According to the Centers for Disease Control and Prevention (CDC), vectorborne disease cases tripled in the U.S. from 2004–2016. Since 2004, nine new pathogens spread by mosquitoes and ticks have been discovered or introduced. Commerce and transportation can move vectors and pests across borders and around the world. Infected travelers can introduce and spread pathogens across the globe. Rodents, fleas, mosquitoes, and ticks can move disease-causing organisms into new areas of our cities, such as suburban and rural areas, putting more people in our communities at risk. New pathogens, such as chikungunya and Zika, have caused outbreaks in the U.S. for the first time. Recall last month’s column where I mentioned the impact of climate change on vectors and the pathogens they carry.

Mosquito-borne and tickborne disease epidemics are happening more frequently. A case in point is the spread of Lyme disease in the U.S. Each year more than 30,000 cases of Lyme disease are reported nationwide. It is estimated by CDC that there are actually 300,000 cases of Lyme disease in the U.S. Another example is a pest of environmental and public health interest that has been confronted by many environmental health professionals over the last decade—the bed bug. Although bed bugs are not a vector (i.e., disease causing), it is a pest that can cause both physical and mental health problems. Many health departments and environmental health professionals have had to spend their limited resources to control bed bugs in their communities.

Another problem is that 80% of vector control organizations lack critical prevention and control capabilities. State and local environmental health programs face increasing demands to respond to vector and pest threats. Environmental health programs and professionals need the training, resources, and skills to deal with this ever-increasing threat. More proven and publicly accepted vector and pest control and prevention methods are needed.

While working at CDC, Captain Michael Herring and I developed a vector and pest control course in collaboration with the National Environmental Health Association (NEHA) and a group of subject matter experts. We had heard the concerns more than a decade ago from environmental health professionals about the threats in their communities from an increase in vector and pest problems. Environmental health professionals also lacked the training and skills needed to deal with this problem. In collaboration with NEHA and our subject matter experts, we developed a multiday, face-to-face, hands-on course on the biology and control of vectors and pest of public health concern.

The outline of that course was done on the back of a Starbucks napkin. The basis of the course was integrated pest management (IPM)—some folks now use the term IVM (integrated vector management). Today you can take a free online course called Vector Control for Environmental Health Professionals (www.cdc.gov/nceh/ehs/elearn/vcehp.html). This course was done in partnership with CDC, the National Network of Public Health Institutes, Tulane University, and NEHA.

NEHA is working with vector control experts to update existing policies and to develop new policies on vector and pest control. NEHA’s board of directors recently passed a policy on mosquito control to aid local and state environmental health professionals (www.neha.org/node/60010). In September 2018, NEHA and CDC hosted the 15th International Conference on Lyme Borreliosis and Other Tick-Borne Diseases. Over 300 scientists and vector control professionals from around the world attended the conference.

NEHA affiliates need to work with their partners (e.g., health departments, universities, law makers, vector and pest control companies, entomologists, etc.) to help identify needs in their areas to bring vector problems under control. One of these needs might be training of environmental health professionals. Other needs might be the monitoring and tracking of vectors and pest locally over time.
I have a few other suggestions.
• Use data to drive decisions in the community about vector control.
• Develop an action plan to control a vector of concern during all stages of life.
• Use multiple types of methods to control vectors.
• Conduct pesticide resistance testing.
• Educate the public on how to prevent bites and control the environments around their homes and neighborhoods to reduce the risk of vectorborne disease.

Recently, while still a CDC employee, I was fortunate to visit a large privately-owned vector and pest control company in Atlanta, Georgia. It had a very extensive training facility. The training facility consisted of indoor and outdoor areas to train the company’s staff and technicians. I thought it would be a wonderful place to train some of our CDC staff that are involved in vector and pest control issues. I asked the company’s leadership if CDC could send a few employees to their facility for training. They thought it was a wonderful idea. The moral of this visit was twofold: 1) don’t be afraid to ask if it can help others and 2) public–private collaborations are important to gain control over vectors and the pathogens they spread.

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