Tactical Emergency Casualty Care (TECC)

First Receiver MASCAL Concept Map

STRATEGIC MEDICAL RESEARCH & TRAINING

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TECC First Receiver Outline

1000 Phases of Care

1001 Major Bleeding1002 Airway Management

1003 Respiration

1004 Circulation (Shock)

1005 Hypothermia 1006 Head Injury

1007 Pain Management

1008 Nursing Care 1009 Antibiotics

TECC First Receiver Phases of Care (TECC-FR-1000) DRAFT

PLANNING PHASE

PROTOCOL DEVELOPMENT

- Standing Order Sets -
- Plan for immediate actions for ALL staff (registration to internal medicine to house keeping).
- Develop patient care protocols that maximize scope of practice of all available providers.

LOGISTICS:

- Supplies / Meds / Blood -
- Access to adequate supplies
- Access to required medications in ED/Pharmacy
- Daily O -/+ quantity tracking
- Pre-loaded EMR Trauma #s

MASCAL READINESS

- Confidence / Competency -
- Quarterly hospital wide MASCAL drills
- Incorporate training into onboarding training for new employees.

PREPARATION PHASE "CODE TRIAGE"

EVENT

HOSPITAL WIDE

- Initiate hospital wide MASCAL plan.
- Secure facility
- Initiate RECALL Roster
- Initiate appropriate discharges

ED SPECIFIC

- Consolidate unstable patients
- Transfer, admit or discharge stable patients. "You don't have to go home, but you can't stay here"
- Contact tertiary facilities
- Assign ED staff roles
- Assign triage zones
- Distribute radios to team leads

SURGERY SPECIFIC

- Stop all elective surgeries
- Recall all staff
- Prepare all operating rooms

EARLY RECEIVING PHASE

VEHICLE DROP OFF

- Assign non-medical security staff to direct personal vehicles transporting casualties to appropriate area and staff to clear vehicles when unloaded.

REVERSE TRIAGE EFFECT

- Anticipate first casualties to arrive via car with mild to moderate injuries.
- Maintain resources for anticipated severely injured patients in late receiving phase.

PATIENT REGISTRATION & DOCUMENTATION

- Utilize paper records and standard documentation to maintain consistency.

LATE RECEIVING PHASE

EMS ARRIVAL

- Anticipate the most critical injured patients will arrive when resources are dedicated to the first arrivals.

FOCUS SHIFT

- Shift appropriate resources (staff, blood, etc) to the most critically injured patients.

RECALL STAFF ARRIVAL

- Assign recalled staff to appropriate established roles.
- Consider geographic zone assignments.

STABLIZATION, HOLDING & TRANSFER PHASE

TRANSFER CONSIDERATIONS

- Consider transferring GREEN patients to non-trauma centers.

HOLDING CONSIDERATIONS

- Consider using non-ED RN staff for GREEN and YELLOW treatments as appropriate.
- Utilize non-RN staff to maintain nursing care.

RECALL STAFF ARRIVAL

- Assign recalled staff to appropriate established roles.
- Consider geographic zone assignments.

RECOVERY PHASE

STAFF ROTATION

- Anticipate need to rotate staff caring for casualties.

RETURN TO NORMAL OPERATIONS

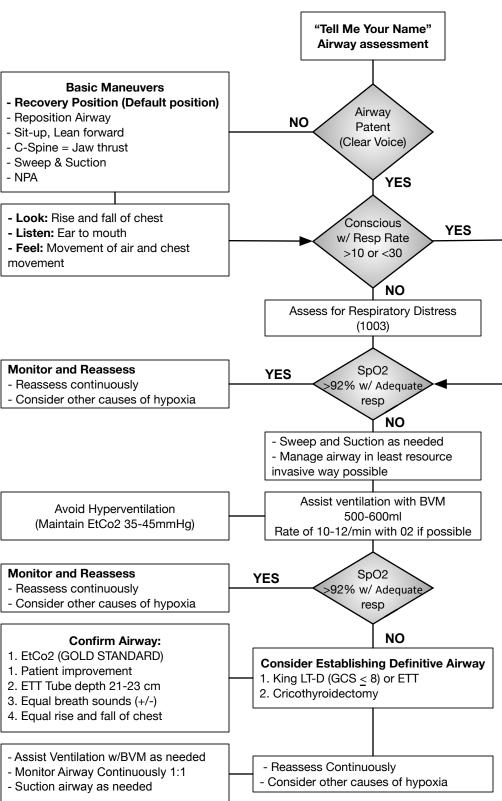
- Anticipate staff need to return to normal operations.

