Massive Hemorrhage Protocols – Dr. Jeannie Callum & Dr. Katerina Pavenski

Massive hemorrhage poses a critical challenge in medical settings, demanding swift and coordinated responses to ensure patient survival. Effective management of massive transfusion necessitates a well-orchestrated protocol encompassing various essential components.

Activation of the Massive Hemorrhage Protocol (MHP):

Activation of MHP is triggered upon recognition of life-threatening bleeding, typically when the patient has the right mechanism of injury to trigger massive hemorrhage (high speed blunt trauma, penetrating injury to the trunk, postpartum bleeding) coupled with concerning hemodynamics (shock index >1.4) and no response to front line crystalloid and red cell transfusion. MHP activation initiates a coordinated effort to rapidly restore hemostasis and stabilize the patient until surgical control of hemorrhage can be achieved. The majority of patients with gastrointestinal hemorrhage can be managed without activation of the MHP (rapid access to uncrossmatched red cells).

Assembling the Clinical Team:

An interdisciplinary team comprising surgeons, anesthesiologists, hematologists, transfusion medicine specialists, nurses, and laboratory personnel must be rapidly mobilized. Clear communication channels and predefined roles ensure efficient coordination and execution of tasks. Prior exposure to drills and simulations are critical to adherence to protocols.

Administration of Tranexamic Acid (TXA):

TXA, an antifibrinolytic agent, is administered early to reduce bleeding and correct the coagulopathy. TXA should be administered in the setting of life-threatening hemorrhage from trauma, postpartum bleeding, and prophylactically for all major surgeries.

Collection of Laboratory Samples:

Serial blood samples are collected every 30-60 minutes to monitor coagulation status, electrolytes, and blood counts. Timely assessment guides transfusion decisions and identifies coagulopathies requiring targeted hemostatic interventions. The first 60 minutes of care, before laboratory results are available, are managed with a prophylactic use of 2:1 ratio of red cells to plasma. Once lab results are available, personalized response to hemostatic derangements is recommended. The collection of the group and screen must be prioritized to allow transition to group-specific red cells and plasma.

Transfusion into Target Zones:

Blood products are transfused judiciously to optimize oxygen delivery while minimizing risks of fluid overload and transfusion-related complications. Targeted transfusion strategies, to maintain hemoglobin between 70-90 g/L, INR<1.8, Fibrinogen >1.5 g/L (>2 g/L in cardiac and obstetrical bleeding), and platelets >50 (>100 with brain/spine bleeding).

Prevention of Hypothermia:

Hypothermia exacerbates coagulopathy and increases mortality. Measures to maintain normothermia include using warmed fluids, blankets, and forced-air warming devices throughout the resuscitation process.

Termination of MHP:

MHP is terminated once hemorrhage control is achieved, evidenced by hemodynamic stability, cessation of ongoing bleeding, and normalization of laboratory parameters. Transitioning to conventional transfusion protocols and post-resuscitative care ensures ongoing patient management.

In conclusion, effective management of massive transfusion demands a systematic approach integrating timely activation of protocols, collaborative teamwork, targeted interventions, and vigilant monitoring. By addressing these core aspects comprehensively, healthcare providers can optimize outcomes and improve survival rates in patients experiencing massive hemorrhage.