Major haemorrhage in rural Australia: time for a novel solution to a unique problem?

TO THE EDITOR: The past decade has seen significant change in the management of major haemorrhage, including earlier and more aggressive use of fresh frozen plasma (FFP). Australian guidelines now advocate high ratios of FFP to packed red blood cells (PRBC) from the outset of resuscitation. Preparation of one unit of FFP for every two units of PRBC is recommended. This approach is supported by a recent meta-analysis demonstrating a reduction in organ failure and mortality with high FFP:PRBC ratios.2

In Australia, 40% of major trauma incidents originate in rural areas,3 some distance from tertiary or even secondary care. Initial resuscitation often falls to general practitioners (with no blood bank) or aeromedical services.

In a 2010 international survey of 29 aeromedical services conducted by the Royal Flying Doctor Service (RFDS) (Western Operations), the seven responding Australian services reported difficulty accessing blood products. Only three had immediate access to PRBC, although all could obtain it within 45 minutes. None could obtain FFP without delaying departure, and only four had access within 45 minutes.

This difficulty in obtaining blood products, particularly FFP, was evident in an analysis of major haemorrhage management by the RFDS (Western Operations). Of 7585 patients transferred in the 2009–10 financial year, 610 (8%) had a diagnosis that put them at risk of major haemorrhage; of these, 58 (9.5%) demonstrated physiological derangement predictive of requiring massive transfusion and did receive transfusion in flight. However, the FFP:PRBC ratios fell short of accepted standards (Box), particularly in patients originating from non-regional hospital locations.

As logistical difficulties with storage and preparation render FFP impractical in remote Australia, alternative sources of coagulation factors must be explored. European groups have proposed replacing FFP with freeze-dried factor preparations (fibrinogen concentrate and prothrombin complex concentrate),4 which are currently available in Australia. These are easier to store, transport and deliver, and may be safer and more efficacious than FFP.4 Evidence that tranexamic acid significantly reduces mortality in trauma-related haemorrhage5 has been met with a guarded response in Australia. The study was conducted in developing countries with limited access to blood products and its applicability here has been questioned, although it may be highly applicable to remote and regional areas where FFP is scarce.

Ongoing research and the planned Australian Massive Transfusion Registry will contribute further to the debate. When devising major haemorrhage strategies, however, it should be remembered that managing bleeding in Melbourne and managing bleeding in Meekatharra (in remote Western Australia) are two very different prospects.

Stuart A Gillon
Retrieval Registrar
Cem R Kibar
Emergency Physician
Royal Flying Doctor Service (Western Operations), Perth, WA.
gillon@me.com

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