

## The Cost-Effectiveness of Screening the U.S. Blood Supply for West Nile Virus

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The full report is titled "The Cost-Effectiveness of Screening the U.S. Blood Supply for West Nile Virus." It is in the 4 October 2005 issue of *Annals of Internal Medicine* (volume 143, pages 486-492). The authors are B. Custer, M.P. Busch, A.A. Marfin, and L.R. Petersen.

### What is the problem and what is known about it so far?

West Nile virus has appeared in the United States recently. Most people with West Nile virus infection are not aware they have it. However, approximately 20 of every 100 infected people have symptoms including fever, loss of appetite, vomiting, eye pain, headache, muscle pain, and skin rash. West Nile virus can cause serious illness or death when it infects the nervous system.

The virus spreads to humans through the bite of an infected mosquito. Infection can also spread if a patient receives a transfusion of blood donated by an infected person. Blood banks have been testing donated blood for West Nile virus since June 2003, but experts are uncertain about the most cost-effective strategy for this testing. Blood banks can test individual blood donations, but doing separate tests on every blood donation can be time-consuming and expensive. Minipool testing is another strategy that can be used. This testing combines samples from 6 to 16 donations and tests the combined samples. Only if the combined sample is positive does the blood bank need to test the individual samples to find the infected blood. Another way to make testing more affordable would be to test only in certain parts of the United States or only during certain times of the year where or when infection is common.

### Why did the researchers do this particular study?

To estimate the costs and benefits of testing donated blood for West Nile virus.

### Who was studied?

Rather than studying actual patients, the researchers used a computer to simulate what would happen to patients 60 years of age or older who received blood transfusions that were or were not tested for West Nile virus.

### How was the study done?

The computer simulated 7 different testing strategies: 1) no testing; 2) national minipool testing during 6 months each year when infection is most common; 3) national minipool testing throughout the year; 4) individual donation testing during 4 months each year in areas with high infection rates and minipool testing everywhere else; 5) individual donation testing throughout the year in areas with high infection rates and minipool testing everywhere else; 6) national individual donation testing for the 4 months each year when infection is most common and minipool testing the rest of the year; or 7) national individual donation testing throughout the year. Estimates of the costs and benefits came from published studies. Benefits of testing included infections avoided by discarding infected blood. The researchers measured benefits as quality-adjusted life-years saved, a measure that considers the years of life saved and whether people are sick or healthy during those years.

### What did the researchers find?

National minipool testing throughout the year cost the least per quality-adjusted life year saved (\$483,000). The cost per quality-adjusted life-year saved decreased if West Nile virus infection became more common or if minipool testing was performed only 6 months of the year but remained more than \$250,000.

### What were the limitations of the study?

There is limited information on West Nile virus to use in the computer model.

### What are the implications of the study?

Testing donated blood for West Nile virus is expensive. National minipool testing throughout the year seems to provide the best balance of costs and benefits.

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