Reference: [1], [2], [5]

STRATEGIC First Receiver MEDICAL **Major Bleeding RESEARCH &** (TECC-FR-1001) TRAINING **Expose Patient** Locate Bleeding - Seemingly minor bleeding can add up to "If the blood is significant blood loss. **DRAFT** - 10ml blood loss/min = 600ml/hr moving, treat it" Apply direct and indirect pressure as indicated. Extremity Head/Neck Apply tourniquet Junctional 1. Maintain direct pressure. above wound 2. Apply hemostatic agent. 3. Refer to head injury protocol. 3. Apply pressure dressing with 1. Dedicated direct pressure YES Bleeding airway management or maintain 2. Pack hemostatic agent or Controlled direct pressure while transferring roller gauze. to damage control surgery. 3. Apply pressure dressing or NO maintain direct pressure while - Tighten tourniquet - Airway Considerations: transferring to damage control - Remove clothing Observe for expanding surgery. - Reassess source of hematomas that may impede bleeding airway. - Apply the second - Neck Injuries: Apply occlusive tourniquet above first. Reassess dressing to all neck wounds. - Reassess for bleeding Q 15 - Pack wound with - Complete detailed blood hemostatic agent. - Apply pressure bandage - Consider mechanism of injury - Control pain and internal bleeding - Blood on the Floor & 4 More: **Tourniquet Conversion** 1. Chest - Defer until skilled staff are available. 2. Abdomen - Four criteria must be present: 3. Pelvis 1. Casualty not in shock 4. Long Bones 2. Able to monitor wound closely for bleeding. 3. Tourniquet is not being SHARK TEAMS CONCEPT Assess for shock & used to control bleeding from - "You are a shark. Get out there and look for administer TXA per amputated limb Circulation (1004) protocol - EMTs, AEMTs and Paramedics and RNs 4. First attempt to remove -Splint suspected long must be experts at stopping bleeding fast tourniquet bones and pelvic fractures and carry the appropriate equipment in a - Leave the tourniquet loss around "Bleeding Control Bag". as indicated the affected limb for rapid re-- Only radioopaque gauze or roller - Treat/prevent Hypothermia application. gauze should be packed into wounds. (1005)- Adequate number of tourniquets need YES to be available within the department Bleeding for resupply. Controlled, NO - Reapply tourniquet and mark "DO NOT REMOVE" - Do not attempt to convert Reference: [1], [2], [5] Date Updated: 7/10/23 tourniquet again.

Airway Management (TECC-FR-1002)

DRAFT



Indications for Airway Management

- Secure airway prior to transport
- Airway obstruction
- GCS <8 or decreasing GCS
- Hypoxia (SpO2 <90%)

AVPU Assessment

- Alert
- Verbal Responds to verbal stimuli
- Pain Responds to painful stimuli
- Unresponsive Does not respond to any stimuli

Glascow Coma Scale

Eye Opening

Spontaneous To Voice 3 To Pain 2

None

Verbal Response

Oriented to time, place & person

Confused

Inappropriate Words

3 Incomprehensible Sounds 2

4

5

Motor Response

Obeys Commands

Localizes Pain

Withdrawals (Pain)

