

# Overuse of blood transfusions increases infection risk

April 1 2014

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Blood transfusions are one of the most common procedures patients receive in the hospital but the more red blood cells they receive, the greater their risk of infection, says a new study led by the University of Michigan Health System and VA Ann Arbor Healthcare System.

Researchers analyzed 21 [randomized controlled trials](#) for the study that appears in today's *Journal of the American Medical Association (JAMA)*.

Elderly [patients](#) undergoing hip or knee surgeries were most susceptible, with a 30 percent lower risk of infection when fewer transfusions were used. Overall, for every 38 hospitalized patients considered for a red [blood](#) cell transfusion (RBC), one patient would be spared a serious infection if fewer transfusions were used.

Transfusions are often used for anemia or during surgery to make up for blood loss. The authors evaluated all health care-associated infections that were reported after receiving donor blood in the randomized trials. These included serious infections such as pneumonia, bloodstream infections and wound infections.

"The fewer the red blood cell transfusions, the less likely hospitalized patients were to develop infections, " says lead author Jeffrey M. Rohde, M.D., assistant professor of internal medicine in the division of general medicine at the U-M Medical School.

"This is most likely due to the patient's immune system reacting to donor

blood (known as transfusion-associated immunomodulation or TRIM). Transfusions may benefit patients with severe anemia or blood loss; however, for patients with higher red blood cell levels, the risks may outweigh the benefits."

Risks of additional hospital infections were particularly high for patients who already had sepsis – a condition in which the body's immune system overreacts to an [infection](#) and may lead to organ failure. Patients with sepsis were twice as likely to develop additional infections when they received more transfusions.

Approximately 14 million red blood cell units were used in the United States in 2011, most often in the hospital. Lower hemoglobin thresholds are recommended by recent guidelines, but only 27 percent of hospitals that responded to the National Blood Collection and Utilization Survey reported using them after surgery. Only 31 percent of hospitals reported having a blood management program that aims to optimize the care of patients who might need a transfusion.

A nationwide effort called the "Choosing Wisely" campaign recommends that patients planning for surgery or a hospital admission discuss transfusions and other common medical procedures with their physician ahead of time. Senior author Mary A. M. Rogers, Ph.D., research associate professor in internal medicine and member of U-M's Institute for Healthcare Policy and Innovation suggests patients ask the following questions:

**More information:** "Healthcare-associated infection after red blood cell transfusion: A systematic review and meta-analysis," *JAMA*, 2014.

Provided by University of Michigan Health System

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