

2021 CME WEBINAR SERIES
PBM: OPTIMIZING THE CARE OF SURGICAL PATIENTS

PBM: A Call to Action During the Pandemic

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Additional Questions from March 2021 Live Webinar

1. **How do you incorporate PBM education for medical students, residents and fellows?**

All residents and fellows are required to participate in and successfully complete patient blood management virtual educational sessions on an annual basis. These are interactive presentations that discuss the principles of patient blood management, including an emphasis on evidence-based transfusion utilization. Second, our PBM program coordinators provide in-person (or virtual, given COVID restrictions) educational sessions to groups with high rates of transfusion utilization, including our anesthesiology, hematology-oncology, surgical, and transfusion medicine trainees. At this point in time, there has been less emphasis on PBM-specific education at the medical student level, but certainly that remains a priority in the continued development of our PBM program. Third, our PBM team interacts frequently with the membership of various departments, including both attending staff and trainees. The leaders of our PBM program are often invited to give grand rounds, discuss ongoing PBM activities relevant to their group, and to identify opportunities for broader engagement in the practice. Finally, all transfusion activity is tracked electronically, with linkage of the ordering provider (often a resident/fellow) to a responsible attending physician. While these are primarily reviewed at the departmental and attending physician level, it is also possible to evaluate for aberrant transfusion behavior at the level of order entry (i.e. resident/fellow level).



2. What methods do you recommend for internal and external benchmarking for PBM?

External benchmarking can be challenging given inherent differences between institutions and incomplete assessment of PBM activities across diverse clinical environments. For transfusion utilization, there are certain societies that maintain transfusion benchmarks that allow for relative comparisons (e.g. transfusion utilization for certain cardiac surgeries from the Society for Thoracic Surgeons), and we do engage with those external benchmarks to ensure that we are meeting or exceeding comparable activity. Internal benchmarking is much more important in our day-to-day activities. We routinely set and re-evaluate goals for most aspects of our PBM program with careful tracking over time. For example, prior to our PBM efforts we noted that the proportion of surgical patients transfused intraoperatively with RBCs and subsequently having an initial postoperative hemoglobin > 10 g/dL was more than 60%. Recognizing that this likely represented overly liberal transfusion behavior, our goal was to cut this in half, which has now been achieved and sustained over the past 3 years. We have set similar pre-transfusion and post-transfusion benchmarks for all major component transfusions (e.g. proportion of patients transfused for Hb < 8 g/dL should be <20%). These benchmarks may vary across different areas of our practice (e.g. different transfusion benchmarks in our pediatric and high-risk cardiac surgical practices). Additionally, we have set benchmarks for other aspects of our PBM activities, including the proportion of patients presenting for elective surgery with untreated anemia. In our experience, the winning strategy is to use your own data to identify deficiencies and set reasonable goals that fit within the realities of your clinical practice. There is no one-size-fit-all, but there is always room for improvement and refinement.

3. What is the accuracy of lab values if specimen is drawn in pediatric-sized tubes?

Using an insufficient volume to fill a standard specimen tube (i.e. underfilling) can be problematic, as these tubes often contain a calculated amount of anticoagulant for the expected blood volume. Hence, underfilling can result in decreased accuracy. However, using a smaller amount of blood volume to appropriately fill a smaller pediatric-sized tube should not have a clinically meaningful impact for most routine laboratory tests. Otherwise, we would need to use larger volumes in pediatric patients and neonates to obtain accurate values, which fortunately we do



not! Pediatric (or low volume) blood draws do have a modestly higher rate of needing a phlebotomy “re-draw”, but this is quite rare, with a recent study showing an average re-draw rate of 1 per adult patient every 57 days. For more information specific to your practice location, I would reach out to your phlebotomy and clinical laboratory leadership. Their input can be very helpful in designing optimal phlebotomy strategies.

4. **Are you providing pre-operative anemia management for medical patients as well or just pre-op?**

At this point, we are primarily seeing patients prior to surgery or other planned invasive procedures. These non-surgical procedures may include diverse interventions such as interventional radiology procedures, cardiac interventions, and endoscopy. We also assist with blood health optimization and anemia management in patients that decline transfusion therapies in both our medical and surgical practices.

5. **In what timeframe should a post-transfusion CBC be repeated?**

This will depend, to some extent, on the context for transfusion. In hemodynamically unstable patients and those with ongoing blood loss, hematological indices (and other indices to evaluate acid-base status and other markers of resuscitation adequacy) should be checked immediately following transfusion, with serial assessments as needed until hemodynamic and hematological stability is ensured. In less critical patients, the timing for repeat laboratory testing is often of lesser importance. However, the most reliable assessments of post-transfusion increments in hematological indices (i.e. hemoglobin, platelet count) will occur within 10-60 minutes following transfusion. If the patient has a history of being refractory to transfusions, it is particularly important to obtain a repeat CBC within this time frame. Of note, it is also important to recognize that an asymptomatic and clinically stable individual may not need a transfusion therapy in response to an isolated hematological derangement. In these scenarios, we must use our clinician intuition and close observation before deciding on the need for repeat laboratory testing or transfusion. Most importantly, we do not transfuse for the primary purpose of correcting numbers. In the case of red cell transfusion, for example, we transfuse when the patient develops anemia-mediated signs or symptoms of inadequate tissue oxygen delivery despite our best efforts to prevent red cell loss and augment erythropoiesis.