

Traumatic Hemorrhagic Shock

Purpose: To assist hospitals in treating trauma patients with hemorrhagic shock. To provide a standardized evidenced based approach throughout the Regional Trauma Network of a multi-pronged approach to the bleeding patient thereby improving identification of, treatment of and ultimately better patient outcomes. Early referral to the Lead Trauma hospital via Criticall is essential.

Background: Mortality dynamics have changed for trauma patients over the last decade due to more efficacious EMS and better management of post surgical complications. We are now seeing more early hospital death (within 12 hours). Hemorrhage is responsible for 45% of deaths in first 48 hours and 6% – 15% of trauma patients are in hemorrhagic shock at presentation. Despite significant advances in care, hemodynamic instability from blood loss is common. A large body of literature exists that has demonstrated superior efficacy with a multi-pronged approach to the management of the bleeding trauma patient in order to prevent the development of the coagulopathy of trauma. This includes rapid identification of shock, limited administration of crystalloids, early multi component blood therapy, administration of tranexamic acid, stopping the bleeding and early transfer to a Level 1 trauma facility.

Assessment/Treatment: Initial management should follow ATLS protocol – with rapid assessment of the hemodynamically unstable patient. Once hemorrhage is identified, treatment focuses on external bleeding control and volume replacement. Minimizing crystalloid use and early administration of warmed blood/ blood components and Tranexamic Acid is recommended. Consult and /or transfer to a Level 1 trauma centre early. Pelvic hemorrhage control is achieved through mechanical stabilization of the pelvic ring. Application of these principles will provide rapid stabilization and minimize the incidence of the coagulopathy of trauma.

Recommendation: Evidence for the use of a multi-pronged approach to hemorrhage control demonstrates a clear reduction in mortality, especially if all components are followed. This will facilitate rapid stabilization prior to transfer; thereby reducing risks associated with transfer and will reduce the incidence of coagulopathy. Collectively this reduces the early mortality of trauma secondary to hemorrhage

Implementation: Attached algorithm developed by a working group from the Central South Regional Trauma Network as a suggested approach, with appropriate references. Local hospital implementation will be at each facilities discretion and in accordance with available equipment and resources.

References

- 1) Holcombe et al. J Trauma 2007;62:307–310.
- 2) Hewson et al. Crit Car Med 1985;13:387.
- 3) Hirschberg et al. J Trauma 2003;54:454.
- 4) Cotton et al. J Trauma 2008;64:1117.
- 5) Brohi et al. J Trauma 2003; 54:1127-1130
- 6) MacLeod et al. J Trauma 2003; 55: 38-44
- 7) Cotton et al. J Trauma 2009;1004-1012
- 8) Stephens et al. Curr. Opin Anesthesiol 2016; 29:250-255
- 9) Holcolombe et al. JAMA 2015; 313:483-494

- 10) Del Junco et al. J Trauma Acute Care Surg 2013; 75:S24-S30
- 11) Cotton et al. Ann Surg 2011; 254:698-605
- 12) CRASH 2. Lancet 2010;276: 23-32
- 13) Grissom, T.E and R. Fang. Curr Opin Anesthesiol. 2015; 28(2): 210-216
- 14) Simmons et al. Curr Opin Anesthesiol. 2015; 28: 191-200
- 15) Davenport, R.A and K. Brohi. Curr Opin Anesthesiol.2016; 29:212-219