

8 Hemorrhage

Acute massive bleeding

START

- 1 Call for help (Anesthesia FW 662-4351)
 - ▶ Ask: "Who will be the crisis manager?"
- 2 Open IV fluids and assess for adequate IV access
- 3 Turn FiO₂ to 100% and turn down volatile anesthetics
- 4 Call blood bank (662-2121)
 - ▶ Activate massive transfusion protocol
 - ▶ Assign 1 person as primary contact for blood bank
 - ▶ Order blood products (in addition to PRBCs)
 - 1 FFP: 1PRBC
 - If indicated, transfuse platelets
- 5 Request rapid infuser (or pressure bags)
- 6 Discuss management plan between surgical, anesthesiology and nursing teams
- 7 Call for surgery consultation (vascular, trauma) Amion or Remis
- 8 Keep patient warm (convection, fluid warmers)
- 9 Send labs (CBC, ABG, DIC Screen, iCa)
 - ▶ Fill tubes from massive transfusion cooler and ABG
- 10 Consult MMC Massive transfusion policy

11 Consider...

- ▶ Electrolyte disturbances (hypocalcemia and hyperkalemia)
- ▶ Uncrossmatched type O blood if crossmatched blood not available
- ▶ Damage control surgery (pack, close, resuscitate)
- ▶ Special patient populations (see considerations below)

DRUG DOSES and treatments

HYPOCALCEMIA treatment

Give calcium to replace deficit (calcium chloride or calcium gluconate)

HYPERKALEMIA treatment

1. Calcium gluconate • 30 mg/kg IV
- or -
Calcium chloride • 10 mg/kg IV
2. Insulin • 10 units regular IV with 1 – 2 amps D50W as needed
3. Sodium bicarbonate • 1 – 2 mEq/kg
If pH < 7.2 slow IV push

SPECIAL PATIENT POPULATIONS

OBSTETRIC:

- Empirical administration of 1 pool of cryoprecipitate (10 cryo units)
- Check fibrinogen... (goal is fibrogen > 100 mg/dl)

If first fibrogen level is:

<100 Mg/dL	Order 2 more pools of cryoprecipitate
100-200 Mg/dL	Order 1 more pool of cryoprecipitate

TRAUMA

Give either:

- Antifibrinolytic tranexamic acid: 1000 mg IV over 10 minutes followed by 1000 mg over the next 8 hours.
- or-
- Aminocaproic acid: 4 – 5g in 250 mL NS/RL IV over first hour followed by a continuing infusion of 1g in 50 mL NS/RL IV per hour

NON-SURGICAL UNCONTROLLED BLEEDING despite massive transfusion of PRBC, FFP, platelets and cryo:

- Consider giving Recombinant factor VIIa: 40 -80 mcg/kg IV (Pharmacy 662-3333)
 - Surgical bleeding must first be controlled
 - **Use with CAUTION** in patients at risk for thrombosis
 - **DO NOT use** when PH <7.2