Logistics on Transfusion Support for Patients Undergoing Same-Day Surgery

In the recent past, patients undergoing elective surgical procedures were required to be admitted the day before so that a series of preoperative procedures and routine laboratory workup could be completed. Included was an ABO type and antibody screen (T+S) and crossmatch of units for transfusion during or after surgery.

Changes in methods of delivery of patient care services and financing have stimulated the introduction of various innovative and practical approaches to dealing with elective surgical procedures in a manner that is timely and cost-efficient. Indeed, most patients undergoing elective surgery are currently admitted the same day, directly to the surgical suite. Preoperative workup, including routine T+S, is completed on an outpatient basis, days and in some cases even weeks before the surgery.

Currently, in compliance with present regulations and guidelines, for example, those of the American Association of Blood Banks (AABB, Bethesda, Md), College of American Pathologists (Northfield, Ill), and Joint Commission on Accreditation of Healthcare Organizations (Oakbrook Terrace, Ill), the T+S is performed on a sample of blood that is less than 3 days old in cases where patient information (eg, transfusions or pregnancies in the preceding 3 months) is unreliable or not available. However, these regulations and guidelines could place an inordinate limitation on the logistics of transfusion support for patients undergoing same-day or outpatient surgery.

We present the policies in place in a number of institutions that provide active outpatient and same-day surgical services. These institutions have devised protocols to comply with current regulatory requirements yet provide safe, sound transfusion support for their patients.
components but also with simple and complex laboratory tests. The laboratory tests are done at a reference laboratory, where particular typing problems and consultations from hospital blood banks are worked up.

**Results**

Of the 11 establishments surveyed, only two had a limit of 3 days on the expiration of the sample of blood with no possible extension on use of a T+S specimen result to issue blood (Table). These two institutions were the regional blood center and one of the large university teaching hospitals. The regional blood center performs T+S testing and issues blood for small hospitals, but does not require a history for each patient for whom the T+S is performed. The large university teaching hospital has a large volume of trauma patients and patients with inaccurate or unreliable histories. All of the other establishments allowed extension of this 3-day limit, provided the patient had not recently received a blood transfusion or been pregnant.

One of the large, private, not-for-profit teaching hospitals required patients scheduled to undergo surgery in more than 3 days to sign a form that stated that the patient neither received blood nor was pregnant in the preceding 3 months. This hospital stored all T+S blood samples for up to 3 weeks, and a 3-week-old sample could be used for crossmatching blood for outpatient surgery, provided the patient completed and signed the form. This form included the following information:

1. A question regarding pregnancy in the preceding 3 months
2. A question regarding transfusions in the preceding 3 months
3. A statement that the patient will notify the hospital transfusion service at a given telephone number if he or she receives any blood component before the scheduled procedure
4. A space for the anticipated date of surgery or transfusion
5. A space for the patient's signature and the date
6. An explanatory note stating that if the patient answers that he or she has received a transfusion or been pregnant in the preceding 3 months, or will not sign the form, a blood sample for crossmatching will need to be collected within 72 hours of the possible transfusion.

The form is attached to the T+S requisition form and sent together with the blood sample to the transfusion service.

Five of the hospitals allow collection of a T+S blood sample up to 7 days prior to outpatient surgery, provided the patient has not received a blood transfusion or been pregnant in the preceding 3 (two hospitals and the surgical center) or 6 (two hospitals) months. Only two of eight hospitals that allowed extension of the 3-day limit for

