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POLICY SESSION

Symposium 1

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KOREAN
SURGICAL SOCIETY



POLICY SESSION

SYMPOSIUM 1: NATIONAL IMPLEMENTATION OF PATIENT BLOOD MANAGEMENT & ROLE OF SURGEON

What is Patient Blood Management & the Surgeon's Role?

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Probably in his last contribution to academia before he passed away in 2016, the iconic American heart and cardiothoracic surgeon Dr. Denton Cooley, also founder of the Texas Heart Center, stated: "Patient Blood Management is a compelling concept to preempt anemia, correct bleeding disorders and minimize blood loss. This evidence-based, multidisciplinary approach does not only lead to reductions in the use of blood and blood products, and therefore to considerable cost savings, but - more importantly - it also improves patient outcomes and patient safety. I hope that PBM [...] becomes the new normal".¹

Rather than routinely resorting to donor blood, PBM seeks to optimize erythropoiesis, minimize blood loss and harness or optimize the physiological reserves of anaemia (www.ifpbm.org).² The rationale driving this concept is the preemption of independent risk factors for adverse patient outcomes that have been largely underestimated in the past, both in terms of prevalence and impact:^{3,4} First, anemia, a condition affecting approximately 30% of the world's population.⁵ Anemia is highly prevalent in the elderly and in hospitalized patients. Numerous studies have shown that pre-operative anemia is an independent predictor for mortality, morbidity, hospital length of stay and transfusion.⁶ Second, bleeding and major blood loss, mostly caused by local surgical interruption or vessel interruption, is another predictor for the same adverse outcomes.⁷ Blood transfusion, still the most common invasive procedure performed during hospitalizations⁸, is the third independent predictor for the same adverse outcomes and comes at a major cost for the system.⁹ Overall, poorly managed bleeding either induces or exacerbates pre-existing anemia. Once the anemia reaches a certain threshold, transfusions are administered.

Only PBM breaks this vicious circle and surgeons do have a key role in achieving this. This requires first and foremost meticulous hemostasis and surgical techniques, blood-sparing devices, vigilant monitoring and management of post-operative bleeding. Also important are patient positioning, minimally invasive surgical techniques, staging and packing, interventional radiological embolization and topical hemostatic agents.¹⁰ Lastly, adherence to restrictive but individualized transfusion thresholds are recommended.¹¹

Results from the world's largest PBM real-world study with more than 600'000 patients in Western Australia – and hundreds of surgeons involved – were associated with a major improvement in patient outcomes.² In-hospital mortality was reduced by 28% (95% CI, 0.67 - 0.77; $p < 0.001$), infection by 21% (95% CI, 0.73 - 0.86; $p < 0.001$), myocardial infarction/stroke by 31% (95% CI, 0.58 - 0.82; $p < 0.001$) and average hospital length of stay by 15% (95% CI, 0.84 - 0.87; $p < 0.001$). Blood product use dropped by 41% with product cost savings of AU\$18.5 million and estimated activity-based cost savings of \$80 - \$100 million. Meanwhile Australia introduced standards, guidelines and initiatives to support the implementation of PBM across the nation (<https://www.safetyandquality.gov.au/national-priorities/pbm-collaborative/>). The European Commission sponsored the development of a guide for health authorities to establish national programs of PBM and a practical implementation guide for hospitals.^{12,13} In many countries, PBM has already considerable impact.^{14,15} Globally, it could significantly improve the outcomes of millions of patients while saving billions of dollars each year.

Cooley, by reconfirming the importance of PBM, conveyed an important message to regarding the surgeon's role: treat the haemopoietic system with the same respect as every other body system. PBM has evolved into a widely accepted holistic treatment concept and is a must-have for all modern health care systems.

