Infection Risk Poses Blood Transfusion Dilemma

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PHILADELPHIA — For a transfusion, fresher blood is better.

Patients who received a first unit of packed red blood cells that had been stored for at least 26 days following donation were twice as likely to develop a nosocomial infection than were patients who received more recently donated blood, Dr. Raquel Nahra said at the annual meeting of the American College of Chest Physicians.

But the practical implication of the finding is not to simply discard old blood sooner. "From our results, it's clear that the younger the blood the less the risk of infection, but it's hard to say we should just use fresher blood for all patients. We can't just discard blood that is older than 26 days," said Dr. Nahra, an infectious diseases physician at Cooper University Hospital in Camden, N.J. Current practice in the United States is to discard blood once it is 42 days old, she noted.

An alternative response is to limit blood transfusions to those that are absolutely necessary, thereby relieving pressure on the banked blood supply.

"If a more restrictive transfusion strategy were applied, it would skew the blood supply to a younger age," said Dr. David R. Gerber, associate director of the ICU at Cooper University Hospital and senior investigator for the study.

Standard practice at most U.S. hospitals has moved to a more restrictive transfusion approach in recent years, commented Dr. Mark J. Rosen, chief of the divisions of pulmonary, critical care, and sleep medicine at North Shore-University Hospital and Long Island Jewish Medical Center in New Hyde Park, N.Y. "We used to transfuse everyone to a hemoglobin of 10 g/dL. Now, if a patient has a hemoglobin of 7 g/dL or higher and is doing okay and does not have coronary disease or another reason to get better oxygen delivery,

we generally don't transfuse," he said.

The new finding "is consistent with a large body of information that indicates that the shelf life [of blood] really does matter," Dr. Rosen added. "In the best possible world, blood would be safe and free from complications, but we're not there. We need to deal with the supply we have, and the best we can do is use it responsibly."

The study by Dr. Nahra, Dr. Gerber, and their associates reviewed 421 patients who received one or more units of packed red blood cells at Cooper University Hospital from July 2003 to September 2006. The median age of the patients was 66 years, and they spent a median of 5 days in the ICU and a median of 17 days in the hospital. The analysis looked at the age of the oldest unit of blood they received, the age of the first unit of blood, and the total number of units received. Those parameters were analyzed relative to mortality rates, hospital length of stay, ICU length of stay, and infection rate while in the hospital.

The average age of the blood they received was 26 days. Eleven patients died, and 57 developed nosocomial infections.

In addition to showing a doubled risk for infection when the first unit of blood was at least 26 days old, the analysis also showed that patients had a 2.9-fold increased risk for infection when they received any unit that was at least 29 days old. Both of those were statistically significant associations, Dr. Nahra reported.

Blood that was at least 29 days old was associated with a 2.9-fold increased risk for infection.

DR. NAHRA

The analysis failed to find any significant link between the age of blood transfused and the rate of death or length of stay in the hospital or ICU. Patients who received five or more units of packed red cells were significantly more likely to develop at least one nosocomial infection, compared with patients who received less blood.

Red cells that are stored for more than 2 weeks begin to release increased amounts of proinflammatory cytokines, which may underlie an increased susceptibility to infection, Dr. Nahra said. The amount of cytokine released increases with time, peaking at 42 days, which is when unused stored blood is discarded. ■

Despite evidence-based clinical practice guidelines for the prophylaxis of DVT and PE, recommendations are underutilized and many patients are not receiving proper anticoagulation. This is not only detrimental to patient care but also increases the burden on the health care system.

The first step in reducing the incidence of DVT/PE is to increase public and physician awareness of these devastating conditions, and to ensure that all hospitalized patients are adequately assessed for risk of DVT and treated accordingly.

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