# Transfusion Risks: Transmission of Viral, Bacterial, or Parasitic Agents

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The transmission of viral, bacterial, or parasitic agents has been identified as one of the potential risks to an individual receiving a blood transfusion. For some well-recognized agents such as HIV or Hepatitis B, testing for antibody and the presence of viral nucleic acids in the donor has significantly reduced the risk of transmission. With newly identified viral agents whose transfusion-transmission potential is unknown, the determination of risk and the development of diagnostic tests represent complex tasks. For parasitic agents such as those that cause Chagas' disease or babesiosis, there are no serologic tests available. Chronic parasitemia with few circulating organisms makes identification of at-risk donors difficult and donor history questions are the sole means of identifying at-risk donors. Bacterial contamination of blood components is more problematic because of the varied ways in which bacteria can be introduced into the component and, until recently, the lack of effective and efficient ways to identify contaminated units. Small numbers of bacteria might not affect the recipient, yet a high level of bacterial contamination will cause significant morbidity and mortality. The articles in this FOCUS section discuss the viral, bacterial, and parasitic agents that are associated with transfusion transmission including their prevalence, current methods of testing, and the addition of tests or changes in testing requirements for each group of organisms.

LEARNING OBJECTIVES

After completion of the FOCUS Section, the learner will be able to:

1. List the viruses for which the U.S. blood supply is currently tested.
2. List virulent transfusion-transmitted viruses for which additional donor testing may soon be required.
3. Discuss the rationale for performing additional viral testing on donor units.
4. Discuss the effects of NAT testing on the incidence of transfusion-transmitted HIV and HCV.
5. Differentiate between viruses that are inactivated by solvent-detergent treatment and those that are not.
6. Identify and briefly explain three methods of viral inactivation that can be used for FFP.
7. Identify the major transfusion-transmitted parasites.
8. Identify the transfusion-transmitted parasite that is endemic in the U.S. and the geographical areas in which donors show the highest seroprevalence of the organism.
9. Describe current methods to prevent transmission of each of the parasites.
10. Explain the major reasons for concern with the transfusion-transmission of *Trypanosoma cruzi* in the U.S.
11. Identify the most common organisms that contaminate units of red cells and those that contaminate platelets.
12. Describe the primary methods to detect bacterial contamination in platelet units.
13. Describe the underlying cause of fatality in patients who receive units of blood contaminated with *Yersinia enterocolitica*.
14. Compare the level of bacterial contamination that can be detected with microscopy or automated methods.
15. Describe several methods by which the entry of bacteria into the unit can be decreased.
16. Explain why the use of leukoreduced units or apheresis (single donor) platelets will help reduce bacterial contamination.
17. Identify the major use of psoralen compounds in platelet units and the underlying mechanism of action.

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