Flexion

2 Extension

None

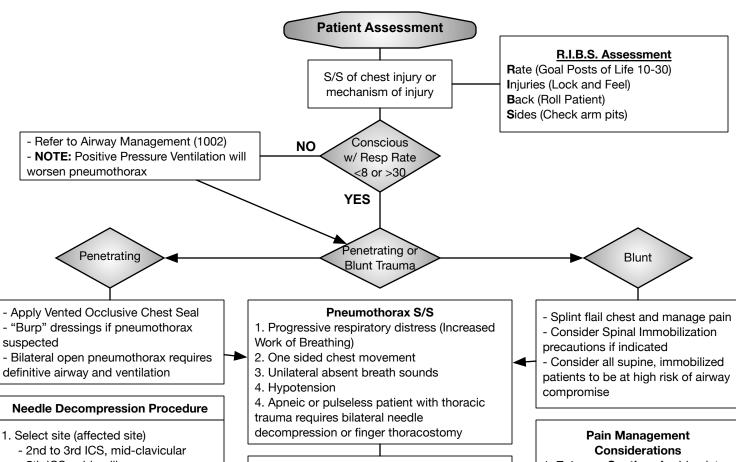
E + V + M = GCS

Cric Indications:

- 1. Maxillofacial Trauma with failed King LT-D or ETT
- 2. Airway Burns w/ failed ETT
- 3. Uncontrolled Airway + Intolerance to King-LT or failed ETT
- **Consider pre-medicating with Ketamine 75mg IV/IM

Respiration (TECC-FR-1003)

DRAFT



- - 5th ICS, mid-axillary
- 2. Cleanse site (alcohol or iodine)
- 3. Remove leur-lock from end of 10-14ga 3.25" needle
- 4. Insert needle at 90 degree angle to chest wall over top rib, away from the heart.
- 5. Remove needle, leave catheter in place if 10-12ga catheter.
- 6. Assess Decompression Effectiveness
- Optional: Attach saline filled syringe to decompression needle (Bubbles = Pneumo) (Saline Drains = No Pneumo)
- Optional: Attach Cook Catheter tubing and one-way valve (ensure one-way valve is placed correctly)

Needle Decompression per protocol

Assess Decompression Effectiveness

- 1. Decease in RR & WOB
- 2. Improvement of SpO2
- Reassess Q 15 min
- Anticipate return of pneumothorax
- Repeat Needle Decompression as often as needed

Oxygen Administration

- Consider oxygen administration for:
 - Unconscious patients
 - Traumatic Brain Injury (Avoid Hypoxia)
 - Patients in shock
 - Patients at altitude >5000ft
 - Pneumothorax (Known or suspected)

- 1. Extreme Caution: Avoid opiates
- due to respiratory depression 2. Consider subdissociative
- Ketamine dosing (Pain Dose Ketamine) 0.1-0.3mg/kg

Penetrating Trauma Cardiac Arrest

- Consider bilateral needle decompression or finger thoracostomy for pulseless victims of blast and GSW trauma prior to discontinuing care.

Chest Tube

- Consider large bore indwelling needle decompression as an alternative to chest tube placement
- ETT Tubes 7.0 or greater can be used if chest tube supply is exhausted.

Circulation (TECC-FR-1004) DRAFT

- Reassess all previous bleeding control interventions.
- Consider patient's age, injuries and comorbid conditions when selecting target BP.

Continue to monitor for shock or rebleeding

NO
S/S of Hypovolemic Shock

YES

Establish bilateral large bore peripheral IV at earliest convenience

TXA # 2 (Infusion) Consideration

- 1gm in 100-500ml NS
- Administered over 10 hours
- May be deferred to definitive care
- Consider using dial type IVF rate reduction device with TXA 1gm in 500ml NS if IV pumps are unavailable.

