Preface

The administration of blood components is a common and potentially lifesaving medical intervention, but it is not without risk. At the first sign of a suspected transfusion reaction, the transfusion should be stopped. It must be confirmed that the patient received the intended product by rechecking the bag, product label, paperwork, patient sample, and patient identifying information.

The subsequent evaluation of the transfusion reaction is determined by the pattern of symptoms and clinical signs, the severity of the reaction, and the response to treatment. The primary goal of testing, when performed, is typically to rule out more serious complications, such as immune-mediated hemolysis and bacterial contamination. Laboratory data and clinical presentation must both be taken into consideration when assessing a suspected transfusion reaction. Although the diagnosis of a transfusion reaction requires evaluation of clinical presentation, signs, and symptoms, these topics are not the focus of this *Guide*.

The goal of the *AABB Guide to the Laboratory Evaluation of Transfusion Reactions* is to focus on the use of laboratory tests that aid in the evaluation and diagnosis of adverse events during or after transfusion. The Appendix serves as a reference relating clinical presentation with laboratory evaluation and diagnosis. The steps, application, and interpretation of laboratory data make up the main content of this *Guide* with the goal of providing transfusion services with assistance during the laboratory workup and evaluation of a reported suspected transfusion reaction.

This *Guide* covers hemolytic transfusion reactions, posttransfusion purpura, and allergic/anaphylactic transfusion reactions. Its content also includes transfusion-related acute lung injury (TRALI), transfusion-associated circulatory overload (TACO), transfusion-associated graft-vs-host disease (TA-GVHD), as well

as iron overload. The greatest risk of morbidity and mortality from transfusion is caused by these noninfectious complications.

In the United States (US), donor screening practices (ie, donor history questionnaire, deferral, and nucleic acid testing) have greatly improved transfusion safety. The greatest infectious risk currently associated with transfusion is bacterial contamination. The residual risk of acquiring viral infections such as human immunodeficiency virus, hepatitis B virus, and hepatitis C virus is exceedingly low (approximately <1 in 1.5 million).[1] However, in theory, any infectious agents that may be present in the donor's blood without causing noticeable symptoms that can survive the process of donation, processing, and storage could potentially be transmitted via transfusion. With more than 60 possible pathogens that meet these criteria,[2] it is not feasible or practical to cover all such infectious agents and associated testing in this text. Therefore, the major infectious risk to the US blood supply, septic transfusion reactions, is the only infectious reaction discussed.

On behalf of the authors, I hope this *AABB Guide* will assist you and your laboratory with the evaluation and subsequent management of transfusion reactions.

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Editor

1. Crowder LA, Steele WR, Stramer SL. Infectious disease screening. In: Cohn CD, Delaney M, Johnson ST, Katz LM, eds. Technical manual. 20th ed. Bethesda, MD: AABB, 2020:173-227.
2. Stramer SL, Hollinger FB, Katz LM, et al. Emerging infectious disease agents and their potential threat to transfusion safety. Transfusion 2009;49(Suppl 2):1S-29S.