

CASE STUDY: USE OF THE BELMONT® RAPID INFUSER IN HEMORRHAGE SHOCK DUE TO GUNSHOT WOUNDS

FLUID THERAPY IN THE TRAUMA CARE SETTING

Severe injury due to firearms remains a common problem in the United States. The standard of care in treating massive hemorrhage following any injury is repletion of lost blood using a "balanced resuscitation" strategy, which consists of 1:1:1 transfusion of packed red blood cells (PRBC) : Plasma : Platelets. More recently, some centers are using whole blood in addition to a balanced resuscitation to augment hemostatic ability. Rapidly and accurately providing a 1:1 ratio of PRBC : Plasma can be challenging due to the logistics of spiking bags of blood and plasma. In addition, the products are stored in a cold state and need to be warmed to prevent hypothermia, especially when they are administered rapidly and in large amounts.

"...the ability to precisely and quickly transfuse without the need for additional personnel is key to providing evidence-based care." —Dr. Babak Sarani, Director, Center for Trauma and Critical Care (CTACC), George Washington University

TREATMENT OF FIREARM RELATED INJURIES

A 35-year-old male sustained 6 gunshot wounds and arrived in extremis. He had a gunshot to the left flank, right chest, mid back, and 3 gunshots to the left elbow. Massive transfusion protocol was activated, and The Belmont was used to rapidly administer 2 units of whole blood prior to intubation. He was taken emergently to the operating room where he underwent a right thoracotomy with wedge resection of the right middle and lower lobes, laparotomy with left colectomy and ligation of bleeding lumbar vessels in the retroperitoneum, and a left forearm fasciotomy with ligation of the ulnar artery and reconstruction of the radial artery. He received 21 units of PRBC, 19 units of plasma, 2 units of whole blood via the Belmont (approximately 10 liters total). The patient also received 3 units of platelets and three 10-pack units of cryoprecipitate (not administered via the rapid infuser) in the first 6 hours following his arrival. Upon arrival to the ICU, the pH was 7.38 and the lactate was 3. He then underwent several more operations to address all his injuries and was discharged to acute rehabilitation on hospital day 30.



THE BELMONT ADVANTAGE IN RESOURCE MANAGEMENT

- Use of The Belmont Rapid infuser with the 3 Liter Reservoir allowed us to spike multiple units of blood products simultaneously in order to provide a 1:1 balanced resuscitation, which was delivered at body temperature, with no need to dedicate additional personnel solely to the task of ensuring ongoing transfusion.
- Hospital personnel are often limited in a massive transfusion setting, particularly after-hours, and the ability to precisely and quickly transfuse without the need for additional personnel is key to providing evidence-based care.