

Frequency of blood tests in heart surgery patients may lead to anemia, transfusions

March 18 2015

Laboratory testing among patients undergoing cardiac surgery can lead to excessive bloodletting, which can increase the risk of developing hospital-acquired anemia and the need for blood transfusion, according to an article in the March 2015 issue of *The Annals of Thoracic Surgery*.

Key points

- Excessive lab tests prior to and following cardiac surgery can lead to excessive bloodletting, which can increase the risk of developing hospital-acquired anemia and the need for transfusion during surgery.
- The study found that heart surgery patients had an average of 116 lab tests while in the hospital.
- Patients should ask their doctors whether a specific test is necessary.

"Prior research shows that patients who receive [blood](#) transfusions during [heart surgery](#) have more infections after surgery, spend more time on the ventilator, and die more frequently—even after adjusting for how sick they were prior to surgery," said Colleen G. Koch, MD, MS, MBA, from the Cleveland Clinic in Ohio, who led the current study.

Dr. Koch and colleagues examined every laboratory test from 1,894 patients who underwent [cardiac surgery](#) from January to June 2012 at the Cleveland Clinic. The number and type of blood tests performed

were recorded from the time patients met their surgeons until hospital discharge. The researchers then tallied up the total amount of blood taken from each patient.

Results showed a total of 221,498 laboratory tests were performed during the study period, which equaled 116 tests per patient. Cumulative median phlebotomy volume for the entire hospital stay was 454 mL per patient. Phlebotomy volume differed between the intensive care unit (ICU) and other hospital floors, with ICU patients having more blood drawn, on average (332 mL vs. 118 mL).

"We were astonished by the amount of blood taken from our patients for laboratory testing. Total phlebotomy volumes approached 1 to 2 units of red blood cells, which is roughly equivalent to 1 to 2 cans of soda" said Dr. Koch.

More complex procedures were associated with higher overall phlebotomy volume. Patients undergoing combined coronary artery bypass grafting surgery and valve procedures had the highest median cumulative phlebotomy volume.

The findings also noted that as the cumulative phlebotomy volume increased, so did the need for blood products. Similarly, the longer a patient was hospitalized, the more blood was taken, which increased the subsequent need for a red blood cell transfusion.

"Patients should feel empowered to ask their doctors whether a specific test is necessary—'What is the indication for the test?', 'Will it change my care?', and 'If so, do you need to do it every day?,'" said Dr. Koch. "They should inquire whether smaller volume test tubes could be used for the tests that are deemed necessary. Every attempt should be made to conserve the patient's own blood—every drop of blood counts."

Importance of Reducing Preoperative Bloodletting

In an invited commentary in the same issue of *The Annals*, Milo Engoren, MD, from the University of Michigan in Ann Arbor, emphasized the importance of reducing blood loss to decrease possible complications during [surgery](#). "We make efforts to minimize intraoperative blood loss, now we need to make similar efforts postoperatively," he said. "While some may argue that transfusion itself is not harmful, but only a marker of a sicker patient, most would agree that avoiding anemia and [transfusion](#) is the best course for [patients](#)."

More information: *The Annals of Thoracic Surgery*,
www.sciencedirect.com/science/.../ii/S0003497514019511

Provided by Elsevier

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<https://medicalxpress.com/news/2015-03-frequency-blood-heart-surgery-patients.html>

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