Trauma:
Eye Injury

Goal: To aid EMS Providers in the treatment of patients with eye injury in order to preserve vision whenever possible
Inclusion Criteria: Blunt or penetrating eye injury; chemical exposures to the eyes
Exclusion Criteria: Patients without known or suspected traumatic or chemical eye injury
Refer to: Head Injury/TBI, Toxic Chemical Exposure, and Trauma CPGs; Spinal Motion Restriction Policy

Observe Body Substance Isolation Precautions and employ appropriate PPE

Basic Level

1. Assess and support ABCs according to UNIVERSAL CARE – ADULT or UNIVERSAL CARE – PEDIATRIC and according to the Trauma CPG, as clinically indicated:
    a. A and B (Airway and Breathing): Suction airway secretions as needed after exposure to toxic chemicals or riot control agents
    b. C (Circulation) and Wound Care: Control bleeding from associated injuries with gentle pressure and moist, sterile dressings
        i. Do not apply direct pressure to the eyeball itself, especially if open globe is suspected
    c. D (Disability): Assess and document GCS; and assess pupillary size and reactivity, if possible
        i. At least two sets of measurements, 5 to 10 minutes apart, is the absolute minimum
            1. Signs of early deterioration: confusion, agitation, drowsiness, vomiting, severe headache
        ii. Reassess and document every 5 to 10 minutes in patients with significant injury or instability
        iii. Assume associated (cervical) spine injury in patients with moderate/severe head injury
    d. E (Exposure/Environmental): Assess for Toxic Chemical Exposure and for other traumatic injuries
2. Positioning:
    a. Initiate Spinal Motion Restriction, if indicated, per Spinal Motion Restriction Policy
    b. If spinal injury is not suspected, place the patient in a position of comfort, preferably with the head slightly elevated
    c. If there is evidence of shock, treat the patient according to the Shock CPG
3. In the absence of known/suspected chemical injury, perform and document gross visual acuity estimate:
    a. If a Snellen reading card is unavailable, ask patient to read a sign in the distance or instructions on a box or package:
        i. Patient should wear his/her glasses when testing, if available
    b. If visual acuity is too limited for the patient to be able to read, assess “count fingers” vision:
        i. Hold up 1, 2 or 5 fingers and ask patient: “How many fingers do you see?”
        ii. Test each eye individually
    c. If patient cannot count fingers, assess for “hand motion” vision:
        i. Move your hand approximately 12” from the patient and ask: “Tell me when my hand moves”
        ii. Test each eye individually
    d. If patient cannot detect hand motion, assess for “light detection” vision:
        i. Ask patient: “Tell me when you see the light” and shine a penlight in the eye being examined, while covering the other eye
        ii. Test each eye individually
4. Specific conditions:
    a. Known or suspected eye avulsion or open globe – “Shield and Ship”:
        i. Discontinue further examination
        ii. Do not place anything, e.g. eye pads or medication, in the affected eye
        iii. Shield the eye with a protective Fox shield or improvised protective device (e.g. bottom portion of Styrofoam cup) (see Figure 1):
            1. Place tape from the center of the forehead to the angle of the mandible
            2. IMPORTANT: Do not place any pressure on the eye or allow anything to touch the eye
        iv. Prepare for transport

b. Impaled object:
   i. Do not attempt to remove the object
   ii. If the object is large and protruding from the eye, attempt to stabilize it
   iii. Follow guidelines for open globe, as above
c. Chemical exposure: **IMMEDIATE, COPIOUS IRRIGATION IS THE MOST CRITICAL STEP**
   i. Remove contact lenses, if possible
   ii. Sterile isotonic Normal Saline or Lactated Ringers, or sterile eye wash solution may be used
      1. Tap water may be substituted if these are unavailable
      2. Do not delay irrigation waiting for a specific irrigation solution
   iii. Initiate irrigation with at least 1 to 2 liters and continue en route to receiving hospital ED:
      1. Use "large drip" (10 gtt/mL) tubing
      2. If a Morgan lens is unavailable, an adult nasal cannula may be connected to the IV tubing and taped to the bridge of the patient's nose to provide continuous irrigation
   iv. If necessary, administer 1 or 2 drops of proparacaine to the affected eye(s) to relieve pain and to facilitate irrigation
      1. May repeat dose once, after 5 minutes, if needed
   v. Instruct patient not to rub the eyes
   vi. If pH paper is available, consider testing pH after at least 1 to 2 liters of irrigation
d. Acid burns:
   i. Damage is usually superficial, but patient must be transported for ED evaluation/treatment
   ii. Irrigate on-scene and continue en route, as described above
   iii. Hydrofluoric acid (HF) causes exceptionally severe eye burns
      1. Use hexafluorine solution for irrigation, if available (e.g. on a work site)
      2. Emergent ED evaluation/treatment is critical
e. Alkali burns:
   i. Damage is usually deeper and more serious: patient must be transported for ED evaluation/treatment
   ii. Irrigate on-scene and continue en route, as described above
f. Riot control agents (including "mace", "pepper spray", "tear gas"):
   i. Treat respiratory signs and symptoms according to the Respiratory Distress CPG
   ii. Ocular signs/symptoms: intense lacrimation (tear production), as well as swelling and redness
   iii. Irrigate on-scene, as described above
   iv. Patients who remain symptomatic despite irrigation or more than 30 minutes after exposure should be transported for ED evaluation/treatment, even if this is the patient's only injury
      1. Continue irrigation en route

5. Once advanced level care arrives on scene, give report and transfer care

Advanced Level

6. Consider establishing IV/IO access at TKO rate or with a saline lock
7. Persistent pain may be treated according to the Pain CPG
8. NOTE: All patients with known or suspected traumatic or chemical eye injury should be strongly encouraged to accept transport for ED evaluation/treatment:
   a. POSSIBLE exceptions:
      i. Mild/dilute acid burns without symptoms after irrigation
      ii. Riot control agent exposure without symptoms at least 30 minutes after exposure and irrigation
   b. When in doubt, transport
9. For additional patient care considerations not covered under standing orders, contact BioTel

Figure 1