NAPA COUNTY EMS AGENCY

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Trauma

ALS / BLS Burns

TREATMENT GUIDELINE 9602

9602.1 PROCEDURE

A. **Initial**

1. Extinguish burning or smoldering clothing.
2. Flush chemical burns with copious amounts of water.

B. **Airway**

1. Assess airway for burns. Airway burns should be suspected when the patient:
   a. Is burned or exposed to smoke.
   b. Has been exposed to toxic fumes.
   c. Has burns to the face and/or the upper airway.
   d. Has redness / blisters / soot in the mouth or nose and/or singed nasal hair.

C. **BLS Treatment**

1. Assess for other injuries and treat as indicated.
2. Maintain airway and administer high-flow oxygen, refer to BLS Treatment Guideline # 8003 Airway / Oxygen.
3. Remove jewelry but do not remove stuck clothing.
4. Use water or NS to stop the burning process and quickly dry the patient after the burning has stopped.
5. Burns < 10% total body surface may be kept wet with saline moistened dressings (sterile preferred).
6. Burns > 10% total body surface area; use dry dressings – no exceptions, as to not induce hypothermia.
   a. The patient should then be covered with a sterile burn sheet and blanket to prevent loss of body heat.
   b. Do not use water or burn gels.
7. Elevate burned body parts thirty (30) degrees if possible.

D. **ALS Treatment**

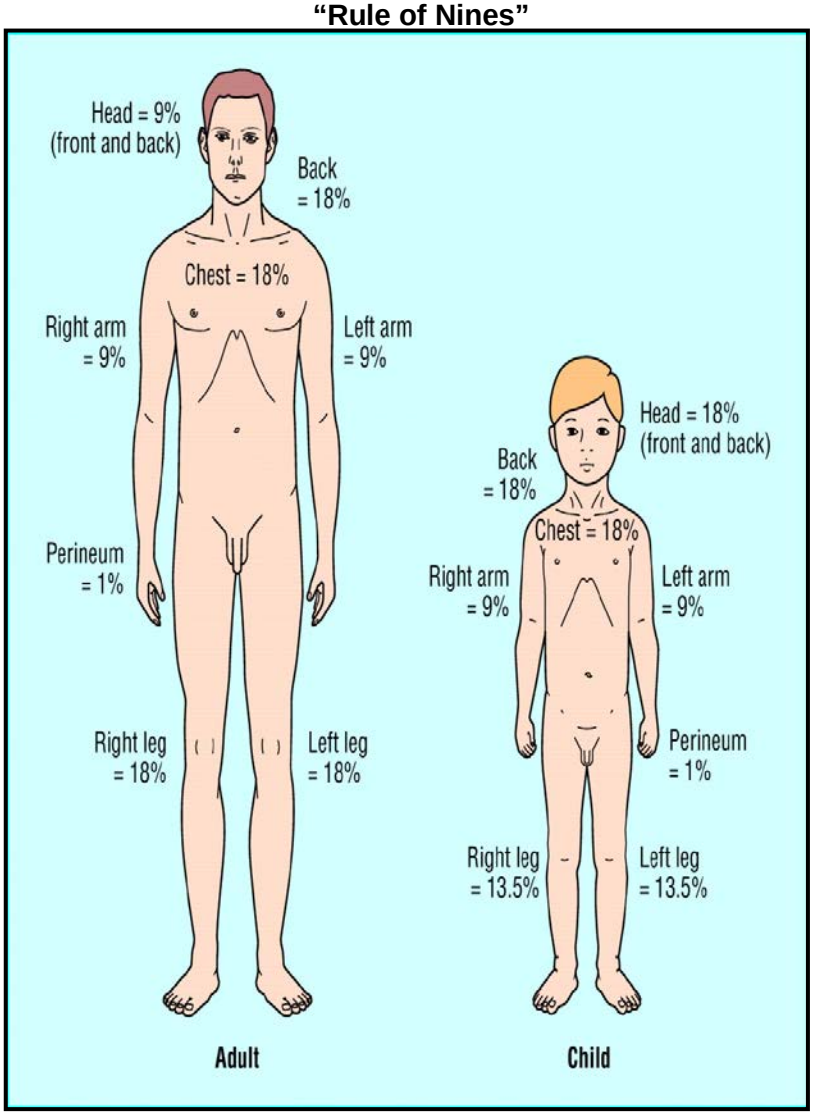
1. Consider early advanced airway if airway burn involved. Administer oxygen to maintain oxygen saturations above 96%.
2. If clinically indicated, IV NS 10 mL/kg. Recheck vital signs every 250 mL's. May repeat bolus if transport time is over thirty (30) minutes.
3. For pain management, in absence of hypotension, significant other trauma, altered level of consciousness and narcotic allergy, administer fentanyl; refer to Treatment Guideline # 9004 Pain Management.
4. Address psychological needs; refer to Treatment Guideline # 9005 Sedation.