TXA # 2

SBP 90

Repeat Fluid Challenges

500ml Crystaloid until SBP

90mm, reassess after each

500ml NS Bolus

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- Administered over 10 hours

- 1gm in 100-500ml NS

Emergency Vascular Access X 2

- 1. Peripheral access attempt
- 2. EJ attempt
- 3. IO Access

TXA # 1

- 1gm in 100ml NS
- Do not administer more than 3 hours after injury

Blood Products are the preferred Resuscitation Product

S/S of Hypovolemic Shock

- Altered Mental Status
- **NOTE:** Consider head injury target SBP 100-110 (1006)
- Weak/Absent radial pulse
- Tachycardia & Increased RR
- Anxiety
- Decreased Cap Refill (>2 sec)
- Pallor
- Decreased BP (<90 or down trending)

Tranexamic Acid (TXA) Indications

- Presence of hemorrhagic shock
- One or more major amputations
- Penetrating torso trauma
- Evidence of severe bleeding
- Treatment with TXA ASAP and within
- 3 hours of injury

Fluid Challenge # 1 500ml Crystaloid YES Bleeding Controlled VITKO NO Fluid Challenge # 2 500ml Crystaloid BP Maintenance - Oral Fluids: For patients that are conscious and can swallow, consider

(1008)

- conscious and can swallow, consider oral rehydration with ORS & Water as tolerated after Zofran 4mg IV/PO Monitor Output: Maintain urine output >35ml/hr per Nursing Care
- Fluid Responsiveness: Evaluate fluid responsiveness and surgical priority for all patients with abdominal or thoracic trauma
- Administer blood (Cross matched or O (+/-) per facility protocol and clinical need

Continue to ID and Control Bleeding (1001)

Triage Category RED (SURGICAL PRIORITY)

Massive Transfusion Protocol Per Facility Guidlines

TXA # 2

- 1gm in 100-500ml NS
- Administered over 10 hours
- May be deferred to definitive care
- Consider using dial type IVF rate reduction device if IV pumps are unavailable.

Crystalloid Selection

 Lactated Ringers: Consider medication compatibility and IV access when selecting LR over NS.

Estimate Shock Severity									
Class I	Class II	Class III	Class IV						
Blood Loss: 750ml	Blood Loss: 750-1500ml	Blood Loss: 1500-2000	Blood Loss: >2000ml						
Pulse: <100	Pulse: >100	Pulse: >120	Pulse: >140						
BP: WNL	BP: WNL	BP: Decreased	BP: Decreased						
RR: 14-20	RR: 20-30	RR: 30-40	RR: 35						
Urine: >30ml/hr	Urine: 20-30ml/hr	Urine: 5-15ml/hr	Urine: None						

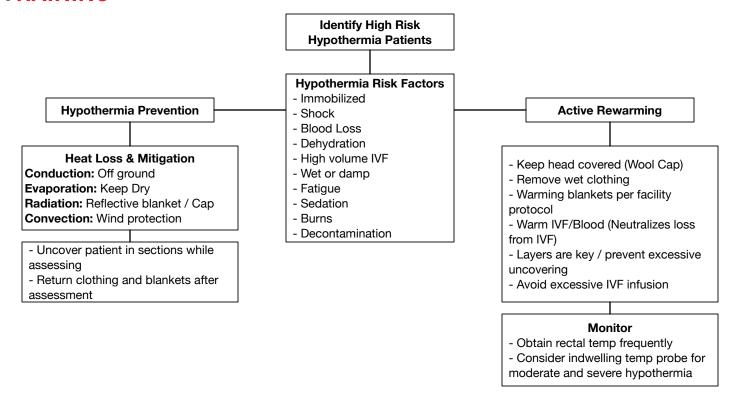
YES

Pain Management Considerations

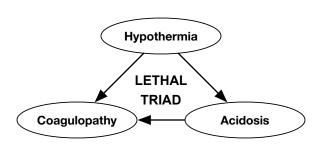
- 1. Extreme Caution: Avoid opiates due to vasodilation
- 2. Consider subdissociative Ketamine dosing for moderate pain 0.1-0.3 mg/kg Q 15-30 min

Hypothermia (TECC-FR-1005)

