

The tPA Bleed
4/22/2018

Administering tPA incurs about a 6% intracranial bleed risk
tPA has no reversal, so our management is to bolster physiologic coagulation and inhibit fibrinolysis
The overall goal is to get the bleeding intracranial vessel to stop bleeding

Approach to tPA bleeds: optimize physiologic coagulation

- **Platelets:** check a level and transfuse if <100k
- **Fibrinogen:** check a level and give cryoprecipitate if <150 mg/dL
- **Coagulation Factors:** either give FFP or Prothrombin Complex Concentrate (PCC)
- **Inhibit Fibrinolysis:** inhibit plasmin with tranexamic acid (TXA) or aminocaproic acid (ACA)
- Management rationale and mental checklist: Damaged endothelium exposes collagen and extracellular matrix providing binding sites for platelets, these are crosslinked by fibrinogen. This environment activates the coagulation cascade to pump out thrombin which forms your definitive fibrin plug. The TXA/ACA inhibit plasmin which breaks down the fibrin clot! This management assures that optimal platelet plug and clot formation is occurring.

Bonus Facts:

- Be a rock star and **know other aspects of management** as well: BP control (<160/90), vasospasm prophylaxis (nimodipine), seizure prophylaxis (consider Keppra or Phenytoin), consult neurosurgery, manage oral secretions + raise head of bed, remove urinary catheter ASAP, DVT ppx with compression devices, fall prevention, frequent repositioning to prevent bedsores, maintain euthermia, euglycemia, euvolemia!
- Here's your **dosing** from AHA/ASA (Yaghi et al, 2017) – check out page 9

Cryoprecipitate	10 units and PRN to keep >150 mg/dL
Platelets	8-10 units from 2 donors to keep >100K
FFP	12 mL/kg
PCC	25-50 U/kg based on INR
Vitamin K	10 mg IV
TXA	10 mg/kg 3-4 times/day
ACA	4G IV in first hour then 1g/h for 8 hours

Reference:

Yaghi, S., Willey, J. Z., Cucchiara, B., Goldstein, J. N., Gonzales, N. R., Khatri, P., ... & Schwamm, L. H. (2017). Treatment and outcome of hemorrhagic transformation after intravenous alteplase in acute ischemic stroke: a scientific statement for healthcare professionals from the american heart association/american stroke association. *Stroke*, 48(12), e343-e361.