***The following information is provided courtesy of the University of Iowa, Department of Ophthamology. Authorized Iowa EMS service physician medical directors may utilize this information, in conjunction with the National Model EMS Clinical Guidelines and the Iowa Emergency Medical Care Provider Scope of Practice, to develop EMS service protocols for poisoning, overdose, and toxic exposure related emergencies.**

EYE EMERGENCY CLINICAL GUIDELINES (ADULT & PEDIATRIC)
June 2023

General considerations and background

- Routine patient and trauma care first.
- Obtain ocular history, including use of glasses or contact lenses, and mechanism of injury.
- An open globe injury is defined as a full thickness wound of the eyewall. Signs of open globe injury include obvious penetrating injury, scleral or corneal lacerations, diffuse subconjunctival hemorrhage, extruding intraocular tissues such as iris or lens, and a deflated globe.
- Assess and document visual acuity of each eye, when able, then assess extraocular motility if no concern for open globe injury.
- If using topical anesthetics (i.e., Proparacaine or Tetracaine), limit use to 1 drop every 15-20 minutes. Repeat doses can predispose the eye to worse injury.
- Be aware that intimate partner violence is the 3rd leading cause of orbital fractures in women after motor vehicle collisions and falls.

Open globe injury

a. Secure a rigid eye shield over both eyes. If the patient can tolerate it, both eyes should be covered with a shield to reduce consensual eye movement that may worsen injury in the affected eye.

b. Transport in a supine position, if able.

c. Provide adequate analgesia and anti-emetic treatment per protocol. Valsalva maneuvers (e.g., vomiting or pain) can increase intraocular pressure and worsen ocular injury.

Impaled object and foreign body

a. Do not remove any foreign body or object in the eye or orbit. When unsure if a foreign body is superficial, leave it in place.

b. Immobilize any penetrating object and place shields over both eyes, if able.

c. Do not exert any external pressure on the globe when placing a shield. Apply saline moistened gauze to exposed globe or orbit.

Chemical burn
a. Determine the chemical involved when possible.

b. If available, assess and document ocular pH with pH paper. When able, check pH inside of the lower eyelid.

c. If using topical anesthetics, instill topical anesthetic prior to irrigation.

d. After topical anesthesia, proceed with copious irrigation with saline. Irrigate from the bridge of the nose outward. Irrigate until pH normalizes (pH of 7.0 to 7.5).

Thermal, radiation, or flash burn
a. Determine the mechanism of injury when possible.

b. Gently flush the eyes with saline prior to placing saline moistened gauze over the affected eyelids. Keep gauze moistened.

Acute vision loss
a. Place cardiac (EKG) monitor, assess vital signs, and provide supplemental oxygen via nasal cannula.

b. Assess pupils.

c. If a retinal artery occlusion is suspected in acute, non-traumatic, painless vision loss – consider calling a stroke alert.

Polytrauma with orbital involvement
a. If orbital fractures are suspected (e.g., bruising and/or swelling around the eye), place cardiac monitor due to risk of oculocardiac reflex. If hemodynamically unstable, do not check eye motility.

b. Once monitors are in place, check extraocular motility. Extraocular muscle entrapment should be suspected if there is profound limitation in one gaze of the affected eye. This typically occurs in patients under the age of 25 and can result in profound bradycardia or asystole when attempting to move the eye in the direction of limitation.