

# BLOOD BULLETIN

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## Patient Blood Management: Beyond Sensible Use of Blood for Better Outcomes

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Our understanding of blood component utilization has evolved rapidly during recent years in light of convincing evidence as to the safety and efficacy of these therapeutics.<sup>1</sup> This shift has been fueled further by growing concerns about the rising costs of health care. As a result, all medical stakeholders – patients, physicians, hospitals, and payors alike – now demand safer, more effective, and less costly treatments,<sup>2</sup> with solid evidence serving as the primary decision-making criterion.

Numerous experts cite the Transfusion Requirements in Critical Care (TRICC) study as the turning point, raising doubt about our historic approach to red blood cell (RBC) transfusion. This randomized clinical trial demonstrated that a more restrictive use of RBC transfusions was associated with equivalent – and perhaps sometimes even better – outcomes when caring for anemic ICU patients.<sup>3</sup>

This and other similarly designed studies<sup>4,5</sup> have strengthened the case for limiting the use of transfusions in many clinical situations. Moreover, a number of complementary approaches have been devised and implemented in recent years with the goal of improving patient outcomes and not just restricting the utilization of resources. Thus the concept of “patient blood management” (PBM) has been formulated to draw the focus away from the “product” and back to the “patient.”<sup>6</sup>

PBM is a multi-disciplinary, evidence-based strategy that calls for the use of clinically-justified, sensible treatment modalities. PBM principles commonly rely on three approaches: (1) maintaining an adequate hemoglobin level; (2) optimizing

### Key Points

- The primary goal of patient blood management (PBM) is to improve patient outcomes (and not just reduce the use of transfusions).
- PBM is multi-disciplinary, evidence-based, and patient-centered.
- Key approaches include correcting anemia, maintaining an appropriate hemoglobin level, optimizing hemostasis, and minimizing blood loss.
- PBM emphasizes proactive, rather than reactive, strategies.

hemostasis; and (3) minimizing blood loss. Figure 1 illustrates some of the specific methods that can be employed.

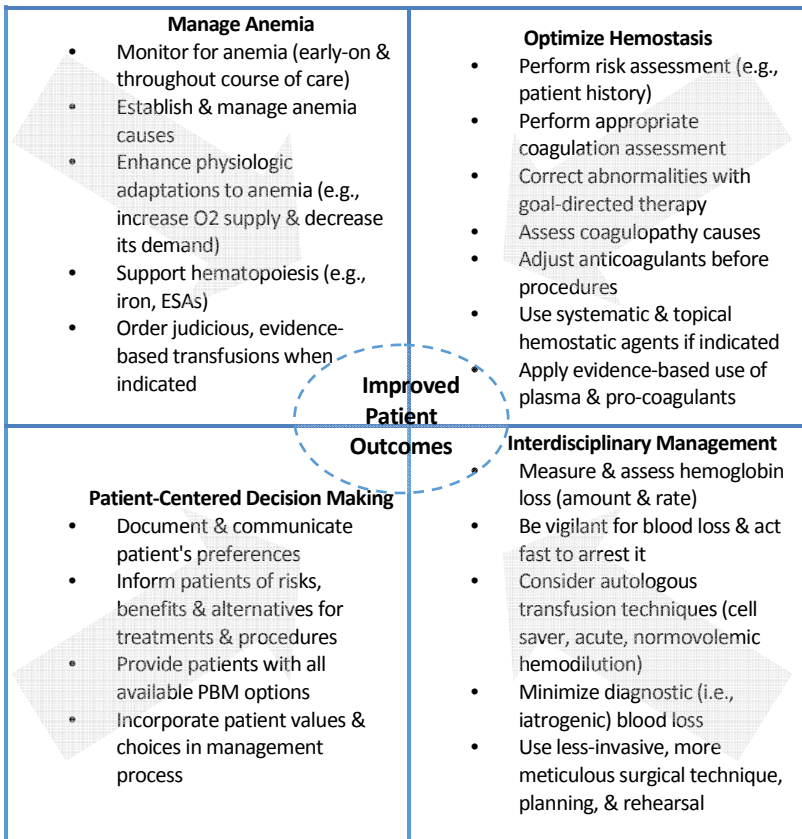
PBM advocates for the judicious use of allogeneic blood components when: (1) they cannot be reasonably avoided by other modalities like blood conservation techniques; (2) they are likely to improve patient outcomes; and (3) their potential benefits outweigh their risks.<sup>7,8</sup> PBM also places great emphasis on prevention and planning, with its success relying on a proactive approach that is used to screen for and detect problems (e.g., preoperative anemia or coagulopathy) while it is still feasible to alleviate them and/or adjust the planned course of action accordingly.<sup>9</sup>

It is important to remember that many risk factors for transfusion, blood loss, and unfavorable outcomes

are at least partially modifiable. Perhaps the best example of this is preoperative anemia. This condition is highly prevalent across many patient populations but often generates little action by clinicians, despite having been shown repeatedly to be an independent risk factor for unfavorable outcomes (mortality, morbidity, and diminished quality of life), as well as a major predisposing factor for transfusion.<sup>8</sup> Rather than ignoring anemia as an incidental finding and relying on transfusion as a quick fix, a more sensible approach is to screen all at-risk patients weeks before their scheduled procedures and to manage anemia expediently.<sup>10-12</sup>


Several other common PBM modalities are geared toward minimizing blood loss. Key means for accomplishing this include: (1) optimizing hemostasis locally (e.g., via topical hemostatic agents and electrocautery) and/or systemically (e.g., via coagulation factors and antifibrinolytics); (2) reinfusing autologous blood collected perioperatively (e.g., through intra- and post-operative cell savers and/or acute normovolemic hemodilution); and (3) avoiding unnecessary phlebotomies.<sup>1,9,13,14</sup>

In summary, PBM is a concept of care that places great emphasis on proactive planning, preventive measures, and the sensible use of available interventions to improve quality of care and patient outcomes.



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**Figure 1** Overview of PBM strategies. All efforts should be made with the primary goal of improving the clinical outcome of the patient (from Society for the Advancement of Blood Management; SABM).