

FR	Universal Care	1-01
FR	Airway/O ₂ Maintenance	A-01
FR	Spinal Immobilization	1-06

Control any gross hemorrhage and dress wounds

Consider tourniquet or other hemorrhage control device(s) per guidelines

A	IV Protocol	1-03
A	Hemorrhagic Shock	T-03

**Permissive Hypotension:
Target SBP 80-90 mmHg in adults**

If any cardiac concerns

P	Continuous ECG Monitoring & 12-Lead ECG	1-05
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Pain Management RX-02

Unstable or Potentially Unstable Patient?
(i.e. High-Energy Mechanism)

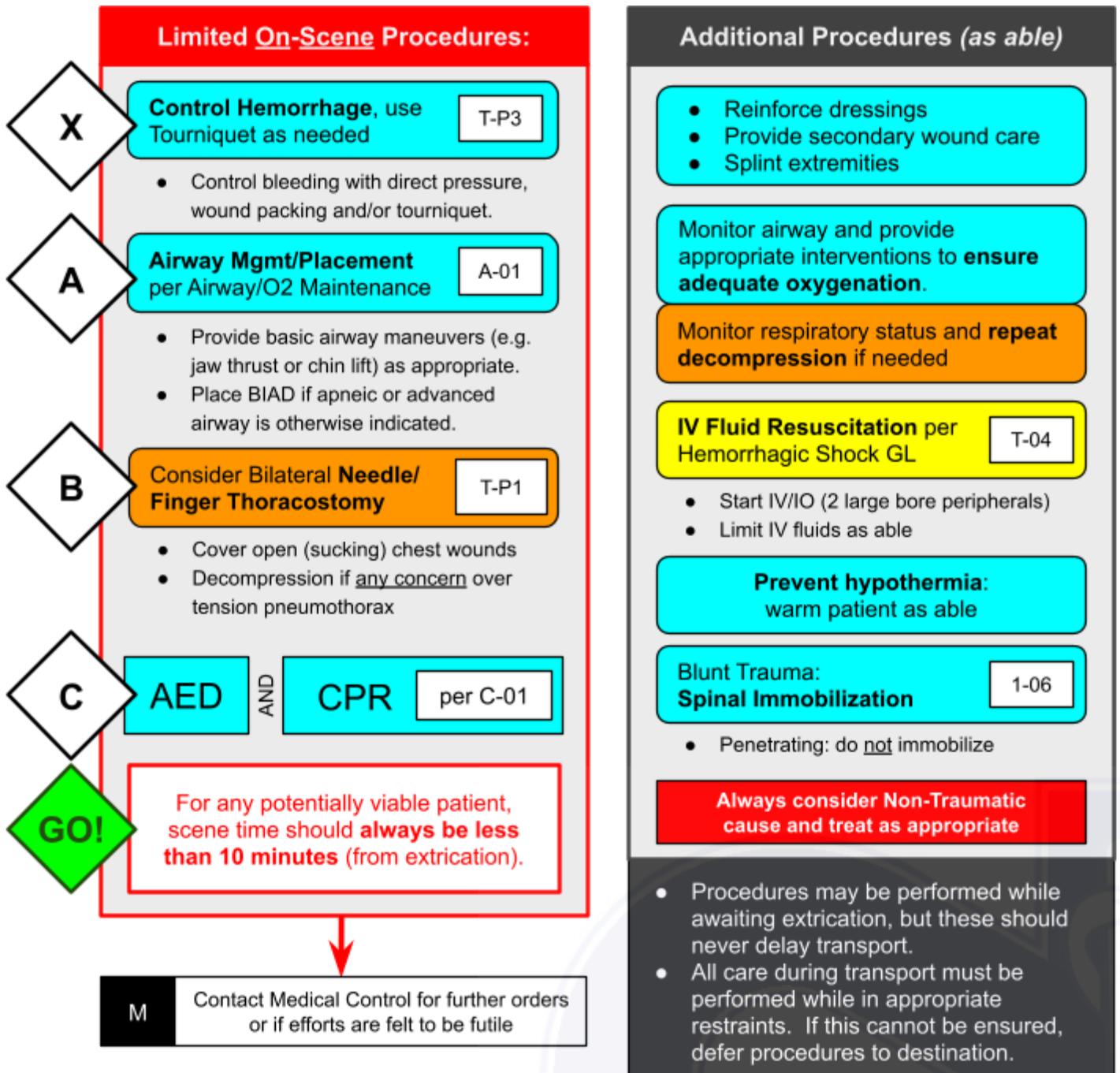
Treat per appropriate Trauma and/or Medical Clinical Guideline TOC

YES

Critical Scene Care & Transport Goals BELOW

Always consider:
Non-Traumatic Causes
of
Altered Mental Status [M-04]
or Medical Shock [M-06]

Unstable or Potentially Unstable Trauma Patients:



**T-01
INITIAL MULTI-SYSTEM
TRAUMA CARE**



Glasgow Coma Scale (GCS):			Trauma Score:		
EYES	Spontaneous	4	Respiratory Rate	10-24/min	4
	Opening to voice	3		24-35/min	3
	Response to pain	2		>36/min	2
	None	1		1-9/min	1
				None	0
VERBAL	Oriented	5	Resp. Expansion	Normal	1
	Verbal confused	4		Retractive	0
	Inappropriate words	3	Systolic BP	>90 mmHg	4
	Incomprehensible sounds	2		70-89 mmHg	3
	None	1		50-69 mmHg	2
		0-49 mmHg		1	
		No Pulse		0	
MOTOR	Obeys commands	6	Capillary Refill	Normal	2
	Localizes pain	5		Delayed	1
	Withdraws (to pain)	4	GCS	14-15	5
	Flexion (arms towards head)	3		11-13	4
	Extension (away from head)	2		8-12	3
	None	1		5-7	2
		3-4		1	

Pediatric Trauma Score (<15 years old):

Component	+2 points	+1 point	-1 point
Size (weight)	>20 kg	10-20 kg	<10 kg
Airway	Normal	Oral/Nasal Airway	Unmaintainable/ Intubated
Systolic BP	> 90 mmHg	50-90 mmHg	<50 mmHg
CNS	Awake	Obtunded/LOC	Coma
Open Wound	None	Minor	Major/Penetrating
Skeletal	None	Closed Fractures	Open/Multiple Fractures

Total Point Values from Physical Presentation of Injury

Trauma Score _____ Sum of Points

Pediatric Trauma Pearls

- Trauma is the leading cause of death in children >1 yo
- “Pediatric” Definition
 - 14 or younger = Pediatric treatment/destination
 - 15 or older = Adult treatment/destination
- Pediatric Hemodynamics/Shock
 - Circulating blood volume = 80 mL/kg
 - Hypotension = < 70 + (2 x age) mmHg
 - Kids compensate well early for decreased fluid volume
 - **Increased Heart Rate = compensatory mechanism**
 - **Blood pressure does not decrease until just before cardiovascular collapse**
 - Hemorrhagic Shock → limit IV fluids to minimum to maintain pulse/capillary refill (10 mg/kg boluses)
- Pain management

- Kids pain is undertreated/undermedicated
- Consider **Fentanyl Intrasal (IN)**
- Ketamine IN may be used after discussion with medical control

Traumatic Mechanisms

- High-Energy Mechanisms (a.k.a. "Trauma Criteria") → see DEST-02
 - Falls = 2-3 times child's height
 - Consider significant head injury with moderate height, such as the parent's shoulder, shopping cart, etc.
 - MVC unrestrained (including car seat not attached to base/seat), child ejected, etc.
 - Kid/Bike vs Auto → Impact considerations:
 - Impact 1 = lower legs (turns towards car)
 - Impact 2 = chest/abdomen/pelvis
 - Impact 3 = projectile → head first
 - Crushed by object (dresser, bookcase, TV, etc.)
 - Head injury common
 - **Chest injury (crush) = asphyxia** (respiratory arrest)
- Non-accidental trauma (Child Abuse) → *See P-03 for more information/examples*
 - Can be physical, emotional, sexual, and/or neglect (usually 2 or more)
 - Pay attention to siblings for signs of abuse
 - Evaluate environment, cleanliness, paraphernalia, interactions, etc.
 - **Suspect If stories do not match**
 - Clearly document reported histories and specific exam findings, **but do not guess/document the cause**, just the evidence.
 - Report to supervisor and receiving hospital so that DCS may be contacted.

Anatomy of Pediatric Injuries

- Head Injury:
 - Infants (<12 months)
 - Fontanelle still open
 - Allows increased swelling/volume before deterioration
 - Monitor for delayed symptoms/decreasing mental status
 - Altered LOC → Child should cry when examined, but should be consolable by family. If not, consider significant pain or change in mental status.

- **Vomiting with changed/decreased LOC = BAD**
- Treatment:
 - Place C-Collar if any suspicion of spinal injury
 - Place head of bed up 30-45 degrees, if possible
- Spinal Injury:
 - SCIWORA
 - Loose ligaments can lead to a spinal cord injury (SCI) without evidence of bony injury (radiographic abnormality, RA)
 - Clinical presentation = **neuro complaints without pain** (paresthesias in hands/feet)
 - Tx: High index of suspicion & **low threshold for C-Collar & ED evaluation**
 - Location
 - <8 yo = higher cervical
 - >8 yo = lower cervical (similar to adults)
- Chest Injury
 - Flexible cartilaginous ribs = less rib fx → less pneumothorax
 - More pulmonary contusions (bruising) → **monitor SpO2**
- Abdomen & Pelvis
 - Liver, spleen and kidneys extend below the rib cage
 - Grunting/splinting may indicate abdominal bleeding
 - Suspect if **improper seat belt use or handlebar injury**
- Ortho
 - Long bone fractures more common
 - Remember pain management and appropriate splinting

Special Situations

- Burns
 - Keep warm thermoregulate
 - Fluid replacement (LR) if >20% BSA:
 - < 5 yo = 125 mL/hr
 - 6 - 13 yo = 250 mL
 - > 13 yo = 500mL/hr