DRAFT



Hypothermia Classification							
Mild Temp: 93.2-96.8 - Prevent further heat loss	Moderate Temp: 86-93.2 - Actively rewarm - Increased danger of bleeding (reassess wounds for bleeding)	Severe Temp: <86 - Transport gently - Handle gentle					
S/S: - Shivering - Poor judgement - Cold diuresis	S/S: - Stupor - Shivering stops - RR decrease - HR decrease - Pupils dilate - Paradoxical undressing	S/S: - Cardiac dysrhythmia - Shivering stops - RR decrease - HR decrease - Pupils dilate - Paradoxical undressing					



AVPU Assessment

- Alert
- Verbal Responds to verbal stimuli
- Pain Responds to painful stimuli
- Unresponsive Does not respond to any stimuli

Nexus Criteria Immobilize C-Spine if ANY are present:

- Midline C-spine tenderness
- Evidence of intoxication
- Abnormal level of alertness
- Focal neurological deficit
- Painful distracting injury
- Significant MOI

Treat Shock

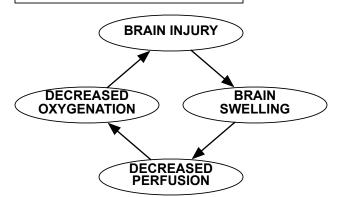
- Treat for shock per (1004) with target SBP 100-110.
- Treat uncontrolled hemorrhage

Cushing's Triad

A change in respirations, often irregular and deep (such as Cheyne Stokes), a widening of the systolic and diastolic pressures, and/or bradycardia.

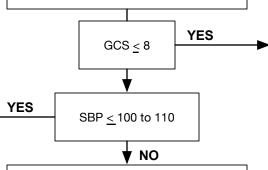
Herniation

Hypertension, arrhythmia, bradycardia, loss of brain stem reflexes (reactive pupils, gag reflex, respirtory drive, etc.), and/or cardiac arrest.



Head Injury (TECC-FR-1006) DRAFT

- Identify S/S of Head Injury
- Identify hemorrhagic shock
- C-Spine stabilization per Nexus Criteria
- Vital Signs
- C-Spine immobilization / Stabilization as indicated.
- Consider mechanism and clearing Cspine clinically.
- 1. AVPU Baseline
- 2. Calcualte GCS Baseline (Prior to Pain Medication)
- 3. SpO2, VS and serial GCS
- Maintain airway with head in neutral position
- Avoid hypoxia hypoxia
- Maintain head of bed at 30 degrees



Monitor

- Transfer to higher level of care
- Monitor closely for changes in condition
- Maintain oxygenation and perfusion

Head Injury S/S

- 1. Obvious mechanism of injury
- 2. Altered mental status
- 3. Loss of consciousness
- 4. Blurred vision
- 5. Sudden nausea/vomiting
- 6. Anxiety/irritability
- 7. Sensitivity to light/loud noise
- 8. Seizure
- 9. Neurological deficit

Establish Definitive Airway

- Supraglotic airway or ETT
- Support ventilation and maintain ETCO2 35-45mmHg
- Titrate O2 concentration to avoid hypoxia

