Patient Blood Management: Recommendations From the 2018 Frankfurt Consensus Conference

Markus M Mueller, ICC PBM Frankfurt 2018 Group

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Perioperative transfusion therapies have radically changed in the last decade due to the implementation of patient blood management (PBM) programs, following the guidelines set by the WHO in 2011 for the optimisation of the consumption of blood products. Much of these practices were analysed at the Frankfurt Consensus Conference in 2018, following 17 PICO questions. The conclusions and recommendations of this multidisciplinary and international conference were published in the special JAMA paper that we comment upon here.

The PICO questions can be grouped into 3 main areas, which do not correspond to the 3 PBM pillars (pre-, intra- and postoperative). These areas were: preoperative anaemia, red blood cell (RBC) transfusion threshold and implementation of PBM programs.

Preoperative anaemia (considered according to the WHO definition as a haemoglobin level less than 13 g/dl in men and 12 g/dl in women) has been associated with increased mortality (in-hospital and at 30 days), as well as morbidity (acute myocardial infarction, ischaemic stroke or renal failure, among others). Thus, the first recommendation regarding preoperative anaemia refers to early detection and management, well in advance of the elective major surgery. In situations with iron deficiency, patients are managed by supplementation with intravenous or oral iron, depending on the severity of the anaemia, the time available up to surgery, or tolerance and degree of absorption of oral iron. The routine use of erythropoiesis-stimulating agents was not recommended given the low efficacy and possibility of adverse effects, such as thrombotic events. However, in the case of major orthopaedic surgery in adults with haemoglobin levels less than 13 g/dl, it is recommended to assess the risk-benefit of the use of erythropoietin together with an iron supplement, as it can reduce the need for transfusion.

Eleven PICO questions focused on RBC transfusion thresholds, generating 4 recommendations in favour of a restrictive transfusion policy. Thresholds of haemoglobin levels <7 g/dl in stable critical patients and <7.5 g/dl in cardiac surgery was “strongly” recommended by the panel, since the studies analysed have not shown any benefit of liberal therapy versus the proposed restrictive thresholds. Since there is less evidence and new clinical

trials are necessary, a “conditional” recommendation for thresholds of 8 g/dl in patients with hip fracture and cardiovascular disease or other risk factors and 7–8 g/dl in patients with gastrointestinal and haemodynamically stable bleeding was proposed.

Regarding the implementation of PBM programmes, the panel of experts recommends implementation of these programmes with the application of computerised decision algorithms to optimise the use of blood products.

Along with the recommendations commented upon, the consensus conference highlights a series of points in which evidence is lacking, such as:

- different haemoglobin thresholds for the diagnosis of anaemia in different groups of patients,
- the efficacy of iron supplements in non-anaemic but deficient patients undergoing major surgery,
- use of erythropoietin and iron supplements in settings other than major orthopaedic surgery,
- transfusion thresholds in haemodynamically stable patients, but with comorbidities or with gastrointestinal bleeding, or,
- effectiveness and performance of the implementation of PBM programmes.

With all this, the paper offers a global and objective vision of PBM programmes, as well as weaknesses or aspects that need further evidence.