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New study shows electronic tracking system helps lower blood transfusions and infection rates

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An electronic system that monitors how physicians give blood to patients after an operation has enabled a 22-hospital system with thousands of doctors to significantly reduce the amount of blood transfusions patients receive, cutting costs by \$2.5 million over two years and contributing to lower infection rates without harming patients, according to a study presented at the 2015 Clinical Congress of the American College of Surgeons.

Intermountain Healthcare, Salt Lake City, implemented the blood ordering and tracking system, along with a program to educate hospital staffs, in 2012 to streamline blood transfusion protocols across its statewide system, explained study coauthor Mark J. Ott, MD, FACS, a general surgeon and surgical oncologist who serves as chief medical director of Intermountain Healthcare's central region, which includes Intermountain Medical Center, the system's flagship facility.

"Blood is a drug, and everybody realizes blood does some wonderful things, but we don't teach our students and residents in training how dangerous blood really is," Dr. Ott said in explaining the rationale for the program. Transfused packed red blood cells act to suppress a recipient's immune system, Dr. Ott explained. "Therefore, their risk of infection goes up, something that's been documented in multiple studies."

The 22 Intermountain hospitals located throughout Utah include trauma centers, small rural hospitals, and large community medical centers. Intermountain employs approximately 1,200 physicians and 550 advanced practice clinicians, such as physician assistants and nurse practitioners. Another 3,000 to 4,000 independent physicians have privileges at Intermountain hospitals.

In 2011, six percent of all patients at Intermountain facilities received blood; today, only four percent do so, according to Dr. Ott. "So, a third of our patients didn't get blood who used to. That's a giant change," he said. "That's tens of thousands of units of blood a year that didn't get used." Study authors report that each unit of blood costs \$300.

Before the program started, Intermountain facilities transfused almost 50 units of blood per 1,000 patient days. By June of this year, that rate had declined to about 35.5 units, a reduction of around 30 percent.

Another significant study finding was a sharp decline in the number of patients who received two units of blood, declining from 68 percent of all transfusion orders to 23 percent, exceeding the program goal of a 25 percent reduction, Dr. Ott said. "In medicine, there had been a mantra: 'If you're going to give one unit of blood, give two,'" he added.

Rates of hospital-acquired infections for both the general hospital population and patients who received blood declined significantly since Intermountain adopted the blood-tracking system. The overall infection rate was cut in half, from a rate of 1.66 to 0.81 per 1,000 patient

days, while among patients who did receive blood, infection rates declined around 33 percent, study authors report. The reduction in infections was also impacted by other initiatives within the health system aimed at reducing surgical site infections and ambulating patients earlier after operations. "So, I cannot tell you that those decreases in hospital-acquired infections are solely due to patients receiving less blood, but it's part of the picture," Dr. Ott said. "And, we did not see worse outcomes in patients."

Physicians use testing to determine the level of plasma and corpuscles in the blood, known as hematocrit, to determine the need for a blood transfusion. Due diligence before Intermountain implemented its tracking system in 2012 showed that general surgeons, orthopedic surgeons and urologists each used different hematocrit levels to order blood. Now, Intermountain uses a consistent threshold across all disciplines for ordering blood. However, as Dr. Ott explained, physicians can still order blood for patients with counts above that threshold when they feel it is medically necessary.

Going forward, the study investigators plan to publish their findings to illustrate how the monitoring program changed physician behavior.

Source:

American College of Surgeons
