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The West Nile Virus
What is Known About an Emerging Virus?

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The West Nile virus has received increasing attention this year due to outbreaks in several states. Older individuals and those with underlying illnesses including immune deficiency seem to be at increased risk for the more severe complications of infection. These clinical signs of infection range from none to fever, nausea, vomiting, flu-like symptoms as well as meningitis and encephalitis (inflammations of the covering of the brain and of the brain itself). It has therefore become important to increase our understanding of the virus and its potential impact on those with primary immune deficiency diseases.

BACKGROUND

While the West Nile virus was first isolated in Uganda in 1937, it did not appear in North American until 1999. The virus is a member of the Flavivirus family, which also includes the Japanese and St. Louis encephalitis viruses, Yellow Fever virus, and Hepatitis C virus. These lipid enveloped RNA viruses may be transmitted by blood feeding insects, such as ticks and mosquitoes. In the case of the West Nile virus in the United States, typically the Culex mosquito carries the virus and spreads it to birds such as crows or jays or to any of over a 100 species. The birds have the virus in their blood stream for 1 to 4 days during which other mosquitoes can become infected following a blood meal. Humans are only involved incidentally and generally do not serve as hosts for spread to other mosquitoes because there is usually a limited period of virus in the blood. Handling a dead bird does not seem to spread West Nile virus to humans, however health authorities recommend avoiding barehanded contact with the birds. While dogs may be infected they do not seem to develop a clinical illness. Horses have a significant mortality rate following infection with the virus.

CURRENT CASES

As of late September, there were 1,745 cases of West Nile virus and 84 deaths reported for 2002 in the United States. 24% of the cases were reported from Illinois, 14 % from Louisiana, and about 13% from Michigan. In contrast, there were 62 cases of severe disease in 1999, 21 in 2000 and 66 in 2001. Confirmed cases in animals, humans, mosquitoes, or birds have been reported in all except six western states.

CDC is currently investigating the first ever reports of possible person-to-person spread of West Nile virus through transplanted organs and blood transfusion. The West Nile virus appears to have been transmitted through donated organs and probably can be transmitted by blood transfusion.

SAFETY OF IGIV

An important question for those with primary immune deficiency diseases is if IGIV could be contaminated with West Nile virus. The good news is that there appears to be little to no risk for transmission of West Nile virus through the use of IGIV for several reasons:

- Potential blood and plasma donors with West Nile virus may be ill with fever and would not be allowed to donate
- There is only a small chance that an infected person would have virus in the blood stream
- Viral inactivation techniques used on all IGIV products including pasteurization and solvent detergent treatment should inactivate the West Nile virus if it were present

REDUCING THE RISK OF EXPOSURE

For everyone including those with a primary immune deficiency disease, the best way to avoid the West Nile virus is to avoid exposure to mosquitoes. Some ways to accomplish this are:

- Reduce time outdoors, especially in the early evening hours
- Wear long pants and long sleeved shirts
- Apply mosquito repellent containing DEET (N,N-diethyl-m-toluamide) to exposed skin areas following the manufacturer's recommendations for dosing frequency, application, and clean-up

Public health authorities have also undertaken measures to destroy mosquito habitats and to spray insecticides that kill mosquitoes.

There seems to be little risk posed to individuals with primary immune deficiency disease from the West Nile virus through the use of IGIV therapy. However, individuals face the same risks as the general population if bitten by an infected mosquito. Those with severe signs of infection are treated using supportive measures. There is active research in the area of vaccine development.