

Rational Preoperative Blood Type and Screen Testing Criteria

DESPITE vast stores of data in hospital information systems, there has been a dearth of analyses to provide rational criteria for preoperative laboratory testing. In this issue of *ANESTHESIOLOGY*, Dexter *et al.* perform an elegant analysis of tens of thousands of patient records in an anesthesia information management system (AIMS) at a single institution.¹ They provide convincing evidence that operations where the median estimated blood loss (EBL) is less than 50 ml do not require preoperative blood type and screen. This moves beyond the traditional guidance from the American Association of Blood Banks (AABB) and others that a type-and-screen order is recommended for procedures that require less than 0.5 units of blood per patient per procedure.² Although not specifically addressed in the study, this also brings into question the AABB principle that the Maximal Surgical Blood Ordering Schedule (MSBOS) should define the number of units needed to meet the needs of 80–90% of patients undergoing specific procedures.

Despite a complex analysis, the authors provide a simple guide (table 2 of the paper) for perioperative teams to analyze their own data sets. Using simple spreadsheet software, it is relatively trivial to determine which scheduled procedures should be exempt from blood type and screen. The absence of an AIMS is not an impediment to performing this analysis in many hospitals that have computerized perioperative nursing records and blood banking systems.

The American Society of Anesthesiologists has devoted extensive resources to promulgate Practice Guidelines for



“Anesthesiologists and blood bank professionals have an obligation to use our expertise to create rational local guidelines for preoperative blood type and screen.”

local guidelines for preoperative blood type and screen.

Without detracting from the importance of this paper, there are several issues to highlight: cases with missing or erroneous EBL data, patients with preoperative anemia, and the possibility that a scheduled procedure will differ from the procedure performed.

The documentation habits of the anesthesia care teams cast some doubt upon the data, since we cannot be certain that missing data are equivalent to minimal EBL in all cases. Although there is little doubt that patients with missing EBL were less likely to have high EBL or transfusion in the AIMS data studied, there is a question as to what extent the authors' handling of the missing EBL data influenced the results. In

Perioperative Blood Transfusion and surveys of transfusion practices by anesthesiologists. We have not, however, taken an active role in facilitating universal implementation of a MSBOS in our facilities. Perhaps many of us believe that having an anesthesiologist representative on a hospital transfusion committee is sufficient, and that our blood-banking colleagues should lead this effort. This is unfortunate, because implementation of a MSBOS is highly cost-effective.

One aspect of the MSBOS that has received less emphasis is the decision as to which procedures that will have not have blood cross-matched should require a preoperative blood type and screen. As Dexter *et al.* demonstrate, a huge proportion of this testing is wasted effort. Anesthesiologists and blood bank professionals have an obligation to use our expertise to create rational local

Image: ©istockphoto.com.

Accepted for publication January 5, 2012. The authors are not supported by, nor maintain any financial interest in, any commercial activity that may be associated with the topic of this article.

Copyright © 2012, the American Society of Anesthesiologists, Inc. Lippincott Williams & Wilkins. *Anesthesiology* 2012; 116:749–50

◆ This Editorial View accompanies the following article: Dexter F, Ledolter J, Davis E, Witkowski TA, Herman JH, Epstein RH: Systematic criteria for type and screen based on procedure's probability of erythrocyte transfusion. *ANESTHESIOLOGY* 2012; 116:768–78.

addition, since the authors deleted high-blood-use cases as “clinically implausible,” we cannot be certain how many of the low-blood-use cases also had incorrect documentation.

Similarly, what would have been the effect of excluding cases with preoperative hemoglobin concentrations less than 12 mg/dl or less than 10 mg/dl? Would it have had any effect on the final MSBOS listing? A reasonable clinician would be much more likely to order type-and-screen or cross-match for a patient with significant preoperative anemia, even for low-transfusion-rate procedures. The inclusion of patients with preoperative anemia would be expected to work against the authors’ goal of decreasing unnecessary testing. Perhaps it would be prudent to eliminate cases with missing EBL and cases with preoperative anemia when we use the method proposed by Dexter *et al.*

Although an MSBOS must be based upon scheduled operations, the discordance between scheduled and performed procedures would also have some influence on the outcome of this analysis. The authors state that scheduled procedures differ “frequently” from actual procedures, but provide no further analysis within their own data.

It has been 27 yr since the publication of the classic analysis of the vast amount of useless preoperative laboratory

testing that occurred in the 1980s.³ Where is the evidence that wasted preoperative laboratory testing is less prevalent in the current era? In recent years, we have seen exponentially increasing implementation of AIMS, enterprise electronic medical records, perioperative information systems, and blood bank information systems. Dexter *et al.* have shown only one example of how we can use these data to fine-tune our preoperative testing algorithms.

David L. Reich, M.D.,* Melissa S. Pessin, M.D., Ph.D.†

*Department of Anesthesiology, Mount Sinai School of Medicine, New York, New York. david.reich@mountsinai.org.

†Department of Laboratory Medicine, Memorial Sloan Kettering Cancer Center, New York, New York.

References

1. Dexter F, Ledolter J, Davis E, Witkowski TA, Herman JH, Epstein RH: Systematic criteria for type and screen based on procedure’s probability of erythrocyte transfusion. *Anesthesiology* 2012; 116:768–78
2. Chapter 3: Blood utilization management. In: American Association of Blood Banks Technical Manual, 14th Edition. Bethesda, MD: American Association of Blood Banks, 2002: 83–5
3. Kaplan EB, Sheiner LB, Boeckmann AJ, Roizen MF, Beal SL, Cohen SN, Nicoll CD: The usefulness of preoperative laboratory screening. *JAMA* 1985; 253:3576–81