While protecting platelet transfusion patients from the risk of septic reactions is always the top priority, maximizing storage shelf life can lead to better availability of life-saving resources. In accordance with the new FDA secondary safety measure guidelines, bioMérieux diagnostic solutions can now extend platelet shelf life up to a total of seven days, improving both patient safety and hospital efficiency.

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**EXTEND PLATELET SHELF LIFE WITH THE PROVEN PIONEER IN TESTING SOLUTIONS.**
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Getting Blood to and From Rural Areas in North America
Blood centers are using creative and strategic solutions to ensure an adequate blood supply.

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Blood Banking and Transfusion in Rural Parts of Africa and Asia
How Cameroon, India and Zambia are managing the challenges of providing blood in resource-limited regions.
The way blood is collected, stored and transported varies greatly based on where the blood bank, donors and transfusion services are located. Methods differ between rural and urban settings, the probability of extreme weather conditions and regions with differing levels of affluence. Not surprisingly, a nation’s size, climate, geography, population density and income level have a considerable effect on the operations of its blood system.

The July issue of AABB News examines transfusion practices in rural areas and highlights the ways in which blood banking is practiced in remote locations in North America, Africa and Asia.

The first feature article, which begins on page 10, describes how blood banks that serve less accessible areas of Hawaii, Quebec and Wyoming handle the logistics of managing their inventory, from conducting blood drives to maintaining blood at the proper temperature during transport and delivering blood products where and when they are needed.

The second feature story — actually a series of articles, beginning on page 18 — reports on the blood systems in Cameroon, India and Zambia, which differ in how, when and where blood is collected, whether or not donors are paid and the level at which the system is coordinated — nationally versus regionally.

The issue also includes articles on the slate of nominees for the 2019-20 AABB Board of Directors, the 2019 National Blood Foundation Hall of Fame inductees, and changes to the diagnosis of transfusion-related acute lung injury (TRALI) and the definition of transfusion-associated circulatory overload (TACO).

The 2019 AABB Annual Meeting begins in just over three months and registration has opened to the public. Don’t miss articles this month on some of the meeting’s hottest new education session topics — such as setting up and managing a whole blood transfusion program; sexual orientation and gender identity in blood banking, transfusion medicine and cellular therapies; newer coagulation products and factor concentrates; and graft engineering for cell-based therapies — and activities hosted by AABB’s Professional Engagement Program (PEP) that provide the opportunity for attendees to network and socialize with friends, old and new. I encourage you to register before the early registration rate ends on July 31 and hope to see you in San Antonio.

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Time for Dropping Possible TRALI

By Pearl Toy, MD
Invited Contributor

Previous definitions of transfusion-related acute lung injury (TRALI) and possible TRALI were published about 15 years ago. There is now evidence against transfusion being a risk factor for possible TRALI. This and other evidence led my co-authors, Steven Kleinman, MD, Mark Looney, MD, and I to propose dropping the term “possible TRALI.” An updated redefinition by an expert panel chaired by Alexander Vlaar, MD, PhD, has now recommended dropping the term “possible TRALI” and redefining TRALI. The eleven authors on the panel include eight AABB members: Vlaar, myself and Kleinman, as well as Mark Fung, MD; Nicole Juffermans, MD, PhD; Daryl Kor, MD; and Christopher Silliman, MD, PhD.

ARDS

In the panel’s report, the term “acute respiratory distress syndrome” (ARDS) is recommended for a transfused patient with an ARDS risk factor who develops ARDS and whose respiratory status has deteriorated during the 12 hours before transfusion. Although we previously used the term “transfused acute lung injury (ALI)/possible TRALI” in our study and then suggested to replace the term “possible TRALI,” I now think that the simple term “ARDS” is more accurate. Of the 163 cases we called “transfused ALI/possible TRALI” in our study, all met the panel’s criteria for ARDS. When the panel’s definition criteria are met, the term “ARDS” should replace the term “possible TRALI.” Our team conducted the largest active surveillance, prospective, case-controlled study on TRALI in all patients over the age of 6 months at two academic medical centers.

In ARDS cases, the panel does not recommend a work-up to detect cognate leukocyte antibody.

TRALI type I and TRALI type II

The panel proposed the new terms “TRALI type I” and “TRALI type II.” Both TRALI type I and type II remain clinical diagnoses, and the panel recommends a work-up to detect cognitive leukocyte antibody.