References:

1. Cooley DA. Patient Blood Management - Foreword. In: Gombotz H, Zacharowski K, Spahn DR, eds. Patient Blood Management. 2nd ed. Stuttgart: Thieme Publishers; 2016.
2. Leahy MF, Hofmann A, Towler S, et al. Improved outcomes and reduced costs associated with a health-system-wide patient blood management program: a retrospective observational study in four major adult tertiary-care hospitals. *Transfusion* 2017.
3. Farmer SL, Towler SC, Leahy MF, Hofmann A. Drivers for change: Western Australia Patient Blood Management Program (WA PBMP), World Health Assembly (WHA) and Advisory Committee on Blood Safety and Availability (ACBSA). *Best Pract Res Clin Anaesthesiol* 2013;27:43-58.
4. Hofmann A, Farmer S, Shander A. Five drivers shifting the paradigm from product-focused transfusion practice to patient blood management. *The Oncologist* 2011;16 Suppl 3:3-11.
5. Vos T, Allen C, Arora M, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. *Lancet* 2016;388:1545-602.

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6. Fowler AJ, Ahmad T, Phull MK, Allard S, Gillies MA, Pearse RM. Meta-analysis of the association between preoperative anaemia and mortality after surgery. *Br J Surg* 2015;102:1314-24.
7. Stokes ME, Ye X, Shah M, et al. Impact of bleeding-related complications and/or blood product transfusions on hospital costs in inpatient surgical patients. *BMC Health Serv Res* 2011;11:135.
8. Pfunter A, Wier LM, Stocks C. Most Frequent Procedures Performed in U.S. Hospitals, 2011: Statistical Brief #165. Healthcare Cost and Utilization Project (HCUP) Statistical Briefs. Rockville (MD)2006.
9. Isbister JP, Shander A, Spahn DR, Erhard J, Farmer SL, Hofmann A. Adverse blood transfusion outcomes: establishing causation. *Transfus Med Rev* 2011;25:89-101.
10. Shander A, Goobie SM, Warne MA, et al. The Essential Role of Patient Blood Management in a Pandemic: A Call for Action. *Anesth Analg* 2020.
11. Trentino KM, Farmer SL, Leahy MF, et al. Systematic reviews and meta-analyses comparing mortality in restrictive and liberal haemoglobin thresholds for red cell transfusion: an overview of systematic reviews. *BMC Med* 2020;18:154.
12. Hofmann A, Nørgaard A, Kurz J, et al. Building national programmes of Patient Blood Management (PBM) in the EU - A Guide for Health Authorities. Luxembourg: European Commission - Directorate-General for Health and Food Safety; 2017.
13. Gombotz H, Hofmann A, Nørgaard A, Kastner P. Supporting Patient Blood Management (PBM) in the EU - A Practical Implementation Guide for Hospitals. Luxembourg: European Commission - Directorate-General for Health and Food Safety; 2017.
14. Carson JL, Triulzi DJ, Ness PM. Indications for and Adverse Effects of Red-Cell Transfusion. *N Engl J Med* 2017;377:1261-72.
15. Klein HG, Hrouda JC, Epstein JS. Crisis in the Sustainability of the U.S. Blood System. *N Engl J Med* 2017;377:1485-8.

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SYMPOSIUM 1: NATIONAL IMPLEMENTATION OF PATIENT BLOOD MANAGEMENT & ROLE OF SURGEON

Evaluation of Adequacy for Transfusion Practice and Meaning of Recent Amendment of Blood Management Law

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Blood Management Law was revised on December 3, 2019 and will be enacted December 4, 2020. The revised Law mandated Transfusion Committee, Transfusion Management Unit, and Dedicated Personnel in the medical institutions above the standards based on the number of beds and amount of blood use. The purpose of the Transfusion Committee and Transfusion Management Unit is for "safe and proper use of blood". Ensuring transfusion appropriateness is essential for the better outcome of the transfusion recipients.

Transfusion Committee is already established in many medical institutions in Korea, but Transfusion Management Unit is newly introduced system. There are many expectations and concerns about what task it will take on. The standards are being prepared as Ordinance of the Ministry of Health and Welfare.

This revision of Blood Management Law has very significant meanings because it expanded its scope into the appropriate transfusion for the blood recipients (patients). The previous Blood Management Law, since legislation in 1970, was mainly focused on the safety of blood donors and blood products.

Based on this understanding, I would like to present the expected duties of the Transfusion Committee and the Transfusion Management Unit.

References

Ministry of Health and Welfare, Korea Centers for Disease Control and Prevention, The Korean Society for Blood Transfusion. Transfusion Guideline, 4th edition. 4 ed; 2016.

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Pilot Project for National Implementation of Patient Blood Management in Korea

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