Glascow Coma Scale

Eye Opening

Spontaneous

To Voice 3

2 To Pain None 1

Verbal Response

Oriented to time, place & person

4 Confused

Inappropriate Words 3

Incomprehensible Sounds 2 1

Motor Response

Obeys Commands

Localizes Pain 5

Withdrawals (Pain) 4 3

Flexion

Extension

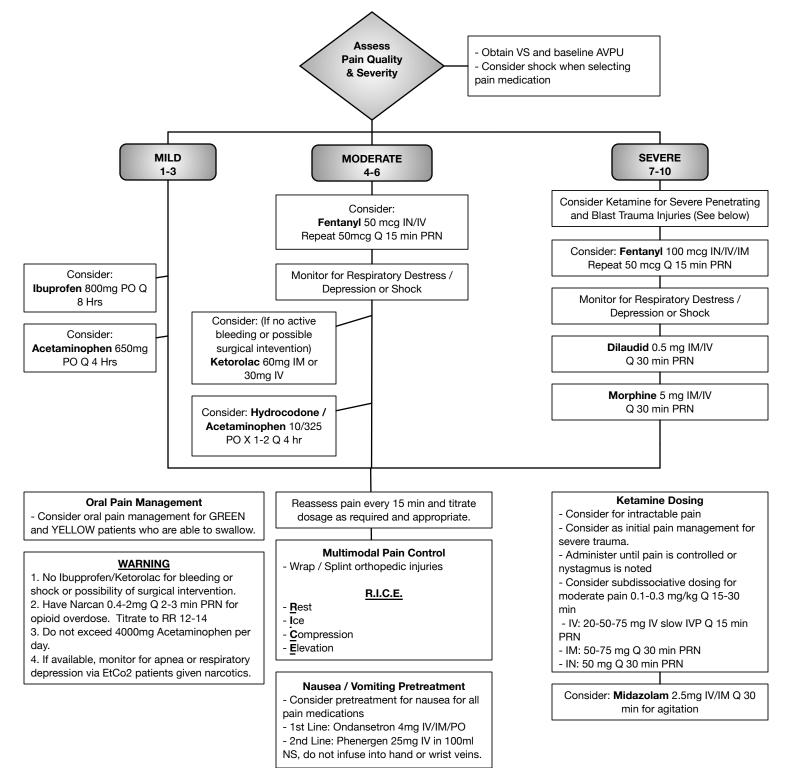
None

2

E + V + M = GCS

Reference: [1], [2], [5]

Pain Management (TECC-FR-1007) **DRAFT**



Nursing Care (TECC-FR-1008)

Tubes

(Clean / Secure / Functioning)

- Ensure patency (D.O.P.E. Trouble Shooting)
- Suction airway (ETT, supraglottic, NPA)
- Reinforce securing devices as needed

Reassess & Record

Reassess & Monitor

- Monitor patient according to injury severity
- Reassess previous interventions
- Complete detailed M.A.R.C.H. assessment
- Clean casualty & closely inspect for wounds

Record (Documentation of Care)

- Record Interventions & Medication Administration
- Record and Trend VS
 - Stable: Q 30 minUnstable: Q 15 min

Infection

- Oral antibiotics are appropriate first line coverage
- Reference Penetrating Antibiotic (1009)

Wound Care

- Perform wound debridement
- Perform dressing changes as needed

Analgesia

- Treat per Pain Management (1007)
- Form long-term pain control plan
- Consider: Odansetron 4mg IV/PO prophylactically

Environment

- Improve casualty's environment
- Protect from sun, wind, insects
- Move indoor ASAP
- Prevent and treat hypothermia

Input

- Maintain SBP >90
- Unconscious / Unable to swallow casualty maintenance fluids: NS 125ml/hr (21 drops/min)
- ORS: Patient able to swallow, consider ORS & water after Odansetron 4mg IV/PO Q 4 Hours

Output

- Monitor urine output in plastic bottle
- Increase fluid intake until >35ml/hr urine output is achieved.
- Keep casualty clean of urine and stool.
- Offer toileting as needed

Ulcers

- Pad all hard surfaces under casualty.
- Loosen or remove constricting clothing.
- Reposition casualty every 2 hours.
- Assess skin for reddening (early ulcer).

