



C I R C U L A T I O N

Priorities

Stop Bleeding

- Apply direct manual pressure
- Apply **tourniquet** if arterial bleeding from an extremity
 - * Blood Pressure Cuff makes good tourniquet
 - * Remember to record time tourniquet applied

Evaluate and Restore Perfusion

- Check pulses and blood pressure
 - * Femoral and/or carotid palpable? Y N
 - If yes, SBP>70mmHg
 - * Radial pulse palpable? Y N
 - If yes, SBP>90mmHg

It is Essential to Prevent Hypothermia!!!

- Increase room temp
- Warming systems (i.e. Bair Hugger™)
- Warm IV fluids/blankets

Place IV Lines

16 GAUGE NEEDLE IS PREFERRED

Unable to place lines in reasonable time?

- Consider intraosseus
- Consider central line if experienced with procedure



Fluid Management

Crystalloids are not benign!!

- Associated with edema
- Prolonged mechanical ventilation
- Normal saline causes metabolic acidosis
- Associated with multiple organ failure and systemic inflammatory response syndrome (SIRS)

**Limit Normal Saline (NS) and Lactated Ringers (LR) :
>3L of Crystalloid is associated with worse
outcomes!**

Tips to limit Crystalloid infusion

- Do not leave IV lines "wide-open"
- Give IV fluid in 250-500 ml boluses only
- Tolerate lower blood pressures
 - Mean Arterial Pressure (MAP) 65 is adequate
 - SBP > 90 is adequate
- Use blood products for resuscitation early
 - PRBC's are first line
 - FFP should be used EARLY if available
 - **See Massive transfusion strategy for Level III and IV trauma centers**

MASSIVE TRANSFUSION STRATEGY FOR LEVEL IV AND V TRAUMA CENTERS

**There is limited application for massive transfusion in critical access hospitals!
BLEEDING NEEDS TO BE EVALUATED BY A SURGEON:
IN NO CASE SHOULD TRANSFUSION DELAY
TRANSPORT TO DEFINITIVE CARE!**

Making the Decision to Transfuse:

- 1) Contact has been made with accepting hospital and transfer arrangements are being made. Y N
- 2) A source of bleeding has been identified or a specific source is considered highly likely. Y N
- 3) The patient is hypotensive with a systolic blood pressure <90 mmHg. Y N
- 4) The patient was not responsive or transiently responsive to the first fluid bolus given per trauma treatment guideline poster algorithm. Y N

**If you answered “YES” to all of the above,
it is appropriate to initiate the massive
transfusion protocol.**

**Current literature and limited FFP resources best support
a transfusion ratio of 2 UNITS PRBC'S TO 1 UNIT FFP (2:1 RATIO).**

Resuscitation/Transfusion Strategy for Level IV & V Trauma Centers Possessing Component Blood Products

