West Nile virus cases set seasonal record

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According to figures from the Centers for Disease Control and Prevention (CDC), 1,590 cases of West Nile virus (WNV) had been reported in the US as of August 28, including 66 deaths. The case total represents the most infections ever reported by the last week of August since 1999, when the virus was first discovered in the country.

An additional 472 cases and 25 deaths were reported in the last week alone, for a percentage increase of 40 percent for total infections and 61 percent in fatalities.

So far this year, every state except Alaska and Hawaii has reported cases of WNV in birds—the primary host of the disease—and 43 states have reported cases in humans. This week, Ohio and Maryland both had their first reported WNV fatalities of the year.

Mosquitoes transmit the virus among birds and mammals, including pets, livestock, and humans. Human infection results in a range of maladies, from mild, flu-like symptoms to more serious, even deadly, neurological complications, including partial paralysis and chronic fatigue. When West Nile virus has attacked the nervous system, it is said to be neuroinvasive and takes on one of three manifestations: encephalitis, or inflammation of the brain; meningitis, or inflammation of tissue around the brain or spinal cord; or meningoencephalitis, which comprises both brain and surrounding tissue inflammation. It appears that West Nile is more lethal to persons with weaker immune systems.

Documented cases of West Nile are almost exclusively those that have become neuroinvasive, as persons with more frequent, milder symptoms (sometimes called West Nile fever) may not seek medical attention and in any event are not generally tested for the disease as are those suffering from neurological complications. Dr. Lyle Petersen, director of the CDC's Division of Vector-Borne Infectious Diseases estimates that only 2 to 3 percent of cases of West Nile fever are reported to health officials.

One in 150 people infected with WNV develop the neuroinvasive form. Of this number, an estimated 4 to 18 percent will ultimately succumb to the disease.

Since 1999, more than 30,000 people in the United States have been reported as getting sick with West Nile virus. The largest West Nile epidemic in the US occurred in 2003, with 264 deaths and nearly 10,000 total infections.

At a telephonic press conference Wednesday, Dr. Petersen interpreted the latest CDC data, saying, "We think the numbers will continue to rise … in fact, we think the reported numbers will get higher through October."

He added, "based on current reports, we think the numbers may come close to or even exceed the total number reported in the epidemic years of 2002 and 2003, when about 3,000 cases of neuroinvasive disease and more than 260 deaths were reported each year."

Peterson explained that WNV is "endemic" in the continental Unites States, meaning that outbreaks can be expected every year in almost any location.

While the epidemic is widespread, more than 70 percent of the human cases have been reported in just six states: Texas, South Dakota, Mississippi, Oklahoma, Louisiana, and Michigan. Nearly half come from Texas alone, and are concentrated in the north of the state, in and around Dallas.

Texas Department of State Health Services commissioner Dr. David Lakey addressed the same CDC press conference, reporting that infections in that state had soared to 894, with 34 fatalities.

"Assuming normal disease progression, it looks like it's going to be our worst year with West Nile. We have 416 cases of West Nile, neuroinvasive cases. In 2003, we had 439. Looking at the progression, this will be our worst year. In 2003, we had 40 deaths. Again, we're at 31 so far this year," said Lakey.

"As I look at the data, I'm not convinced we have peaked." He added, "We may have plateaued. I'm not convinced yet that we have peaked."

Extreme weather resulting from climate change may be contributing to the West Nile epidemic. Higher average temperatures causing cycles of droughts followed by downpours tend to overwhelm storm draining systems and create the stagnant pools of water where infected mosquitoes lay their eggs.

Higher temperatures alone can have an impact as well, increasing the rate at which the virus and the transmitting mosquitoes reproduce.

"As we keep getting more climate extremes there will be more years with many more cases of West Nile," Tony Goldberg, professor of epidemiology at the University of Wisconsin, Madison, told Reuters.

Budget cuts at the state and local level may be adding to the trouble. (See "US West Nile virus cases double in one week")

One of the most effective means in combating a West Nile outbreak is aerial spraying of pesticide to target adult mosquitoes. The CDC's Dr. Petersen made this point Wednesday in relation to a reporter's question about recent spraying in north Texas and Dallas.

"I would also like to emphasize that there's a reasonably extensive medical literature on the effects of spraying on West Nile virus and related kinds of vector-borne diseases. And what has been noted in fairly well conducted studies is that after these spray events, when all is said and done, it has shown a marked decrease in human cases compared to areas that have not been sprayed," he said.

In emergency situations, aerial spraying rapidly and drastically reduces the number of adult mosquitoes over a wide area. State government emergency funds typically pay for such spraying, with little federal assistance.

There is no treatment for West Nile infection, and no vaccine. Drug companies have little incentive to develop one for humans for fear that demand may vary widely from year to year.

The mosquitoes carrying West Nile can transmit other serious illnesses, including Eastern Equine Encephalitis (EEE), LaCrosse encephalitis, St. Louis encephalitis, and dengue fever, to name a few.