

EDITORIAL

Are there alternatives to the shortage of blood in South Africa?

From time to time, the South African National Blood Service disseminates messages that the country's blood stock levels are running very low. The average blood stock level varies from 4.6 days for group B to 10.7 days for group AB blood in non-emergency situations.¹ However, with the December festive period approaching, these blood stock levels usually drop significantly as the demand for blood transfusion increases because of fatalities from motor vehicle accidents, traumatic injuries and obstetric haemorrhage. The solution to blood shortage is not simple in South Africa as potential blood donors dwindle, safety fears increase with regard to contracting blood-borne infections and healthcare workers constantly deal with the ethical dilemma of Jehovah's Witnesses whose doctrine forbids them from accepting blood transfusions. Globally, the safety of blood transfusion has improved substantially since the 1980s, when human immunodeficiency virus (HIV) was discovered to be blood transmissible.² However, one of the biggest challenges to blood safety in sub-Saharan Africa is being able to access safe and adequate quantities of blood and blood products.³

In view of the fact that we constantly have a blood supply shortage in South Africa, it is imperative for family physicians to be knowledgeable about blood supply alternatives as a measure of reducing dependence on this product. I am fully aware of the importance of blood transfusion in saving lives, especially in emergency situations. However, we should be cognisant of the fact that blood transfusions have been associated with increased mortality⁴ and length of hospital stay relating to infections and sepsis,⁵ as well as multi-organ system dysfunction.⁶

The 2013 update to the "Seville Document" on alternatives to allogeneic blood transfusion is a good reference for any healthcare professional who is interested in evidence-based guidelines on this topic.⁷ The rest of this editorial is devoted to a few sections from this document on alternatives to allogeneic blood transfusion. Preoperative autologous blood donation, which involves the withdrawal, days to weeks prior to any intervention, of one or more units of the patient's own blood, is a well-known but less practised procedure. The latter is appropriate for elective surgery in which blood transfusion is required, but the patient should be not anaemic and must be willing to have his or her blood taken and stored before the procedure. Autologous blood transfusion is contraindicated in HIV-seropositive patients, those with serious cardiovascular diseases and in those with active bacterial infection. It is an alternative to blood transfusion which doctors should consider for elective procedures.

Pharmacological measures can be used to stimulate erythropoiesis as an alternative to allogeneic blood transfusion. These include iron, folic acid, erythropoietin, vitamins C, B₁, B₆ and B₁₂. Intravenous iron is more effective than oral iron, but the latter is cheaper. The administration of pharmacological alternatives reduces anaemia and transfusion rates. The emergency situation, in which there is acute blood loss, is a challenge to blood transfusion alternatives. The correction of

haemorrhage-associated hypovolaemia in the initial stages of blood loss occurs through the administration of crystalloid and/or colloid solutions as hypovolaemia is less well tolerated than anaemia.

Haemoglobin-based oxygen carriers are another alternative to allogeneic blood transfusion. Hemopure[®] is the only haemoglobin-based oxygen carrier in South Africa, approved by the Medicines Control Council in 2001 for the treatment of adult surgical patients who are acutely anaemic. It is a cell-free haemoglobin solution derived from bovine haemoglobin, and has been shown to save the lives of 42% of haemorrhaging and severely anaemic patients who would have otherwise died, and has no lasting side-effects.⁸ The product is stable at room temperature, has a shelf life of three years and requires no blood cross-matching.

So why is this product not being used commonly in South Africa to reduce the need for allogeneic blood transfusion? Only a few studies in which this product was used have been conducted in South Africa. In 2008, a metaanalysis⁹ of haemoglobin-based oxygen carriers, which combined five different products and pooled 22 Hemopure[®] studies using varying methodologies and diverse settings on heterogeneous patient populations with differing controls, incorrectly concluded that there was an increase in mortality and myocardial infarction with the use of all these products, but which was not the case with Hemopure[®] which is unconditionally accepted by Jehovah's Witnesses. The cost of the product may be another reason for the low uptake, but allogeneic blood is also expensive. We will have to actively use alternatives to allogeneic blood transfusion if we wish to change the practice of blood transfusion in the country. I welcome responses to this editorial.

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