



Invited Editorial *Cardiac Critical Care*

Implementation of Patient Blood Management – A Long and Winding Road but Worth Doing!

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“Patient blood management (PBM) is a patient-centered, systematic, and evidence-based approach to improve patient outcomes by managing and preserving a patient’s own blood while promoting patient safety and empowerment.” The definition emphasizes the critical role of informed choice. PBM involves the timely, multidisciplinary application of evidence-based medical and surgical concepts aimed at (1) screening for, diagnosing, and appropriately treating anemia; (2) minimizing surgical, procedural, and iatrogenic blood losses and managing coagulopathic bleeding throughout the care; and (3) supporting the patient while appropriate treatment is initiated.^[1] PBM is most effectively implemented as bundles of care.^[2,3] Accordingly, the ABC toolbox of PBM contains bundles of care for (1) Anemia and Iron Deficiency, (2) Blood Loss and Bleeding, and (3) Coagulopathy.^[4]

Here, coagulopathy is defined as a clinical condition in which the blood’s ability to clot is impaired or increased and is associated with prolonged or excessive bleeding or thrombosis. Pathologic coagulation tests alone are not sufficient to define coagulopathy since a rebalance of hemostasis can occur in several clinical conditions, for example, in chronic liver disease. Therefore, pathologic coagulation tests should NOT be corrected routinely in the absence of bleeding. However, this is still common practice in patients with pathologic laboratory results before invasive interventions or treated at the intensive care unit – even if large observational studies and randomized controlled trials showed no benefit but increased morbidity and mortality.^[5-9] Here, implementation of PBM concepts has been shown to reduce prophylactic plasma and platelet transfusion and transfusion-related adverse events.^[10-13]

Accordingly, PBM equals patient safety, which is defined by the World Health Organization (WHO) as “the absence of preventable harm to a patient during the process of health care and reduction of risk of unnecessary harm associated with health care to an acceptable minimum.”^[14,15] An acceptable minimum refers to the collective notions of given current knowledge, resources available, and the context in which care was delivered weighed against the risk of non-treatment or other treatment.” Inappropriate blood transfusion is definitively a safety issue that must be addressed by education and adherence to guidelines.^[16,17] In some countries, such as Italy, PBM implementation is considered mandatory in light of new Italian laws on patient safety.^[18] The Italian Law No. 24/2017 focuses on the safety of care by encouraging the necessary implementation of PBM in hospital settings. The failure to adopt an organized PBM program may constitute, in the event of an adverse transfusion event, a clear profile of health responsibility on the part of the management and clinicians.^[19] Accordingly, PBM is considered “Good Medical Practice”

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following the concept of “Precision Medicine” with diagnosis first, followed by appropriate therapy and reassessment.^[20,21]

On November 21, 2018, an Indian interdisciplinary expert group working in governmental and private healthcare institutions met for the first time to review and discuss the status quo and current practice of PBM in India and the feasibility of applying appropriate standard-of-care guidelines for a broader implementation of PBM in India. The proceedings of this meeting were published in the *Journal of Anesthesiology and Clinical Pharmacology* in April 2021.^[22] On the one hand, misconceptions, lack of education, and change culture have been identified as important barriers to PBM implementation.^[23-27] On the other hand, awareness, knowledge, evidence, ethics, economics, education (4 Es), communication, collaboration, consensus, continuum of care (4 Cs), motivation, implementation, improvement (data from audits demonstrating improvement in patient outcomes and health economics), and sustainability (long-term adherence to PBM guidelines) have been identified as drivers for cultural change from transfusion medicine to PBM.^[28-34] Since PBM is a multidisciplinary and multi-professional team approach, the hospital transfusion or PBM committee plays an essential role in PBM implementation, and the anesthesiologist may take the lead here.^[35-37] This brings us to the 6 Ws of PBM implementation: Who is responsible (Champion), Who must be involved (e.g., Transfusion Committee, PBM Committee, Anesthesiology, Intensivists, Surgeons, Internal Medicine, Obstetrics, Hematology/Lab, Transfusion Medicine, Nursing, Administration (Controlling/Finance)), Who must be trained (e.g., in point of care [POC] viscoelastic testing and interpretation), Where should viscoelastic testing devices be placed (e.g., POC/Bedside, POC Lab, Central Lab, and Blood Bank), and Which protocols and algorithms should be agreed on and used and how adherence and improvement (e.g., transfusion requirements, complication rates, and health economics) should be monitored.^[38,39]