E. **Special Considerations**

1. Pulse oximeter if available, if carbon monoxide poisoning is present, reading may be artificially high.
2. Notify receiving hospital ASAP.
3. Consider direct transport to U.C. Davis (UCD) Medical Center for major / critical burns. Base hospital prior to transport is required.

Estimate the severity of the burns:

"Rule of Nines"



ABA Classification

Minor:

- < 10% partial thickness (adult)
- < 5% < 10 y/o > 50 y/o
- < 2% full thickness

Moderate:

- 10-20% partial thickness (adult)
- 5-10% < 10 y/o > 50 y/o
- High voltage, suspected inhalation, circumferential or susceptibility to infection

Major:

- 20% partial thickness (adult)
- 10% < 10 y/o > 50 y/o
- 5% full thickness
- Partial or full thickness burns to face, eyes, ears, hands, feet, perineum, genitalia or major joints
- Significant electrical and caustic agent burns
- Circumferential burns to an extremity or trunk.
- Inhalation injury with evidence of significant burns.
- Burns in high risk patients, including those with significant underlying medical conditions

Major Trauma

TREATMENT GUIDELINE 9603

9603.1 DEFINITION

Adult and pediatric major trauma definition / triage decision scheme can be found on Trauma Triage Decision Scheme Guideline # 7003. Patients meeting the criteria for major trauma should be transported to the closest, most appropriate receiving trauma center in the most expeditious manner.

9603.2 GENERAL TREATMENT

A. Patient meets anatomic and/or physiologic criteria of the trauma decision schematic:
   1. Begin immediate transport – Code 3 if feasible.
   2. Establish two (2) large bore IV/IO NS.
   3. Administer NS boluses (250-500 ml).
   4. If SBP < 90 mmhg, consider TXA – 1gm in 100 ml NS IV/IO over 10 min Refer to TXA administration.
   5. After each 250 cc bolus, recheck vital signs.
   6. If ALOC, consider medical etiology. Refer to ALOC / Syncope Guideline #9301.
   7. Consider tourniquet use, if appropriate. Refer to Tourniquets / Hemorrhage Control Guideline# 8015.
   8. Splint fractures and dress wounds only if time permits.
   9. If ALOC, consider medical etiology and follow hypoglycemia and/or narcotic OD protocol. Refer to Poisoning / Overdose Guideline #9203.
   10. Notify trauma center ASAP.

B. Patient meets mechanism criterion only of the trauma decision schematic:
   1. May transport – Code 2 at paramedic's discretion.
   2. May establish one (1) large bore IV/IO NS at paramedic's discretion.
   3. Splint fractures and dress wounds.
   4. Notify trauma center ASAP.

9603.3 TXA ADMINISTRATION

Tranexamic Acid (TXA) is a Lysine analogue that works to inhibit the formation of plasmin, which is a molecule responsible for clot degradation. It has had multiple medical applications in the past including; pre-operative use, menorrhagia, hemophilia, and hereditary angioedema. It has recently been shown in multiple studies to reduce mortality in trauma patients meeting specific physiologic criteria or who have obvious signs of massive hemorrhage.

9603.4 TXA INDICATIONS

A. Adults, age ≥18 years old **and;**

B. Any sustained blunt or penetrating trauma within three (3) hours **and;**

C. Patient meets one or more of the following criteria:
   1. Blunt or penetrating trauma with signs and symptoms of hemorrhagic shock.
   2. Systolic blood pressure of less than 90 mmHg at scene of injury, during ground medical transport, or on arrival to designated trauma centers.

3. Patients who are considered high risk for significant hemorrhage:
    a. Major amputation of any extremity above the wrists and above the ankles.
    b. Bleeding uncontrolled by direct pressure or tourniquet.
    c. Estimated blood loss of 500 ml or more in the field accompanied **and** with a heart rate (HR) greater than 120 BPM.

9603.5 TXA ADMINISTRATION

A. Administer TXA 1 gram in 100 ml NS IV/IO over 10 min **(NOT IV PUSH)**.

B. Follow IV fluid resuscitation; refer to Guideline 9603.

C. Upon transfer of care at the receiving Trauma Center, obtain a signature of receiving clinician on the **TXA Trial Study Tracking Form**, retain a copy to be scanned into the ePCR, and ensure the form remains with the patient.

