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Where Have All the Vector Control Programs Gone? Part One

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 this column, EHSB and guest authors from across CDC will highlight a variety of concerns, opportunities, challenges, and successes that we all share in environmental public health. EHSB's objective is to strengthen the role of state, local, and national environmental health programs and professionals to anticipate, identify, and respond to adverse environmental exposures and the consequences of these exposures for human health. The services being developed through EHSB include access to topical, relevant, and scientific information; consultation; and assistance to environmental health specialists, sanitarians, and environmental health professionals and practitioners.

The conclusions in this article are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.

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The 1999 emergence of West Nile virus (WNV) in the United States was a vector wake-up call for public health in this country. By the end of 1999, WNV—an illness previously confined primarily to Africa, the Middle East, and parts of Europe and Asia—had sickened 62 persons in New York, seven of whom died. WNV is now endemic throughout the continental United States. Although most infections are asymptomatic, approximately 341,000 cases of West Nile fever (WNF) have occurred, 12,188 infections

have resulted in West Nile neuroinvasive disease, and 1,164 infections have resulted in death. Based on a ratio of 140 infections for every case of West Nile neuroinvasive disease, CDC projects that 1.7 million WNV infections have occurred in the United States since 1999.

Vector control programs and activities, once a primary component of local environmental health (EH) programs, were experiencing a lengthy period of decline prior to the arrival of WNV. By the time WNV disease

cases peaked in 2003, many health departments saw increases in vector control budgets to combat the disease. Unfortunately, the trend did not last. After WNV became old news, vector control capacity continued to decline.

Although no studies exist to indicate how many programs or activities have been eliminated or reduced, informal reports from the EH workforce indicate that the loss of vector control capacity is severe. The resulting potential health impacts are alarming: approximately 75% of recently emerging infectious diseases affecting humans are zoonotic (of animal origin and transmittable to humans, often by a vector), and approximately 60% of all known human pathogens are zoonotic. Continued elimination of programs to control the majority of emerging diseases afflicting the world today is troubling, especially when the next zoonotic epidemic may be just a plane ride away.

The continued shift of funding for EH programs from local government support to fee-for-service programs may be contributing to the loss of vector control capacity. Several core EH activities (e.g., food safety, onsite wastewater programs) can generate sustaining revenues through permit and inspection fees, but vector control programs are usually seen as revenue negative. Control programs for rodents, mosquitoes, and other vectors and pests can be costly and time intensive. Declining public revenues have led to elimination or substantial reduction of vector control activities to help local governments meet other pressing budget demands.

The overall health impact of reduction in local vector control capacity is difficult to

measure. EH experts note that when residents of inner-city urban areas are asked about the most serious EH issues facing their communities, rodent infestations are almost universally the top issue. Rodent control programs across the country have been severely impacted in recent years, however.

The decline of local vector control capacity is a possible contributor to the nationwide resurgence of bed bug populations that has overwhelmed the capability of many local health departments to respond to infestation complaints. This challenge is exacerbated by limited technical knowledge of bed bug control in local EH programs since bed bugs nearly disappeared as a common public health pest approximately 50 years ago. Although bed bugs are not believed to be a disease vector, they are a pest of significant public health importance because of the physical and mental health consequences associated with bed bug bites and infestations (Centers for Disease Control and Prevention & U.S. Environmental Protection Agency, 2010).

Although local health departments are often the front lines of defense against vectorborne diseases, state health agencies conduct vector surveillance and serve important technical and laboratory assistance roles. In 2007, a survey of the State Public Health Vector Control Conference by the Association of State and Territorial Health Officials (ASTHO, 2007) found that

- 74% did not have sufficient numbers of public health workers to effectively staff their vector control units;
- 38% said inadequate funding was the most challenging aspect for state vector control activities;
- 80% stated that their agencies had not taken any action to prepare for the effect of climate change on vectorborne disease; and
- several states reported that they had no ability to conduct vector surveillance of any kind.

Although comparable studies are not available for local vector control programs, problems confronting the local level would be similar, if not more severe, because local vector programs often rely on state funding along with surveillance and laboratory support.

The growing challenge of meeting the threats of vectorborne illness by local health departments is intensified by the unprecedented loss of professionals in the environmental public health workforce over the past two years (National Association of County and City Health Officials, 2009). Research into the loss of vector control capacity and the potential public health impact is greatly needed.

Ongoing efforts at the Centers for Disease Control and Prevention to confront the challenges created by the loss of vector control programs and capacity at state, tribal, and local health departments will be discussed in next month's "Direct from CDC" column. 🐜

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