The definition of TRALI type I is the same as the traditional definition of TRALI, i.e. new ARDS during or within 6 hours of transfusion in a patient without an alternate ARDS risk factor.

According to the panel, the definition of TRALI type II applies to a patient with an alternate ARDS risk factor, whose respiratory status is stable in the 12 hours before transfusion and in whom ARDS develops after transfusion. There are two forms of TRALI type II, and in both, the patient has an alternate ARDS risk factor:

- In one form, the patient has no ARDS before transfusion and develops new ARDS after transfusion.
- In the other form, the patient has mild pre-existing ARDS that worsens after transfusion.

Note that previous TRALI definitions did not include patients with pre-existing ARDS.

Unlike TRALI type I, which is related to transfusion, there are no data to show whether TRALI type II is related to the transfusion, the alternate ARDS risk factor or both. We recommend avoiding combining cases of TRALI type I with TRALI type II to increase sample size in reports and analyses, as the conditions may be distinct. That is, it is possible that one or both forms of TRALI type II may be ARDS, if transfusion is found not to be a risk factor in a case-control study of TRALI type II.
Other related diagnoses

The term “TRALI/TACO” [transfusion-associated circulatory overload] is used when the two conditions cannot be distinguished, or both conditions occur simultaneously.

Importantly, bacterial contamination of a transfused blood product should be in the differential diagnosis for any ARDS after transfusion. Urgent diagnosis and treatment is needed to prevent the death of the infected recipient and transfusion of other contaminated components from the same donation. 

Other conditions in the differential diagnosis of TRALI include pulmonary syndromes associated with hematopoietic cell transplantation. 

Non-antibody mediated TRALI

The cause of non-antibody mediated TRALI remains an enigma, as biologic response modifiers in blood products have not yet been proven to cause TRALI in humans according to two reviews. Clinical studies found that 35-day-old red blood cells and lipids do not contribute to lung injury in humans. The Berlin list includes only the most common ARDS risk factors. There are actually 60 or more patient risk factors for ARDS (e.g. drugs), and the list is growing. It is possible that some of these ARDS risk factors cause what we now call non-antibody mediated TRALI.


Pearl Toy, MD, is a professor emeritus at the University of California San Francisco School of Medicine.

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Endnotes

AABB, IHN and ISBT
Revise Definition of TACO

By Johanna Wiersum-Osselton, MD
Invited Contributor

Transfusion-associated circulatory overload (TACO) is now recognized to be among the major causes of transfusion-associated morbidity and mortality. A revised international surveillance case definition of TACO has been published and is available on the AABB website. Members of AABB participated in the revision process with representatives of the International Society of Blood Transfusion (ISBT) and the International Haemovigilance Network (IHN).

Why was the revision needed?
Over the years, it was apparent that often a patient might be diagnosed with TACO and the reaction accepted as such by the hemovigilance system, but it did not meet all the criteria of the former (2011 ISBT-IHN) international definition. It was also reported by the United Kingdom’s hemovigilance system (Serious Hazards of Transfusion [SHOT]) that in some cases, respiratory distress arose more than 6 hours after the end of transfusion. The new definition performs better at capturing such cases and allows for cases that start up to 12 hours after the end of blood component administration to be reported.

The updated definition was tested for use in hemovigilance in a two-phase validation exercise using TACO cases from 16 hemovigilance systems and with the participation of 47 experts from 20 countries. Results of the validation were presented at the special TACO, TRALI and TAD State of the Research Meeting in Boston and have now been published.

Where next?
The revision group recommends that this revised definition should be implemented or used as a point of reference by hemovigilance systems as well as by groups conducting research on TACO mechanisms and mitigation. This will contribute to increased knowledge of TACO, improved quality of hemovigilance data and, ultimately, to reducing the occurrence of this important transfusion complication.

It is opportune that the revised TACO definition coincides with the publication of proposed updated definitions for TRALI and other related diagnoses. The revision group encourages hemovigilance systems to systematically assess reported cases of respiratory complications of blood transfusion against the package of updated definitions and to collaborate in formally evaluating their use and impact.

Johanna Wiersum-Osselton, MD, PhD, is the national medical coordinator of the Transfusion and Transplantation Reactions in Patients (TRIP) organization in the Netherlands.

Endnotes