

# New study shows electronic tracking helps reduce blood transfusions and infection rates

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An electronic system developed and implemented by Intermountain Healthcare that monitors how physicians give blood to patients after a surgical operation has enabled the healthcare system 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 new study presented Wednesday at the 2015 Clinical Congress of the American College of Surgeons.

Intermountain Healthcare implemented the [blood](#) ordering and tracking system, along with a robust program to educate hospital staffs in 2012, to streamline blood transfusion protocols across its system, explained study co-author Mark J. Ott, MD, FACS, a surgeon and surgical oncologist at Intermountain Medical Center, who serves as chief medical director of Intermountain Healthcare's central region, which includes Intermountain Medical Center, the system's flagship facility.

Dr. Ott and his colleagues presented results of the study to the 2015 Clinical Congress of the American College of Surgeons on Wednesday.

"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 Healthcare hospitals located throughout Utah and Idaho 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 about \$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.

"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.

Provided by Intermountain Medical Center

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