

Data Analytics in Action: Tackling the Blood Shortage Crisis

Nasir Khan, MBBS, MPH, Regional Director, Clinical Quality Analytics, Loyola Medicine, Maywood, Ill.

Kevin R Smith, MD, MBA, Chief Medical Officer, Loyola University Medical Center, Maywood, Ill

Learning Objectives

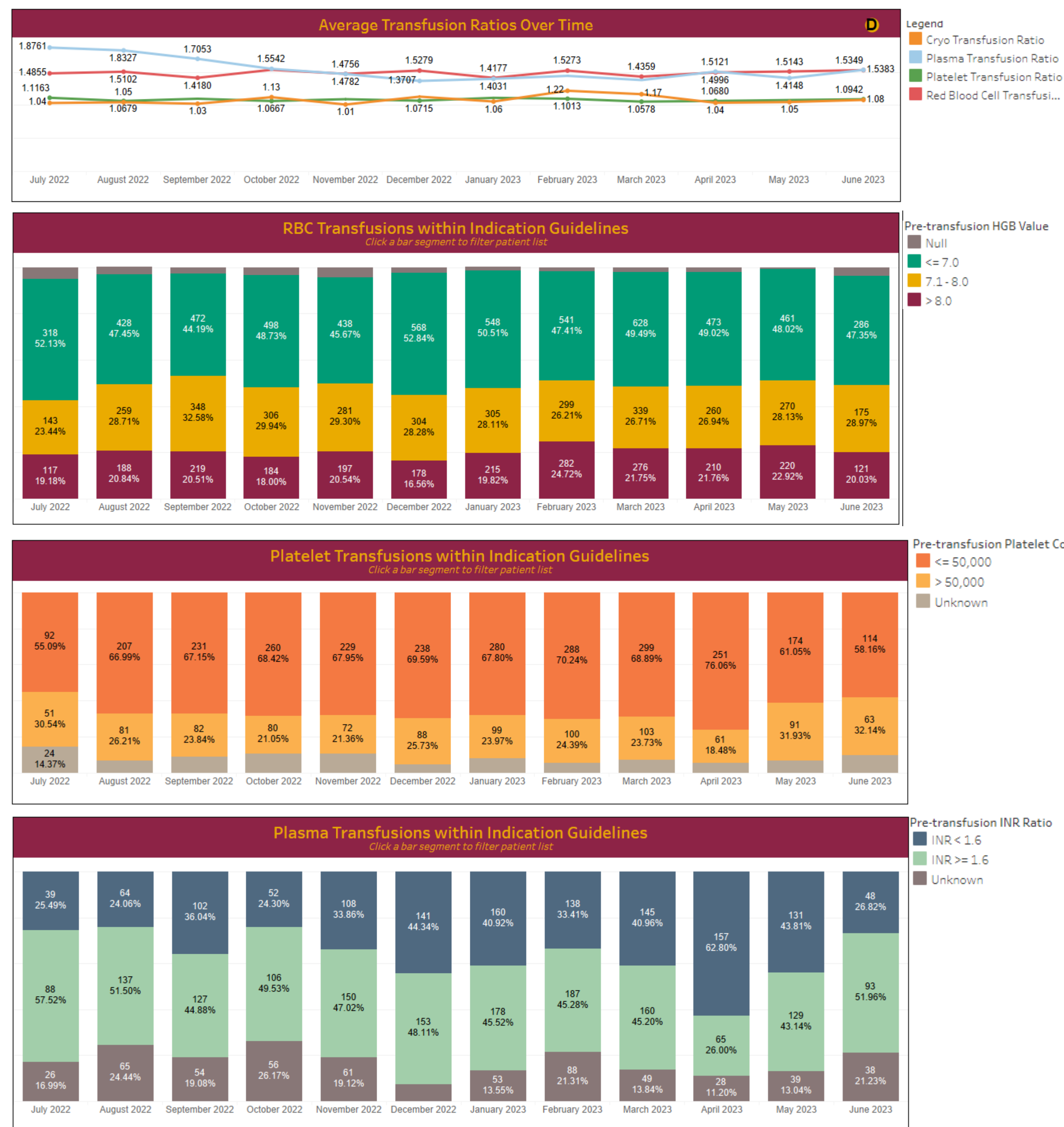
1. Apply data analytics to identify clinical guidelines for blood transfusion protocols.
2. Develop a data dashboard to view blood ordering and transfusion trends.
3. Distinguish between surgical services and by case mix index.

