



Kelli Foster, MSPH

Vector Control Tools and Resources for Environmental Health Professionals

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 a column from the Environmental Health Services Branch (EHSB) of the Centers for Disease Control and Prevention (CDC) in every issue of the *Journal*.

In these columns, EHSB and guest authors share insights and information about environmental health programs, trends, issues, and resources. The conclusions in this column are those of the author(s) and do not necessarily represent the views of CDC.

Kelli Foster is an ORISE fellow in CDC's EHSB. She works on projects relating to vector control, workforce development, and water quality.

In 2015 alone, 2,060 West Nile virus cases were reported to the Centers for Disease Control and Prevention (CDC, 2016). In addition, more than 300,000 estimated human illnesses were caused by Lyme disease in the U.S. each year (CDC, 2014). Vector-borne illnesses are impacting public health, yet recent surveys have shown state and local vector control programs experienced budget cuts and reduced capacity (Association of State and Territorial Health Officials, 2014; Li & Elligers, 2014).

In response, CDC's Environmental Health Services Branch (EHSB) is partnering with the National Network of Public Health Institutes, Texas Health Institute, National Environmental Health Association (NEHA), and Public Health Foundation to advance environmental health programs and support the professionals who protect communities from vector-

borne illness. These efforts have resulted in tools and resources to improve vector control programs and services and enhance professionals' skills and competencies. CDC and its partners incorporated the 10 Essential Environmental Public Health Services into these new tools to ensure a comprehensive framework for addressing vector control (Table 1). The following descriptions provide more information on these tools (Table 2).

Vector Control for Environmental Health Professionals (VCEHP)

VCEHP is a new, interactive, online curriculum designed to advance environmental health professionals' awareness of public health threats posed by vectors and pests. This is a new online version of CDC's popular *Biology and Control of Vectors and Public Health Pests: The Importance of Integrated*

Pest Management course. The curriculum includes 12 courses on topics such as mosquito and tick biology and control, pests and vectors in food and housing environments, risk communication, and program performance assessment and improvement. Those who complete the curriculum will be eligible to receive continuing education units through NEHA. VCEHP has been pilot tested and we anticipate its final release this fall. Watch for updates about the release of this professional development opportunity.

Vector Control Program Performance Assessment and Improvement Reports

These reports result from an initiative involving 14 local health department vector control programs that used the Environmental Public Health Performance Standards to assess their delivery and use of the 10 Essential Environmental Public Health Services. Identified performance gaps were prioritized and addressed using quality improvement techniques and resources to increase the efficiency, effectiveness, and capacity of vector control programs. For example, one vector control program wanted to improve their delivery of Essential Service #2. To do so, they worked with their information technology department to enhance the mosquito control program's database analysis and reporting capabilities, which led to increased efficiencies in resolving mosquito complaints. The reports describe other vector control program quality improvement projects that may be helpful to others interested in improving their vector control program.

TABLE 1

10 Essential Environmental Public Health Services

1	Monitor	Monitor environmental and health status to identify and solve community environmental public health problems.
2	Diagnose and investigate	Diagnose and investigate environmental public health problems and health hazards in the community.
3	Inform, educate, and empower	Inform, educate, and empower people about environmental public health issues.
4	Mobilize	Mobilize community partnerships and actions to identify and solve environmental health problems.
5	Develop policies and plans	Develop policies and plans that support individual and community environmental public health efforts.
6	Enforce	Enforce laws and regulations that protect environmental public health and ensure safety.
7	Link	Link people to needed environmental public health services and assure the provision of environmental public health services when otherwise unavailable.
8	Assure	Assure a competent environmental public health workforce.
9	Evaluate	Evaluate effectiveness, accessibility, and quality of personal and population-based environmental public health services.
10	Research	Research for new insights and innovative solutions to environmental public health problems.