9603.6 TXA CONTRAINDICATIONS

A. Age < 18 years old.

B. Any patient with an active thromboembolic event (within the last 24 hours), i.e., active stroke, myocardial infarction or pulmonary embolism.

C. Any patient with a hypersensitivity or anaphylactic reaction to TXA.

D. Any patient more than three (3) hours post injury.

E. Traumatic arrest with greater than five (5) minutes of CPR without return of vital signs.

F. Penetrating cranial injury.

G. Traumatic brain injury with brain matter exposed.

H. Isolated drowning or hanging victims.

I. Documented cervical cord injury with motor deficit.

9603.7 TXA ADVERSE EFFECTS

A. Thromboembolism (DVT and pulmonary embolism).

B. Gastrointestinal effects including nausea, vomiting, and diarrhea.

C. Headache.

D. Fatigue.

E. Dizziness.

F. Visual disturbance.

NOTE: It must be recognized that rapid transport to appropriate definitive care is of the utmost importance; therefore, the estimated time of arrival to the trauma receiving facility must be taken into account in the field management of major trauma patients.

If clinically indicated, refer to the following policy(ies):

A. ALS Tourniquet / Hemorrhage Control Guideline 9601.

B. ALS / BLS Burns Guideline 9602.

C. Head Injury Guideline 9604.

D. Crush Syndrome Guideline 9605.

Head Injury

TREATMENT GUIDELINE 9604

9604.1 DEFINITION

Head injury: Known or suspected, with persistent altered level of consciousness.

9604.2 TREATMENT

A. If clinically indicated, ensure full spinal precautions. Refer to ALS / BLS Spinal Immobilization Guideline # 8002 / 9003.

B. Establish IV NS TKO.

C. Blood glucose determination.

1. If < 60mg/dl or un-measurable:

   a. Administer D10% IV rapidly (wide-open) – infuse 25 g (entire 250 mL) IV/IO; **or**

   b. If no vascular access, administer glucagon 1mg IM.

   c. If signs and symptoms of hypoglycemia fully reverse, reassess bG level. If > 60mg/dl; slow D10% to TKO to deliver remainder of calculated dose.

   d. If no improvement after five (5) minutes from initial D10% dose and bG level remains < 60mg/dl; give additional D10% in 5 g (50 mL) increments at 5-10 minute intervals.

D. If unable to establish an IV AND BS < 60mg/dl: Glucagon 1mg IM.

E. If clear evidence of narcotic overdose is present and the patient has decreased respirations, 0.8mg Narcan IV/IO/IM/IN may be administered. Refer to Poison / Overdose Guideline #9203

9604.3 MODERATE OR SEVERE DECREASED LOC (GCS 9 OR LESS)

A. Ventilate patient at the normal age based respiratory rate.

B. Consider endotracheal intubation.

C. If patient is combative, extremely agitated, or clenched (trismus), refer to Sedation Guideline # 9005.

D. If patient is seizing, refer to Seizures Guideline # 9302.

E. If intubated, maintain $ETCO_2$ between 30-35 mm H_2O unless signs of herniation occur.

Crush Syndrome

TREATMENT GUIDELINE 9605

9605.1 DEFINITION

Crush syndrome can develop when an individual is entrapped with extensive tissue involvement. Entrapment should be broadly interpreted to mean that movement and circulation have been compromised and some type of extrication assistance is necessary.

9605.2 INDICATION

A. Patients with significant extremity or torso entrapment (usually > two [2] hours duration).

B. Check for: Pain, paresthesia, paralysis, pallor and pulselessness.

9605.3 TREATMENT PRIOR TO EXTRICATION

A. Establish two (2) large bore IV's of NS and flow at 500ml/hr total. If hypotension is present, increase flow as clinically appropriate.

B. Prophylactic sodium bicarbonate 1 mEq/kg to a max of 100 mEq IVP.

C. Albuterol 5mg in 6cc's NS via nebulizer.

9605.4 TREATMENT AFTER EXTRICATION

A. Consider pain management. Refer to Treatment Guideline # 9004 Pain Management.

B. Obtain 12-Lead ECG.

C. Consider $CaCl_2$ 1 gm slowly IVP (over sixty [60] sec) after base physician consultation.

D. Consider further doses of sodium bicarbonate after base consultation.

Note: **DO NOT run sodium bicarbonate and $CaCl_2$ concurrently**. **Either flush line well or use a separate line**.