Background

The COVID-19 pandemic caused a surge in demand for blood transfusions, which led to increased hospitalizations and more critically ill patients. At the same time, the Red Cross reported a 10% decrease in the number of blood donors compared to the pre-pandemic level. These factors emphasized the importance of optimizing blood utilization practices to reduce waste and improve patient outcomes.

Method + Intervention

In collaboration with the blood utilization committee, blood bank, operational and clinical champions, the analytics department developed a close-to-real-time dashboard using EHR, lab software, and Vizient CDB to assess blood utilization practices and variation across all service lines. The dashboard analyzes the order to transfusion ratio and lab indicators for pre-transfusion. The ratio provides an indirect assessment of blood wastage with ideal target set at 1. The lab indicators such as hemoglobin, platelets, fibrinogen and INR were used to assess the need for blood product transfusion. The data was then risk-adjusted (using CMI as a barometer) and benchmarked with Vizient similar size AMCs. Data was appropriately mapped at the service line and at the provider level --allowing for variation to be identified and opportunities for improvement to be highlighted. Loyola Medicine transfusion policy and guideline was used as a reference point to examine variation and deviation from the standard of transfusion indications and practice.



Result

Results were analyzed using a baseline performance before the launch of the dashboard and after for period of 12 months. Wide variation were identified by hospital, individual service line and by prescribing provider. For this abstract demonstration purposes, we focused on the academic medical center. The graphs illustrate average transfusion ratio and transfusion rates (RBC, Platelets, Plasma, Cryo) using pre-transfusion facility reference target. The dashboard allows filtering through each service line and prescribing provider, revealing areas of improvement, outliers and inliers. While some service lines shows a small incremental improvement, the overall project aligned with the facility broader goal of promoting evidence-based, safe, and effective transfusion practices and ultimately improving patient outcomes through effective analytics.

Lesson Learned

1. The use of analytics in blood management has the potential to improve patient outcomes, reduce waste and conserve blood.
2. Cleaned and validated data with some level of risk adjustment, along with benchmark comparisons, can encourage strong support from clinicians.
3. Successful improvement initiatives rely on multiple factors including personnel resources, leadership buy-in and accountability
4. Focusing on individual service line could yield efficient results rather than leading the improvement efforts at a single committee level.

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Reference: Red-Cross (Jan 2021):Red Cross Declares First-ever Blood Crisis amid Omicron Surge; link [Red Cross Declares First-ever Blood Crisis amid Omicron Surge](#)

Nasir Khan, MBBS, MPH (nasir.khan@luhs.org)