TRI-AEIOU

Tubes

Record & Reassess Infection

Analgesia

Environment

Input

Output

Ulcers

Nursing Care Triggers

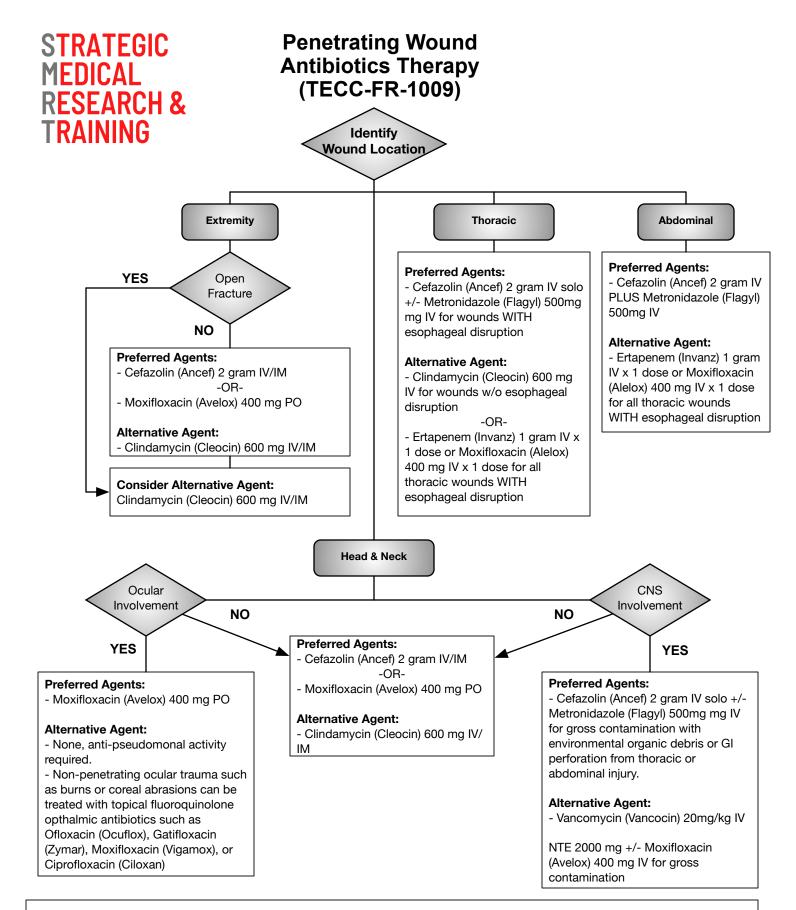
- M.A.R.C.H. X 2 or > 45 min transfer to inpatient care
- Anticipated delay in inpatient

Considerations

- 1. Assign staff per patient areas
- 2. Medical supply inventory & rationing plan.
- 3. Pain management medication inventory and accountability.
- 4. Nursing Care is a repeating process.

D.O.P.E. Airway Trouble Shooting

- **Disconnect ventilator and ventilate via BVM
- Dislodgment
- Obstruction
- Pneumothorax
- Equipment (Ventilator)



*** Consider adding Metronidazole (Flagyl) 500mg IV for <u>any</u> penetrating wound grossly contaminated with environmental organic debris or GI perforation from thoracic or abdominal injury with or without CNS involvement

