurisdictions as they have embraced the environmental assessment training developed to accompany NEARS and the critical thinking skill set fostered by the training (Centers for Disease Control and Prevention, 2018).

Most notable is how the NEARS institutionalization process has led local jurisdictions to adopt the concepts of contributing factors and environmental antecedents, concepts critical to conducting outbreak environmental assessments. Indeed, this focus has carried over to regulatory routine inspections. Staff are now taking a problem-solving approach and focusing on how to mitigate and prevent foodborne illness risk factors during routine inspections.

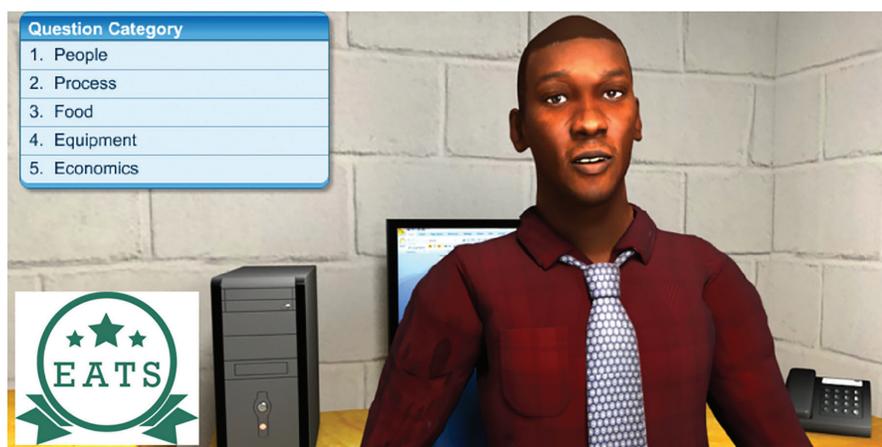
Wisconsin uses NEARS data to identify the most common contributing factors to outbreaks and uses this information to focus efforts on reducing and preventing outbreaks. For example, NEARS data show that contamination by ill workers is a frequent contributing factor to outbreaks in Wisconsin. As a state, we have emphasized the role of ill workers in outbreaks and encouraged field staff to focus their efforts on prevention of ill workers during routine inspections. For example, inspections include the review of employee health policies and verification of knowledge about the employee health policy as it relates to ill worker risk factors.

Wisconsin is also using data collected through NEARS to assess outbreak investigation practices. We are tracking how long it takes to contact outbreak establishments and to visit the

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FIGURE 2

The Environmental Assessment Training Series Offers Simulated Exercises on Interviewing and Other Environmental Assessment Skills



gation practices. In fact, NEARS has helped an individual site improve their prevention and investigation practices (see sidebar).

Summary

NEARS is still in its infancy but given its potential to improve foodborne outbreak investigation and prevention, use of NEARS is growing steadily. CDC is working to support this progression and empower food safety programs to conduct and report environmental assessments. CDC accomplishes this effort by

1. providing free, online, interactive training designed to prepare participants for

NEARS participation called the Environmental Assessment Training Series or EATS (www.cdc.gov/nceh/ehs/elearn/eats/index.html) (Figure 2);

2. providing all NEARS jurisdictions an individual report of their NEARS data every year, as well as annual summary reports (www.cdc.gov/nceh/ehs/nears/publications.htm);

3. providing information about NEARS at national meetings and conferences such as the National Environmental Health Association's annual conference, the Integrated Foodborne Outbreak Response and Management (InFORM) conference, and Food

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establishments after they have been identified for an investigation. In other words, we are tracking how quickly we respond to foodborne outbreaks on a systematic basis. Over time, these data will allow us to identify gaps and improve our investigation practices.

Local jurisdictions in Wisconsin also use NEARS data to improve food safety. For example, one jurisdiction is in the process of using NEARS data to better understand the context and causes of foodborne outbreaks occurring in independent ethnic restaurants. The ultimate goal of this project is to develop interventions to improve food safety in ethnic restaurants in the community.

NEARS participation has supported Wisconsin in the improvement of the environmental assessment process and standardization of investigation practices on a state level. Wisconsin understands the importance of outbreak data and how NEARS data contribute to understanding the environmental causes of outbreaks on a national scale. Data drive decisions and ultimately affect interventions. NEARS has been a valuable asset to inform food safety systems and target prevention efforts in the field.

and Drug Administration regional retail food protection seminars; and
4. analyzing and disseminating data from NEARS that show its potential impact (Brown et al., 2017; Freeland, Masters, Nicholas, Kramer, & Brown, 2019; Lipcsei et al., 2019).

Additionally, in 2019, the National Environmental Health Association, through a CDC partnership cooperative agreement, provided 30 jurisdictions an opportunity to explore NEARS. The jurisdictions are not currently involved with NEARS and will have to determine if participation in NEARS is a good fit for their programs.

As more health departments conduct environmental assessments and report their data to NEARS, we will gain a better understanding about the environmental factors responsible for outbreaks on a national scale. This information is critical to inform food safety policies and target public health interventions. 🐞

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