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## West Nile Virus: Success of Public Health Response Underlines Failure of the System

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**ABSTRACT** *The West Nile virus outbreak in 1999 demonstrated the country's capacity to meet an emerging public health threat. However, while the tracking and monitoring efforts that were put into place by 2000 were impressive, the response to the West Nile virus underscores a fundamental deficiency in the capacity of public health regarding the nation's environmental health efforts. Chronic diseases such as asthma, neurological diseases, and birth defects and their potential links to environmental factors are not being adequately tracked and monitored. New public health infrastructure resources are required.*

**KEYWORDS** *Surveillance, Tracking and Monitoring.*

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In early 1999, US public health officials knew little about the West Nile virus or the encephalitis that it causes. Private doctors; veterinarians; local, state, and federal public health officials; and wildlife biologists attempted to piece together the fragments of the puzzle, struggling to see the big picture. They made progress in fits and starts, sometimes despite bureaucratic divisions and sometimes because of good fortune. But, ultimately, hard work led officials to where they needed to be to protect the public.

Progress in the West Nile response has been remarkable, especially in the development of new tracking technologies. The virus is now being tracked and monitored with state-of-the-art public health capacity and tools.<sup>1</sup> Sentinel flocks of birds, with blood that is examined for West Nile virus, have been stationed in cages up and down the East Coast. There is real-time reporting of the cases of persons who become infected and ill. Sophisticated laboratory tests are available to physicians so that reports of the disease can be verified within a day.

In October 2000, horses in Pennsylvania and birds in Maryland and the District of Columbia were found to be infected with the virus. The local media broke into their routine broadcasts with up-to-date bulletins of what was found, where it was found, and what the public could do to minimize exposure. In fact, today, anyone can go to the Web, click on [www.nationalatlas.gov/virusmap.html](http://www.nationalatlas.gov/virusmap.html), and see information on West Nile virus activity—in real time—in humans, in animals (such as horses, cats, and dogs), in wild birds, in sentinel flocks, and in mosquitoes. It is impressive.

This is the good news. It is also the bad news. In the time of crisis, America has once again risen to the challenge, but if history repeats, we will wait for the

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next crisis. We are expert at mobilizing, but it is one thing to mobilize in the time of crisis and another to be prepared to confront a crisis. The basic repair work needed for the public health system in this country will be left undone—work that would prepare public health officials for the next crisis. Yet, the need for planning and preparation has been recognized and is one of the driving forces behind recent initiatives at building public health capacity to address both bioterrorism concerns and emerging infections. Such initiatives hold promise that, rather than simply mobilizing, we will be prepared.

In September 2000, the General Accounting Office (GAO) issued its assessment of how public health officials performed. According to the GAO, the first “key lesson” to be learned is that

The local disease surveillance and response system is critical. In public health, surveillance is the ongoing collection, analysis, and interpretation of health-related data. In this outbreak, many aspects of the local surveillance system worked well, in that the outbreak was quickly spotted and immediately investigated. Assessments of the infrastructure for responding to outbreaks suggest that surveillance networks in many other locations may not be as well prepared.<sup>2(p4)</sup>

The existing surveillance—tracking and monitoring—capacity for chronic diseases and environmental exposures in this country is weak to nonexistent. Twenty years into the asthma epidemic, only half the states in our country are tracking and monitoring asthma.<sup>3</sup> The importance of collecting and using state-level data on asthma—while recognizing potential problems in the methodological difficulties of a multistate system—was noted by the Centers for Disease Control and Prevention:

Available surveillance information are inadequate for fully assessing asthma trends at the state or local level. Implementation of better state and local surveillance can increase understanding of this disease and contribute to more effective treatment and prevention strategies.<sup>4(p1-2)</sup>

Learning disabilities have risen 50% nationwide over the last 10 years, but only 6 states track and monitor learning disabilities.<sup>5</sup> Moreover, the National Academy of Sciences reported last summer that approximately 25% of developmental disabilities may be related to environmental factors.<sup>5</sup> Although birth defects are the leading cause of infant mortality in the United States, less than half of the nation’s population is covered by birth defect registries,<sup>6</sup> reflecting a truly astonishing lack of basic public health capacity.

