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Risk of HIV Transmission by Screened Blood

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Published results of a study by CDC researchers recently estimated that the current risk of HIV transmission caused by transfusion is from one in 450,000 to one in 660,000 in the United States. These estimates were made on the basis of the window period associated with the use of current, sensitive enzyme immunosorbent assays, and recent data on HIV incidence among blood donors. In the United States, transmission of HIV by blood transfusion occurs almost exclusively when a recently infected blood donor is infectious but before antibodies to HIV become detectable (during the window period).

The researchers analyzed demographic and laboratory data on more than 4.1 million blood donations obtained in 1992 and 1993 in 19 regions served by the American National Red Cross, as well as the results of HIV antibody tests of 4.9 million donations obtained in an additional 23 regions. Based on this analysis, it was estimated that one donation in every 360,000 was made during the window period. In addition, it is estimated that one in 2,600,000 donations was HIV seropositive, but was not identified as such because of an error in the laboratory. It was estimated that 15% to 42% of window-period donations were discarded because they were seropositive on laboratory tests other than the HIV-antibody test. When these results were extrapolated to include the additional 23 Red Cross service regions, there was a risk of one case of HIV transmission for every 450,000 to 660,000 donations of screened blood.

The estimates in this study were based on the average 25-day window period that exists given contemporary recombinant, protein-based enzyme immunosorbent assays. Earlier studies based on estimated window periods of 56 days and 45 days with whole-virus-lysate, reported risks of HIV transmission of 1 in 153,000 and one in 225,000 donations, respectively. The authors conclude that the estimated risk of transmitting HIV by the transfusion of screened blood is very small and nearly one half of that estimated previously, primarily because the sensitivity of enzyme immunosorbent assays has been improved.

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