



Figure 1. A Western Trauma Association critical decisions algorithm for prehospital resuscitation in adult patients following injury.

blood components for resuscitation because they have the capabilities to appropriately store and monitor blood products at their respective bases and during transport. In both military and civilian settings, packed red blood cell transfusion, when initiated early after injury, has been shown to be associated with a survival benefit for air medical transport patients.⁴⁻⁶ Prehospital plasma has similarly been demonstrated to be safe¹³ and reduce mortality when provided in the prehospital arena in patients at risk of hemorrhagic shock.⁷ Cold-stored whole-blood transfusion has become increasingly common for civilian in-hospital resuscitation¹⁴⁻¹⁷ and is even available in a small number of trauma systems across the country in the prehospital setting.^{18,19} Studies are in progress to determine the potential benefits of cold-stored whole blood in both the in-hospital and prehospital environments. In those transport systems where whole blood or blood components are available, blood product transfusion should be initiated in those with hemodynamic instability or in those patients with concern for hemorrhage targeting an SBP of 100 mm Hg. Crystalloid infusion should not be provided prior to blood product infusion in these patients. Once all prehospital blood products have been transfused and continued hemodynamic instability or concern for hemorrhage exists, crystalloid resuscitation may be initiated with blood pressure

targets based on concern for traumatic brain injury (TBI) and prehospital time.

Concern for TBI

For those air medical or ground transport patients without blood products available who are at risk of hemorrhage, crystalloid infusion should be initiated once IV access is obtained. Prehospital hypotension in patients with TBI should be minimized as it is associated with detrimental outcome.^{20,21} Evidence suggest that there is no threshold blood pressure level that is safe and that outcomes are linearly associated with prehospital systolic blood pressure.²² In patients with concern for TBI based on mechanism of injury, Glasgow Coma Scale score, or external signs of injury, crystalloid infusion should target a systolic blood pressure greater than 100 mm Hg.

Preliminary unpublished data presented from a recent completed randomized trial which focused on prehospital tranexamic acid (TXA) in patients with concern for TBI demonstrated benefit in patients with documented brain injury.²³ Tranexamic acid should be considered in this cohort of patients based upon the current evidence available. No evidence for prehospital TXA in those at risk of hemorrhage exists currently but clinical trials will be completed in the near future.