In reviewing the response to West Nile virus from the perspective of emerging diseases, the GAO pointed to the communication issue between public and animal health agencies: “The length of time it took to connect the bird and human outbreaks of the West Nile virus signals a need for better coordination among public and animal health agencies.”<sup>2(p5)</sup> In the area of environmental health, the identical sentence could be rewritten, just replacing “animal health” with “environmental.” For over 30 years, public health agencies at the local, state, and federal levels have become increasingly divorced from the activities of their counterpart environmental regulatory agencies.<sup>6</sup> Although it has not been a hostile divorce, but rather a simple “growing apart,” the consequences are the same. Public health and environmental regulatory agencies do not coordinate their efforts as they should and could. This lack of coordination is detrimental to the nation’s public health.

A concrete example of this division comes from another GAO report, *Long-Term Coordinated Strategy Needed to Measure Exposures in Humans*.<sup>7</sup> The Department of Health and Human Services and the Environmental Protection Agency have both recognized the importance of collecting human chemical exposure data, and each has developed programs in this regard. However, the GAO found that

HHS and EPA surveys together measure in the general population only about 6% of the more than 1,400 toxic chemicals in our review. For those toxic chemicals that we reviewed, the portion measured ranged from 2% of the chemicals prioritized for safety testing to about 23% of those chemicals most often found at Superfund sites and considered to pose a significant threat to human health.<sup>7(p5)</sup>

The need to collect human exposure data is recognized, and some resources have been provided. However, because there is no coordinated strategy, there is a lack of leveraged support for new programs and a failure to provide the public with the protection it deserves. The GAO concludes that

Coordinated, long-term planning among federal agencies has been lacking, partly because of sporadic agency commitments to human exposure measurement and monitoring. . . . A long-term coordinated strategy should also ensure adequate linkages between collection efforts and agency goals, provide a framework for coordinating data collection efforts that considers individual agencies' needs and expertise, provide a framework for identifying at-risk populations, and consider states' needs for information.<sup>7(p5-6)</sup>

A third critical observation in the GAO analysis of the West Nile virus outbreak also speaks to the issue of environmental health tracking and monitoring and the weakness of basic public health infrastructure: "Ensuring adequate laboratory capabilities is essential. Even though this was a relatively small outbreak, it strained resources for several months."<sup>2(p5)</sup> The Pew Environmental Health Commission at the Johns Hopkins School of Public Health examined this issue from the perspective of the historical divorce between public health and environmental regulatory agencies mentioned above.

The commission found that one real impact of this divorce has been the erosion of local public health capacity to respond effectively to environmental health crises.<sup>6</sup> The commission points to Brick Township, New Jersey, as one example of this phenomenon, where "an ongoing investigation of an autism cluster has overwhelmed local health officials, due to the complex nature of the environmental health concern and limited financial and human resources to respond to this concern" (Pew Environmental Health Commission, unpublished manuscript, August 23, 2000, p. 28). In its recommendation for a nationwide health tracking network, the commission estimates that the United States needs to invest \$275 million—less than 0.1% of the current annual \$325 billion cost of chronic disease to this country.<sup>6</sup> Given the limited resources of our nation's public health system, this country can ill afford not to invest in the basics of public health—tracking and monitoring—to attempt to prevent disease in our communities.

The United States has not shown an ability to invest in public health infrastructure until there is a crisis, and then it favors a "Band-Aid" approach—whatever it will take to get through the day. The public health system needs to be prepared better with increased capacity—from more and better trained public health profes-

sionals to the laboratory and information management needs catalogued in the two cited GAO reports—so we are ready to respond to whichever crisis comes next. It is not enough to be satisfied with the American capacity to mobilize and meet the crisis.

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