Considering all these drivers and barriers for PBM implementation results in the following call-to-action to physicians and nurses who want to implement PBM in their institutions:

1. Identify wrong beliefs and knowledge gaps
2. Identify and abandon potential harmful or low-value care (to use these resources to start your PBM program)^[40]
3. Identify potential PBM stakeholders and keep everybody on board (team approach)
4. Identify the main PBM issues in your hospital and focus on these in the beginning (hospital-centered approach)
5. Identify the diagnostic/therapeutic options available in your hospital/country (resources)
6. Bundle and algorithm/SOP/Guideline implementation^[38,41-51]
7. Convince your surgeon (outcome) and administration (cost-effectiveness) with data (publications and internal audits)^[29-34]

8. In the end, implement PBM as a holistic concept (effectiveness).

On October 19, 2021, the WHO published a policy brief on the urgent need to implement PBM.^[23] Since then, 127 PubMed-listed papers have been published with the term “Patient Blood Management” in the title.^[52] However, we are still far away from worldwide PBM implementation.^[53-55]

To address the importance of education and knowledge, an online certified PBM course for India, the Middle East, and South Asia was established in 2020. This PBM course has an international faculty of PBM experts and consists of six sessions/modules. To receive the certificate, participants had to attend the sessions and pass the corresponding examination with multiple-choice questions. In between, this certified PBM course is endorsed and supported by multiple medical societies such as the Simulation Society (TSS), the Cardiac Society of Nepal, the College of Anesthesiologists and Intensivists of Sri Lanka, the Sri Lanka College of Transfusion Physicians, the Malaysian Society of PBM, and the Australian and New Zealand College of Anesthesiologists and is supported by Werfen. From 2020 to 2023, the number of registrations and certifications increased 10-fold and 4-fold, respectively [Figure 1].

This issue of the *Journal of Cardiac Critical Care TSS*, as the official journal of TSS, publishes several review papers summarizing key presentations of the last certified PBM course from 2023.^[56,57] This successful educational activity will be continued in 2024 since there is still a long and winding road to go to implement PBM in India, South Asia, and beyond.

“Most of us can read the writing on the wall; we just assume it’s addressed to someone else.”

“Knowledge is Power, but Enthusiasm pulls the Switch.”

Ivern Ball, American Writer and Aphorist, *July 31, 1926, †January 12, 1992.

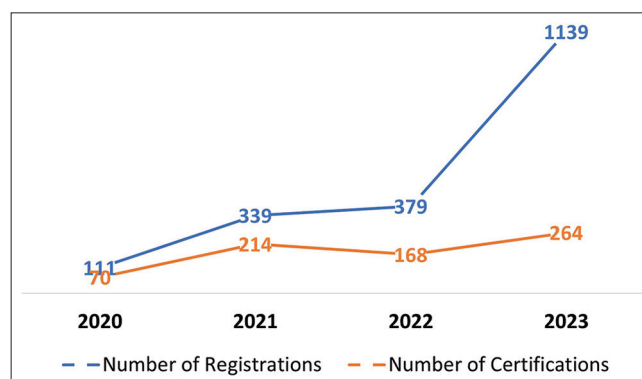


Figure 1: Number of registrations and certifications for the online Certified Patient Blood Management Course for India, the Middle East, and South Asia from 2020 to 2023.

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