Reference: [7-28] Date Updated: 7/10/23



TECC First Receiver Skills/Tasks

DRAFT

Task	NON- MED	EMT (TECH)	AEMT	Paramedic	RN (ED)	RN (NON-ED)	RESP THERAPY	NP/PA (NON-ED)	NP/PA (ED)	MD (NON-ED)	MD (ED)
Initial Patient Movement	+	+	+	+	+	+	_	_	-	_	-
Primary Triage	-	-	+	+	+	-	_	+/-	+	_	_
Documentation of Care	-	+	+	+	+	+	_	+	+	_	-
M - Blood Sweep	+/-	+	+	+	+	+	_	+	+	+	+
M - Direct Pressure	+/-	+	+	+	+	+	_	+	+	+	+
M - Tourniquet	+/-	+	+	+	+	+	_	+	+	+	+
M - Pressure Dressing	+/-	+	+	+	+	+	-	+	+	+	+
M - Reassess Bleeding	+/-	+	+	+	+	+	_	+	+	+	+
M - Convert Tourniquet	-	<u> </u>	+*	+*	+*	+*	_	+	+	+	+
M - Wound Packing (HCA/Gauze)	-	-	+*	+*	+*	+*	-	+	+	+	+
A - Body Positioning	+/-	+	+	+	+	+	_	+	+	+	+
A - Clear Airway / Suction	-	+	+	+	+	+	-	+	+	+	+
A - Basic Manual Maneuvers	+/-	+	+	+	+	+	-	+	+	+	+
A - Nasal Airway	-	+/-	+	+	+	+	-	+	+	+	+
A - Supraglottic Airway	-	-	+*	+*	-	-	-	_	+	+/-	+
A - Oro/nasotracheal intubation	-	-	-	+*	-	-	-	+/-	+	+/-	+
A - Surgical Airway	-	_	+*	+*	+*	+*	_	+/-	+	+/-	+
A - Continuous Sedation	-	_	-	+*	+*	+*	-	+/-	+	+	+
R - Seal sucking chest wound	-	+	+	+	+	+	-	+	+	+	+
R - Recognize Tension	-	+	+	+	+	+	_	+	+	+	+
R - Decompress tension		-	+*	+*	+*	+*	_	+	+	+/-	+
R - Chest Tube		-	-	-	-	-	-	+/-	+	+/-	+
R - BVM Ventilation	-	+	+	+	+	+	+	+	+	+	+
R - Ventilator Operations	-	-	+/-	+	+/-	+/-	+	+/-	+	+	+
R - Monitor Vented Patient		+/-	+	+	+	+	+	+/-	+	-	<u>T</u>
C - IV Access	-	+	+	+	+	+	_	+	+	+	+
C - IO Access	-	_	+*	+*	+*	+*	_	+		+	
C - Ultrasound IV Access	-	+/-	+	+	+	+	-	+	+	+/-	+
C - Central IV Access	-	-		<u> </u>		-	_	+	+	+/-	+
C - TXA Administration		_	+*	+*	+*	+*	-	+	+	-	<u>-</u>
C - Recognize Shock	-	+	+	+	+	+	_	+	+	+	+
C - Administer Crystalloids		-	+*	+*	+*	+*	_	+	+	-	<u> </u>
C - Administer Crystallolds C - Administer Blood	-	-	-	+*	+*	+*	-	+	+	_	<u> </u>
C - Recognize Head Injury	-	+	+	+	+	+	_	+	+	+	+
C - Resuscitate Head Injury	-	-	+*	+*	+*	+*	-	+	+	+	+
H - Prevent Hypothermia	+	+	+	+	+	+	-	+	+	+	+
Administer Oral non-narcotics	-	+/-*	+/-*	+*	+*	+*	-	+	+	+	+
Administer Oral non-narcotics Administer IV non-narcotics		+/-	+/-"	+*	+*	+*	-			+	
Administer IV non-narcotics Administer Oral Narcotics	-	-	+*	+*	+*	+*	-	+	+	+	+
Administer Oral Narcotics Administer IV Narcotics	-	-	+*	+*	+*	+*	-		+	+	+
Administer IV Narcotics Administer Oral Antibiotics	-	-	+*	+*	+*	+*	-	+		+	
Administer Ural Antibiotics Administer IV Antibiotics	-	-	-	+*	+*	+*	-	+	+	+	+
Administer IV Antibiotics Administer Conscious Sedation	-	-	-	+/-*	+/-*	+/-*	-	+/-	+	+	<u>+</u>
Monitor Conscious Sedation	-	-	+	+/-**	+/-"	+/	-	+/-	+	+	+
Monitor Conscious Sedation Monitor GREEN Patient		_	+			1	-				
Monitor YELLOW Patient	+	+	+	+	+ +	+	-	+	+	+	+
Monitor RED Patient	-	-		+			-		+	+	
Intrafacility Patient Transport			+		+	+	-	+			+
Interfacility Patient Transport	-	+	+	+	+	+	-	+	+	+	+
Nursing Care GREEN Patient	+	+	+	+	+	+	-	+	+	+	+
Nursing Care GREEN Patient Nursing Care YELLOW Patient	-	-	+		+	+	-	+	+	-	-
Nursing Care RED Patient	-	-	+	+	+	+	-	+	+	-	-
Nursing Care RED Patient	-	-	+	+	+	+	-	+	+	_	-

* = MD Order Required



TECC First Receiver Protocol Reference List

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