Intraosseous (IO) access is used by military first responders administering fluids, blood, and medications. Current IO transfusion strategies include gravity, pressure bags, rapid transfusion devices, and manual push-pull through a three-way stopcock” Auten et al (2018).

Abstract:

BACKGROUND: Intraosseous (IO) access is used by military first responders administering fluids, blood, and medications. Current IO transfusion strategies include gravity, pressure bags, rapid transfusion devices, and manual push-pull through a three-way stopcock. In a swine model of hemorrhagic shock, we compared flow rates among four different IO blood transfusion strategies.

METHODS: Nine Yorkshire swine were placed under general anesthesia. We removed 20 to 25mL/kg of each animal’s estimated blood volume using flow of gravity. IO access was obtained in the proximal humerus. We then autologously infused 10 to 15mL/kg of the animal’s estimated blood volume through one of four randomly assigned treatment arms.

RESULTS: The average weight of the swine was 77.3kg (interquartile range, 72.7kg-88.8kg). Infusion rates were as follows: gravity, 5mL/min; Belmont rapid infuser, 31mL/min; single-site pressure bag, 78mL/min; double-site pressure bag, 103mL/min; and push-pull technique,
109mL/min. No pulmonary arterial fat emboli were noted.

CONCLUSION: The optimal IO transfusion strategy for injured Servicemembers appears to be single-site transfusion with a 10mL to 20mL flush of normal saline, followed immediately by transfusion under a pressure bag. Further study, powered to detect differences in flow rate and clinical complications, is required.

You may also be interested in...

Transfusion reactions and consequences of mismatched blood components
Suitability and safety of intraosseous access blood samples for transfusion
Impact of blood transfusion on HIV transmission

Reference: