Untangling the Forward Blood Transfusion Conversation

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Forward blood transfusion has, for good reason, gained significant attention from Defence leadership and within the Australian military health profession. However, we've observed that conversations regarding the forward fresh whole blood (FWB) transfusion capability often confuse or entangle with discussions about autologous FWB transfusion training.

This poses two distinct risks. First, there is the potential for people to erroneously believe that autologous transfusion training carries the same clinical risks as therapeutic blood transfusion, leading to misdirected apprehension about the training itself. Second, reluctance or trepidation about the specifics of autologous transfusion training could hinder or delay the implementation of forward FWB transfusion as a Ready Now capability.

Chan and colleagues' recent publication on autologous FWB transfusion training contributes valuable insights to this conversation and illustrates the potential for such confusion.[1] For instance, while relevant in a clinical context, their discussions of blood-borne viral transmission and transfusion reactions do not apply to autologous transfusion training. Likewise, the referenced reductions in haemoglobin and ferritin levels were observed in a trial analysing serial donations for operational resourcing, not transfusion training.[2] In each instance, readers might erroneously perceive that these risks also apply to autologous transfusion training. Our workplace discussions affirm the prevalence of these misunderstandings.

Similarly, the assertion that 'autologous FWB training is essential to achieve and maintain proficiency in FWB transfusion' explicitly links capability to training.[1] The 'scepticism and reluctance' many have regarding autologous transfusion training will be unnecessarily transferred onto the forward FWB transfusion capability.[1] Decision-makers' apprehension about autologous transfusion training may prevent them from supporting the implementation of the transfusion capability, as they have been told that they cannot have one without the other.

Before we move on, it is important to briefly clarify some definitions: autologous procedures (in this case, transfusion) are where a person receives cell or tissue from their own body. Importantly, autologous transfusions have several medical applications; most are not conducted for training. In contrast, receiving another person's blood is an allogenic transfusion.

A forward FWB capability (the what) should be delinked from the conduct of autologous transfusion training (a proposed how). To further disarticulate the two conversations, we would like to make a few points:

- There is no risk of blood-borne viral transmission from one's own blood in autologous transfusion training. Viral testing is unnecessary for training.
- Similarly, in autologous transfusion training, there is no risk of haemolytic or other antibody-mediated transfusion reactions from one's own blood. Antibody titre level measurements are unnecessary for training.
- The exception to the statements above is in the case of human error leading to a volunteer receiving another person's blood (i.e. an allogenic transfusion). This potentially catastrophic complication has occurred at least once in autologous transfusion training—a medic was transfused with half a bag of another's incompatible blood accidentally.[3] Luckily, no reaction occurred, but the outcome may have differed greatly. Strict adherence to the clinical governance and safety architecture overseeing transfusion training is unwaveringly critical.
- The haemoglobin and ferritin drop referred to in Chan's paper were not in the context of autologous transfusion skills training. These observations occurred in blood donors who repeatedly donated to a simulated blood bank. The whole blood was refrigerated for 22–24 hours before being reinfused; this occurred up to five times in each volunteer over five weeks.[2] This study was intended to test the feasibility of a temporary surge FWB blood bank during a high-risk operational period with a limited donor pool. A statistically significant (but arguably clinically insignificant) reduction in haemoglobin and ferritin were observed. The study involved

autologous transfusion, but not autologous training transfusions—several critical elements differentiate the studied process from autologous training transfusions.

- Several authors have asserted or implied that autologous transfusion is required for the forward FWB transfusion capability, but none have articulated a robust argument to support this assumption.[1,4,5] While the prevailing consensus is that autologous FWB training offers the preferred means of affirming accurate quantitative venesection and subsequent transfusion practice, it seems unlikely to be the only means to achieve this—several other clinical proficiencies are maintained without training on volunteers. It may be true that this is the best method for training forward FWB transfusion, or even the only suitable method, or it may not be. This warrants further investigation, but prolonged deliberation over the training modality should not delay the end state.

Finally, readers may also be interested to know that autologous FWB transfusion training is no longer limited to the military. Since 2019, Norwegian medical students have regularly undertaken autologous transfusion training.[6] This is a much smaller program with substantially more theoretical training.

We believe that discussing FWB capability and training distinctly is crucial. Clinicians, authors, advocates and decision-makers should explicitly clarify which aspect they are addressing. Entwining or confusing these two conversations threatens the future development of both.

(Views are the authors' own)

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