TABLE 2

Vector Control Resources Available From the Centers for Disease Control and Prevention (CDC) and Partners

Resources	Description	CDC's Partners
Vector Control for Environmental Health Professionals	Courses on topics such as mosquito and tick biology and control, pests and vectors in food and housing environments, risk communication, and program performance assessment and improvement.	National Network of Public Health Institutes, Texas Health Institute, Tulane University School of Public Health, and National Environmental Health Association (NEHA)
Vector Control Program Performance Assessment and Improvement Reports	Reports from local vector control programs on how they used the Environmental Public Health Performance Standards to assess and take action to improve their performance.	Public Health Foundation (PHF)
Vector Control Population Health Driver Diagram	Tool that encourages a collaborative process to identify and address vector control and vectorborne disease concerns in a community.	PHF
Enhancing Environmental Health Knowledge (EEK): Vectors and Public Health Pests	Recorded webinars to enhance the knowledge of environmental health professionals on vectors and public health pests.	NEHA

Note: Resources can be found at www.cdc.gov/nceh/ehs/topics/vectorcontrol.htm.

Vector Control Population Health Driver Diagram

A population health driver diagram can be used collaboratively by public health, health-care, and community partners to identify the potential primary and secondary drivers that can achieve an identified community health objective, in this case decreasing vectorborne disease (Figure 1). Vector control programs have used the diagram to work with partners and stakeholders to accomplish objectives such as forming methods to increase coordination on mosquito control decisions and expanding vector laboratory testing to

nearby counties. Vector control programs can use the population health driver diagram and corresponding implementation guidance to collaborate with partners and stakeholders to address vector control concerns.

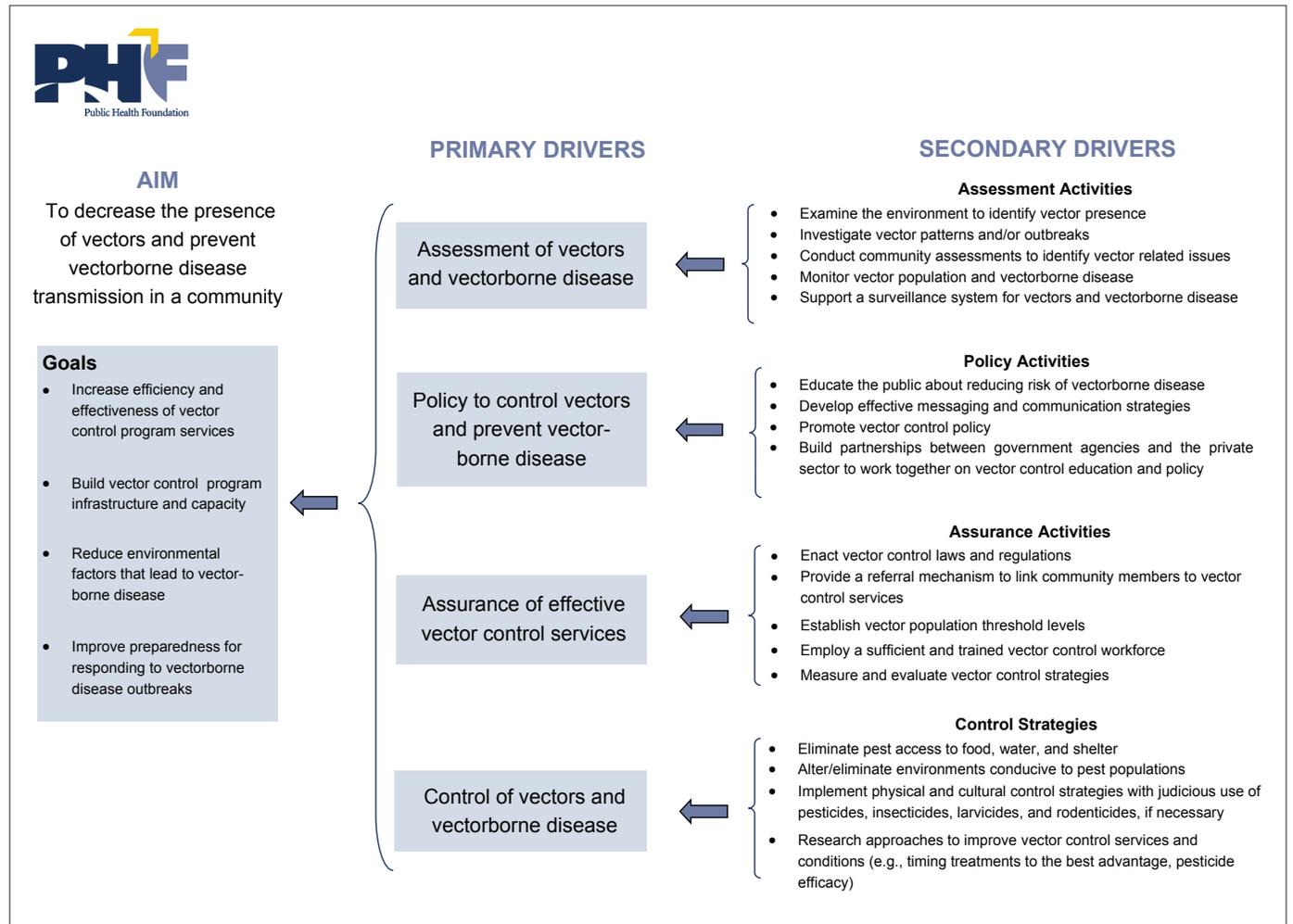
Enhancing Environmental Health Knowledge (EEK): Vectors and Public Health Pests

