

## **Continuous Non-invasive Hemoglobin Monitoring during Orthopedic Surgery: A Randomized Trial**

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### **Abstract**

Blood transfusions during orthopedic surgery increase the risk of adverse outcomes and are costly. In current practice, laboratory hemoglobin values are used to determine the need for blood transfusion, but testing is intermittent. We hypothesized that continuous non-invasive hemoglobin monitoring (SpHb) could reduce intraoperative blood transfusions. Patients undergoing elective orthopedic surgery were randomized to receive standard care alone or standard care with SpHb monitoring. Of the 327 patients enrolled (170 intervention, 157 control), 0.6% received intraoperative transfusions in the intervention group compared to 4.5% in the control group, for an absolute risk reduction of 4% (95% CI: -7% to -0.4%). The amount of red blood cell units transfused did not differ between the groups, nor did the rate of laboratory hemoglobin testing. The use of continuous noninvasive hemoglobin monitoring may reduce the rate of transfusions when compared to standard care using intermittent laboratory hemoglobin testing.