

ADDRESSING PATIENT NEEDS WITH PATIENT BLOOD MANAGEMENT

What is patient blood management?

Patient blood management (PBM) consists of measures designed to improve surgical and medical patient outcomes by optimally managing and preserving patient's blood. It has three basic aims: to correct anaemia and iron deficiency, to minimise blood loss and bleeding, and to establish the appropriate use of blood transfusion. There has been a shift over the past decade from a "product-focused" approach, ensuring the safety and quality of blood, towards a multi-disciplinary "patient-focused" approach, caring for each patient individually and aiming to ensure their best possible outcome.

What are the risks associated with anaemia, and particularly iron deficiency anaemia?

Anaemia is a global epidemic, with high prevalence in the ageing and surgical populations. Preoperative anaemia is detected in up to 40% of patients, with varying prevalence depending on the type of surgery.¹ Evidence strongly suggests anaemia is an independent predictor of adverse outcomes, including mortality, morbidity and length of hospital stay, and increases cost of care. Published studies have shown that preoperative anaemia is associated with increases in length of stay, surgical complications, mortality and increased rates of transfusions. It is associated with a 22% longer hospital stay,² 1.93 times higher probability of infection, 3.75 times higher probability of kidney injury, 2.9 times higher probability of mortality and a 3.9 times increase in transfusions.³

Newly identified problems with transfusion and outcomes

New and re-emerging pathogens pose a constant threat for the blood donor pool.^{4,5,6} The huge inter- and intra- hospital transfusion variability for

matched patients persisted for decades,^{7,8,9,10,11,12} mainly due to the lack of training and education in transfusion medicine¹³ or simply due to behaviour and hospital culture.¹⁴ Finally, recent studies revealed that the cost of transfusion is a multiple of what has previously been assumed.^{15,16} Further to this, there are now additional problems identified with transfusion. Clinical evidence has shown that transfusion is also an independent risk factor for adverse outcomes. Systematic reviews and meta-analyses of randomised controlled trials have shown increased risks (including infection, cardiac events, re-bleeding and in-hospital mortality) from liberal transfusion.^{17,18,19,20,21}

Does PBM help patients and improve patient outcomes?

Large observational studies on PBM including anaemia management have demonstrated improved patient outcomes. The implementation of a PBM programme in Western Australia led to a reduction in mortality of 28%, a reduction in infection of 21% and a reduction in time spent in hospital of 15%.²²

How can PBM contribute to lower hospital costs and benefit national healthcare budgets?

Studies around the world have shown that the implementation of PBM programmes can generate cost savings, improve key performance indicators for hospitals and benefit national healthcare budgets. One real-world study with

1 Fowler AJ et al. *Br J Surg*. 2015;102(11):1314-24
2 Beattie WS et al. *Anesthesiology*. 2009;110(3):574-81
3 Fowler AJ et al. *Br J Surg*. 2015;102(11):1314-24
4 Alter HJ et al. 2007;44(1):32-41
5 Stramer SL et al. *Transfusion*. 2009;49 Suppl 2:1S-29S
6 Snyder EL et al. *N Engl J Med*. 2015;372(20):1882-5

7 Stover EP et al. *Anesthesiology*. 1998;88(2):327-33
8 Bennett-Guerrero E et al. *JAMA*. 2010;304(14):1568-75
9 Snyder-Ramos SA et al. *Transfusion*. 2008;48(7):1284-99
10 Gombotz H et al. *Transfusion*. 2007;47(8):1468-80
11 Baele PL et al. *Acta Chir Belg*. 1994;94(2):69-74
12 Zhu C et al. *Medicine*. 2015;94(50):e2164
13 Salem-Schatz SR et al. *JAMA*. 1990;264(4):476-83
14 Shander A et al. *Transfus Med Rev*. 2011;25(3):232-46.e53
15 Shander A et al. *Transfusion*. 2010;50(4):753-65
16 Shander A et al. *Vox Sang*. 2016
17 Carson JL et al. 2012;4:CD002042
18 Rohde JM et al. *JAMA*. 2014;311(13):1317-26
19 Holst LB et al. *BMJ*. 2015;350:h1354
20 Salpeter SR et al. *Am J Med*. 2014;127(2):124-31.e3
21 Carson JL et al. *Cochrane Database Syst Rev*. 2016;10:CD002042
22 Frank SM et al. *Anaesthesiology* 2017; 27:754-64



more than 600,000 patients in Western Australia confirmed these findings and demonstrated a 41% reduction of allogeneic blood transfusions with cost savings of more than 80 million dollars.²³

In a growing number of countries, authorities are focused on the "triple aim":

- Improving the patient and provider experience of care;
- Improving the health of populations; and
- Reducing the per capita cost of healthcare.

Vifor Pharma is engaged in the promotion and implementation of PBM programmes that represent a unique opportunity to achieve these aims on a significant scale.

Developing the PBM concept around the world

The World Health Organisation recommended the development and implementation of PBM programmes in 2010 to achieve high quality, effective patient care, improve patient safety and ensure efficient use of resources. In 2017, the European Commission published guidelines

²³ Leahy MF et al, *Transfusion*. 2017 Jun; 57(6):1347-1358.

recommending broad adoption of PBM. Leading thought leader and authorities around the world support the PBM concept, including the Australian government as well as the EU. Also, large blood services around the world are now proactively supporting PBM and even include its dissemination and implementation as one of their core activities.²⁴

Vifor Pharma's PBM vision

Vifor Pharma's aims to become a key partner for hospitals with the aim to make PBM – including Iron Deficiency and Anaemia management – a standard practice and ensure optimal outcomes. An estimated 1 million patients could benefit from PBM in the EU's five largest countries,²⁵ representing a potential market opportunity of CHF 200 million.

²⁴ AABB. Advancing Transfusion and Cellular Therapies Worldwide: Patient Blood Management, available from: <http://www.aabb.org/pbm/Pages/default.aspx> (last access: 11/07/2016)

²⁵ Vifor Pharma analysis, Q1 2018, Countries included DE, ES, FR, IT, UK