The first-ever virtual vector control conference, EEK: Vectors and Public Health Pests, took place April 2016. This virtual conference enhanced the knowledge of environmental health professionals on vectors and pub-

lic health pests to help them better prepare for and respond to vectorborne disease outbreaks. The conference addressed topics such as rodents, ticks, mosquitoes, and bed bugs; institutional integrated pest management; emerging vectors and vectorborne diseases; new technologies in vector and pest control; climate change and vectors; and inspection successes, including stories from field work. The sessions were recorded and are available as webinars on NEHA's Web site at www.neha.org/news-events/community-calendar/eeek-vectors-and-public-health-pests-virtual-conference.

FIGURE 1

Vector Control Population Health Driver Diagram



This work was funded through a cooperative agreement with the U.S. Centers for Disease Control and Prevention. The project is managed by the Environmental Health Services Branch, Division of Emergency Health and Services, National Center for Environmental Health.

Environmental health professionals are on the frontline of helping individuals, institutions, and communities reduce threats from mosquitoes, ticks, and other vectors. To support this important role, EHSB encourages environmental health professionals to take advantage of these new tools and resources that can be accessed at www.cdc.gov/nceh/ehs/topics/vectorcontrol.htm. 🚚

Corresponding Author: Kelli Foster, Division of Emergency and Environmental Health Services, National Center for Environmen-

tal Health, Centers for Disease Control and Prevention, 4770 Buford Highway, MS F-58, Atlanta, GA 30341.
E-mail: Kelli.Foster@cdc.hhs.gov.

References

Association of State and Territorial Health Officials. (2014). *Profile of state environmental health: Summary and analysis of workforce changes from 2010–2012*. Retrieved from <http://www.astho.org/Profile-of-State-Environmental-Health-Workforce/>

Centers for Disease Control and Prevention. (2014). *About the division of vector-borne diseases*. Retrieved from <http://www.cdc.gov/nceid/dvbd/about.html>

Centers for Disease Control and Prevention. (2016). *West Nile virus*. Retrieved from <http://www.cdc.gov/westnile/statsmaps/preliminarymapsdata/index.html>

Li, J., & Elligers, A. (2014). Impact of budget cuts to environmental health services at local health departments: Key findings. *Journal of Environmental Health, 76*(10), 38–40.