

Patient Blood Management: Recommendations From the 2018 Frankfurt Consensus Conference.

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Abstract

IMPORTANCE: Blood transfusion is one of the most frequently used therapies worldwide and is associated with benefits, risks, and costs.

OBJECTIVE: To develop a set of evidence-based recommendations for patient blood management (PBM) and for research.

EVIDENCE REVIEW: The scientific committee developed 17 Population/Intervention/Comparison/Outcome (PICO) questions for red blood cell (RBC) transfusion in adult patients in 3 areas: preoperative anemia (3 questions), RBC transfusion thresholds (11 questions), and implementation of PBM programs (3 questions). These questions guided the literature search in 4 biomedical databases (MEDLINE, EMBASE, Cochrane Library, Transfusion Evidence Library), searched from inception to January 2018. Meta-analyses were conducted with the GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) methodology and the Evidence-to-Decision framework by 3 panels including clinical and scientific experts, nurses, patient representatives, and methodologists, to develop clinical recommendations during a consensus conference in Frankfurt/Main, Germany, in April 2018.

FINDINGS: From 17607 literature citations associated with the 17 PICO questions, 145 studies, including 63 randomized clinical trials with 23143 patients and 82 observational studies with more than 4 million patients, were analyzed. For preoperative anemia, 4 clinical and 3 research recommendations were developed, including the strong recommendation to detect and manage anemia sufficiently early before major elective surgery. For RBC transfusion thresholds, 4 clinical and 6 research recommendations were developed, including 2 strong clinical recommendations for critically ill but clinically stable intensive care patients with or without septic shock (recommended threshold for RBC transfusion, hemoglobin concentration <7 g/dL) as well as for patients undergoing cardiac surgery (recommended threshold for RBC transfusion, hemoglobin concentration <7.5 g/dL). For implementation of PBM programs, 2 clinical and 3 research recommendations were developed, including recommendations to implement comprehensive PBM programs and to use electronic decision support systems (both conditional recommendations) to improve appropriate RBC utilization.

CONCLUSIONS AND RELEVANCE: The 2018 PBM International Consensus Conference defined the current status of the PBM evidence base for practice and research purposes and established 10 clinical recommendations and 12 research recommendations for preoperative anemia, RBC transfusion thresholds for adults, and implementation of PBM programs. The relative paucity of strong evidence to answer many of the PICO questions supports the need for additional research and an international consensus for accepted definitions and hemoglobin thresholds, as well as clinically meaningful end points for multicenter trials.