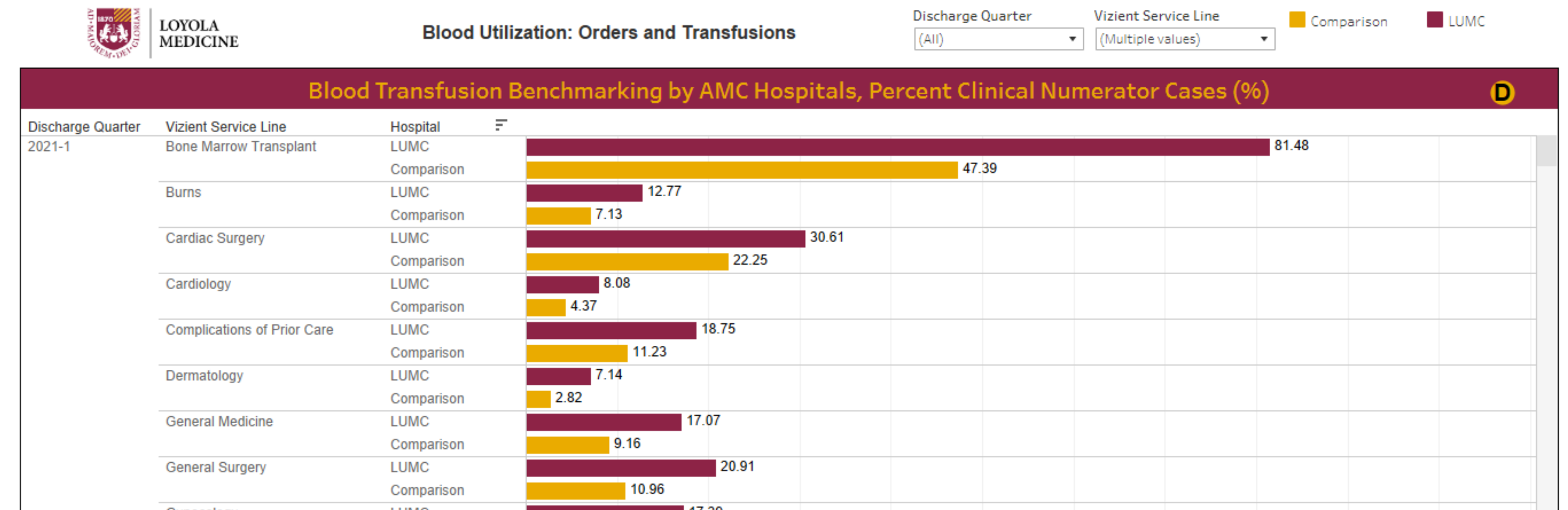
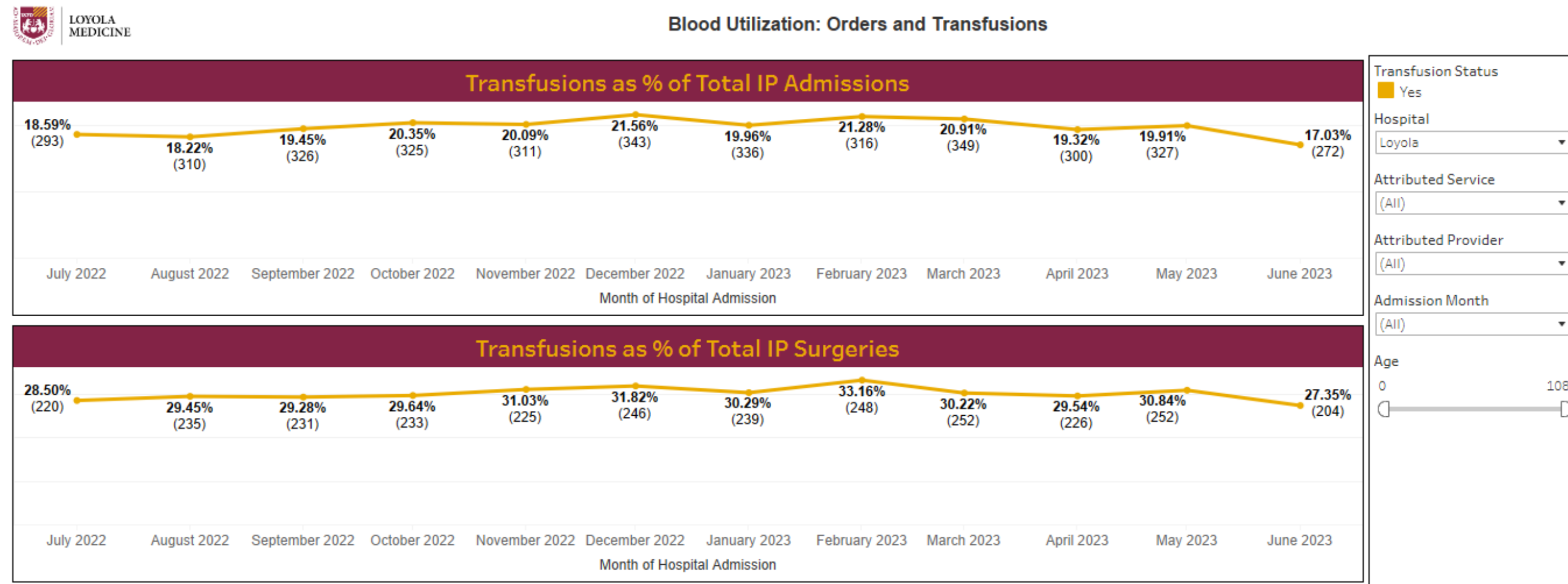
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Supplementary slides



Blood Transfusions by AMC Hospitals, Percent Clinical Numerator Cases (%)

ViziNet Service Line	Hospital	CMI
Bone Marrow Transplant	LUMC	9.752500057
Bone Marrow Transplant	Comparison	9.994672488
Burns	LUMC	13.774999619
Burns	Comparison	12.226248341
Cardiac Surgery	LUMC	7.938344500
Cardiac Surgery	Comparison	7.735306529
Cardiology	LUMC	5.102806829
Cardiology	Comparison	3.769713668
Complications of Prior Care	LUMC	3.489199961
Complications of Prior Care	Comparison	3.272219465
Dermatology	LUMC	2.012099981
Dermatology	Comparison	1.444585384