<table>
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<tr>
<th>Examples of Type and Screen Requirements From 11 Institutions for Same-Day Surgery Patients</th>
<th>Institution Type</th>
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<tbody>
<tr>
<td>Specimen Collection Requirement</td>
<td></td>
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<tr>
<td>72 h, no possible extension</td>
<td>Regional blood center</td>
</tr>
<tr>
<td>7 d, provided patient has not received blood transfusion or been pregnant in the preceding 3 mo</td>
<td>Large university teaching hospital</td>
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<tr>
<td>7 d, provided patient has not received blood transfusion or been pregnant in the preceding 6 mo</td>
<td>Medium-size, private community hospital</td>
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<tr>
<td>14 d, provided patient has not received blood transfusion or been pregnant in the preceding 3 mo</td>
<td>Small, free-standing, outpatient surgical center</td>
</tr>
<tr>
<td>21 d, provided patient has not received blood transfusion or been pregnant in the preceding 3 mo</td>
<td>Large, private, not-for-profit teaching hospital</td>
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Test Your Knowledge

Look for the CE Update exam on Transfusion Medicine (903) in the April issue of Laboratory Medicine. Participants will earn 3 CMLE credit hours.
the T+S required 6 rather than 3 months free from transfusions or pregnancy; the reason for this is not clear. Three hospitals allow use of a sample for up to 2 weeks, provided the patient has not received a transfusion or been pregnant in the preceding 3 months.

**Discussion**

Although new RBC alloantibodies may develop with no previous transfusion or pregnancy, clinically significant antibodies develop after antigenic stimulation. In recognition of these factors, the AABB\(^1\) infers that if a patient has not received a blood transfusion or been pregnant in the 3 months prior to surgery, the 3-day limitation on the performance of a T+S can be modified. A 3-month period free of transfusions or pregnancy could be considered a safe interval before transfusion in a patient with no history of previous transfusions, pregnancy, or RBC antibodies, based on a 7- to 21-day-old sample. However, a detailed history including past surgeries, gynecologic-obstetric events, and possible blood exposure (eg, tattoos, blood-contaminated punctures, nonsterile ear piercing) should be obtained to ensure that the patient provides accurate information. The 3-day limitation on use of T+S blood samples may still be necessary in those patients with a history of clinically significant antibodies, unreliable data, or recent trauma or surgery in which blood may have been transfused.

Marosszesky et al\(^2\) reported on the long-term suitability of preadmission blood samples for pretransfusion testing for elective and scheduled surgeries. They base their conclusions on a study of long-term stored samples for pretransfusion testing conducted in Australia, which included specimens from 500 patients who had not been pregnant or received transfusions during the preceding 3 months. They showed that subsequent retesting of the blood 11 to 335 days after the initial T+S was performed failed to demonstrate any differences in results obtained. These authors conclude that it could be safe to perform pretransfusion testing on blood samples collected well in advance of elective surgery in patients with a clear and sound history of no prior transfusions or pregnancy.

Pregnant women may be exposed to antigenic fetal blood during invasive procedures (eg, amniocentesis) or trauma, and use of 3-day-old T+S blood samples may be necessary in these patients when transfusion is absolutely indicated. However, routine use of 3-day-old blood samples in surgical cases with low likelihood of transfusion is neither advised nor cost-effective.

Also to be considered is the patient identification system that enables rapid retrieval of blood samples with no possibility of error. This does not seem to be a major problem when a proved identification system is used.\(^3\) A policy of this magnitude can affect the logistics and flexibility of providing safe, patient-friendly, same-day surgery. It requires that the medical staff of each institution, through its committees and medical boards that affect the practice of medicine, analyze its policy for limitations on use of blood samples and make the necessary recommendations for change that best suit its physicians and patients. The new policy should be cost-effective and safe, and comply with requirements and guidelines of regulatory and accrediting agencies.\(^1,4\)

**Conclusion**

In order to provide cost-effective and high-quality patient care to those patients undergoing same-day surgical procedures, the institutions offering such services have to reassess their policies for transfusion support. The major objective is to provide safe transfusion support and still remain in compliance with requirements and guidelines of accrediting and regulatory agencies.

The experience reported for 11 institutions surveyed shows that the practice of using blood samples older than 3 days is common and easily managed, without reported untoward patient events.\(^\)\(^D\)

**References**