

# What’s New in the Patient Safety World

## September 2024

### New Tool to Predict Surgical Transfusion Need

Blood transfusions can be lifesaving, but they also have downsides. Our many prior columns related to transfusions have chronicled the movement over the last several decades to be more conservative and optimize the use of transfusions.

Historically, most decisions about planning for transfusions during surgery were based primarily on the type of surgery being performed. You would type and screen for those procedures with a high likelihood of transfusion need. On the other hand, if the percentage of patients needing transfusion for a specific procedure has been low, you could omit typing and screening. Researchers at Washington University School of Medicine ([Lou 2022](#)) developed a personalized surgical transfusion risk prediction tool using machine learning to guide preoperative type and screen orders. That tool used both surgery- and patient-specific variables to guide preoperative type and screen orders. That machine learning model was consistently more efficient than the conventional maximum surgical blood ordering schedule (procedure-centric) approach when it comes to identifying patients who need preoperative blood typing and antibody screening.

Those researchers have now assessed the generalizability of that machine learning tool (now called S-PATH) across a diverse group of institutions ([Vlessides 2024](#)). They used 2020-2021 data from the Multicenter Perioperative Outcomes Group (MPOG), which included 47 institutions and 3,455,295 surgical cases. Their abstract was presented at the 18th World Congress of Anaesthesiologists. The incidence of red cell transfusion at those institutions ranged from 0.0% to 6.5% (median, 1.6%). They found that to achieve a predetermined benchmark of 96% sensitivity, the machine learning tool recommended blood typing and antibody screening in a median of 32.4% of patients compared to 53.4% using the old procedure-centric approach.

Lead researcher Sunny Lou told Anesthesiology News “The personalized model was very consistent in terms of reducing the number of recommended screens by about a third” and “the overall performance of the model was consistently excellent across all hospitals.”

The potential use of this tool is quite exciting. While its application would be expected to lead to considerable cost savings by avoiding unnecessary screening, we'll need to see whether that translates to better patient outcomes.

**Prior columns on potential detrimental effects related to red blood cell transfusions:**

- March 2011 “[Downside of Transfusions in Surgery](#)”
- August 2011 “[CPOE Alerts Reduce Blood Transfusions in Children](#)”
- January 2012 “[Need for New Transfusion Criteria?](#)”
- April 2012 “[New Transfusion Guidelines from the AABB](#)”
- February 2013 “[More Evidence Favoring Restriction of Transfusions](#)”
- June 2013 “[Hopkins Blood Ordering Initiative](#)”
- May 2014 “[Blood Transfusion and Infection Risk](#)”
- June 2015 “[Economics and Blood Transfusion](#)”
- November 2016 “[AABB Updates Transfusion Guidelines Again](#)”
- December 2017 “[Study Confirms Safety of Restrictive Transfusion Policy](#)”
- January 2018 “[Transfusion in Cardiac Revision Surgery](#)”
- August 2018 “[Thromboembolism: Another Downside of Transfusions](#)”
- August 2021 “[New Blood Management Guidelines for Cardiac Surgery](#)”
- January 9, 2024 “[Hopkins Blood Management Program 10 Years Later](#)”

**References:**

Lou SS, Liu H, Lu C, Wildes TS, Hall BL, Kannampallil T. Personalized Surgical Transfusion Risk Prediction Using Machine Learning to Guide Preoperative Type and Screen Orders. *Anesthesiology* 2022; 137(1): 55-66  
<https://pubs.asahq.org/anesthesiology/article/137/1/55/118579/Personalized-Surgical-Transfusion-Risk-Prediction>

Vlessides M. Surgical Transfusion Risk Prediction Model Works Across Institutions. *Anesthesiology News* 2024; July 10, 2024  
<https://www.anesthesiologynews.com/Medical-Monitor/Article/07-24/Surgical-Transfusion-Risk-Prediction-Model-Works-Across-Institutions/74182>



The  
Truax  
Group  
Healthcare Consulting  
[www.patientsafetysolutions.com](http://www.patientsafetysolutions.com)

<http://www.patientsafetysolutions.com/>

[Home](#)

[Tip of the Week Archive](#)

[What's New in the Patient Safety World Archive](#)