# Blood is for Bleeding, Salt Water is for Cooking Pasta: An introduction to the THOR Network's Supplement for the 2018 Remote Damage Control Resuscitation Annual Symposium

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Resuscitation practice for severe bleeding has changed since Landsteiner discovered ABO types in 1901, which permitted the US military to develop the practice of transfusing large amounts of whole blood for casualties in WWI roughly 100 years ago. Blood products were predominantly used to treat bleeding until the 1960's when there was a transition to the primary use of crystalloids or "salt water" for the initial resuscitative solution. The past 15 years, since the early days Operation Iraqi Freedom, have seen the pendulum swing back to the primary use of blood for bleeding. The adverse effects of "salt water" are now more widely appreciated, to the point where in many trauma centers the goal is to completely avoid using it except as a carrier for medications. The changes back to a blood based resuscitation for bleeding and avoidance of crystalloids has led to the battle cry of the Trauma, Hemostasis, and Oxygenation Research (THOR) Network, BLOOD IS FOR BLEEDING, SALT WATER IS FOR COOKING PASTA.

Welcome to the Trauma, Hemostasis, and Oxygenation Research (THOR) Supplement. The THOR network continues to grow and now has 295 members from 22 countries that span the entire scope of trauma and massive bleeding resuscitation, from first responders to transfusion medicine physicians to trauma surgeons. Importantly, THOR has both military and civilian members, so as to facilitate knowledge transfer and best practices for the good of all bleeding patients. You might not yet have heard of THOR, but you are probably aware of some of our activities, such as helping to change the AABB Standard to allow for the use of low titer group O whole blood transfusion to recipients of unknown ABO group, and the full day workshop it leads on therapies for hemorrhagic shock at the annual AABB meeting.

This Supplement, our third in Transfusion, is composed of invited papers, many of which were presented at our annual meeting in June 2018 near Bergen, Norway. These papers were selected to highlight the state of the art in the resuscitation of massively bleeding patients. The first section of the Supplement features some commentaries on the nature and epidemiology of trauma in both the civilian and military fields, as well as on the ideal blood products for resuscitating these patients. Then there are several original research studies on platelet storage and novel platelet products, followed by studies describing issues related to antibodies and compatibility testing. There are several papers dealing with the topic of traumatic brain injury, and optimizing the storage and function of red blood cell-containing products. The next few manuscripts highlight some innovations in plasma transfusion and novel plasma products, followed by some very interesting papers detailing the use of drones for blood product delivery, fibroblasts and stem cell for treating trauma patients, and a novel method of using the ROTEM device for predicting who will require a massive transfusion in the military setting.

We hope you will find these manuscripts thought provoking as we move forward in developing best practices for resuscitating traumatically injured and massively bleeding patients.

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