



SECTION 15 – OPHTHALMOLOGY

General Conditions

- [Eye Injuries](#)

EYE INJURIES

Background

This case definition was developed by the Armed Forces Health Surveillance Center (AFHSC) and the Tri-Service Vision Conservation and Readiness Program (TSVCRP) at the US Army Public Health Command (USAPHC) in an effort to improve eye injury surveillance in the U.S. Armed Forces. The definition is used in an annual MSMR report and a quarterly AFHSC report for the TSVCRP.^{1 2}

Clinical Description

Eye injuries range in severity from minor scratches and bruises to serious trauma resulting in blindness. The nature and severity of eye injuries depend on the physical characteristics of impacting objects (e.g., mass, size, speed, hardness, sharpness), the location of the impact, and the predispositions of the eye to various injuries. Corneal abrasion, a scratch to the cornea that occurs when small foreign objects (e.g., sand, twigs, wood shavings, metal particles) scratch the cornea, is the most common eye injury.³ A significant proportion of the eye injuries sustained during military service are likely preventable through the use of protective eyewear.⁴

Case Definition and Incidence Rules

For surveillance purposes, a case of “eye injury” is defined as:

- *One inpatient or outpatient medical encounter* with any of the defining diagnoses of eye injury (see ICD9 code list below) in *any* diagnostic position.

Incidence rules:

For individuals who meet the case definition:

- For “superficial” eye injuries (see injury categories below), an individual is considered an incident case *once every 60 days*.
- For “non-superficial” eye injuries (see injury categories below), an individual is considered an incident case *once per lifetime*.
- The incidence date is considered the date of the first inpatient or outpatient medical encounter that includes a defining diagnosis of eye injury.

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¹ Armed Forces Health Surveillance Center. Eye injuries, active component, U.S. Armed Forces, 2000-2010. (*Medical Surveillance Monthly Report (MSMR)*). 2011 May; Vol. 18(5), 2-7.

² Armed Forces Health Surveillance Center. Eye injuries among members of active components, U.S. Armed Forces, 1998-2007. (*Medical Surveillance Monthly Report (MSMR)*). 2008 Nov; Vol. 18(9), 2-5.

³ Army Medical Surveillance Activity. Eye injuries, active duty soldiers, 1993- 1998. (*Medical Surveillance Monthly Report (MSMR)*). 1999 Aug/Sept; Vol. 5(6), 2-11.

⁴ Thomas R, McManus Jr JG, Eastridge B. Scientific abstract no. 184: Ocular injury reduction from ocular protection use in current combat operations. *Ann Emerg Med*. 2008 4 Apr; Vol. 51(4):526.



Case Definition and Incidence Rules (cont.)

- If more than one ocular injury diagnosis is reported during a single inpatient or outpatient encounter, only the first listed of the diagnoses is included.

Exclusions:

- None

Codes

The following ICD9 codes are included in the case definition:

Injury Category

Non-Superficial	ICD-9-CM codes	CPT Codes
High risk blindness ⁵	871.0 (ocular laceration without prolapse of intraocular tissue) 871.1 (ocular laceration with prolapse of intraocular tissue) 871.2 (rupture of eye with partial loss of intraocular tissue) 871.3 (avulsion of eye) 871.4 (unspecified laceration of eye) 871.5 (penetration of eye with magnetic foreign body) 871.6 (penetration of eye with nonmagnetic foreign body) 871.7 (unspecified ocular penetration) 871.9 (unspecified open wound of eyeball)	NA
Anterior segment	364.41 (hyphema) 366.21 (localized traumatic opacities) 366.22 (total traumatic cataract) 364.76 (iridodialysis)	<i>(continued on next page)</i>

⁵ High risk of blindness category based on a 2006 study of United States Eye Injury Registry data. See Kuhn F, Morris R, Witherspoon CD, Mann L. Epidemiology of blinding trauma in the United States Eye Injury Registry. *Ophthalmic Epidemiology*. 2006; 13:209-16.



Burns	<p>940.x (burn confined to eye and adnexa)</p> <ul style="list-style-type: none"> ➤ 940.0 (chemical burn of eyelids and periocular area) ➤ 940.1 (other burns of eyelids and periocular area) ➤ 940.2 (alkaline chemical burn of cornea and conjunctival sac) ➤ 940.3 (acid chemical burn of cornea and conjunctival sac) ➤ 940.4 (other burn of cornea and conjunctival sac) ➤ 940.5 (burn with resulting rupture and destruction of eyeball) ➤ 940.9 (unspecified burn of eye and adnexa) <hr/> <p>941.02 (burn of unspecified degree of eye; with other parts of face head and neck)</p> <p>941.12 (erythema due to burn, first degree, of eye; with other parts of face head and neck)</p> <p>941.22 (blisters with epidermal loss due to burn, second degree, of eye; with other parts of face head and neck)</p> <p>941.32 (full thickness skin loss due to burn, third degree NOS, of eye; with other parts of face head and neck)</p> <p>941.42 (deep necrosis of underlying tissues due to burn, deep third degree, of eye; with other parts of face head and neck, without loss of body part)</p> <p>941.52 (deep necrosis of underlying tissues due to burn, deep third degree, of eye; with other parts of face head and neck, with loss of body part)</p>	
Contusion	<p>921.x (contusion of eye and adnexa)</p> <ul style="list-style-type: none"> ➤ 921.0 (black eye, NOS) ➤ 921.1 (contusion of eyelids and periocular area) ➤ 921.2 (contusion of orbital tissues) ➤ 921.3 (contusion of eyeball) ➤ 921.9 (unspecified contusion of eye) 	
Lid /adnexa	<p>870.0 (laceration of skin of eyelid and periocular area)</p> <p>870.1 (laceration of eyelid, full-thickness, not involving lacrimal passages)</p> <p>870.2 (laceration of eyelid involving lacrimal passages)</p> <p>870.8 (other specified open wounds of ocular adnexa)</p> <p>870.9 (unspecified open wound of ocular adnexa)</p>	<i>(continued on next page)</i>



Optical /cranial nerve	<p>950.0 (optic nerve injury)</p> <p>950.1 (injury to optic chiasm)</p> <p>950.9 (injury to optic nerve and pathways, unspecified)</p> <p>951.0 (injury to oculomotor nerve)</p> <p>951.1 (injury to trochlear nerve)</p> <p>951.3 (injury to abducens nerve)</p>	
Orbit	<p>802.6 (orbital floor, blow-out, closed)</p> <p>802.7 (orbital floor, blow-out, open)</p> <p>802.8 (fracture of face bones; other facial bones, closed)</p> <p>870.3 (penetrating wound of orbit, without mention of foreign body)</p> <p>870.4 (penetrating wound of orbit with foreign body)</p> <p>376.32 (orbital hemorrhage)</p>	
Posterior segment	<p>362.81 (retinal hemorrhage)</p> <hr/> <p>361.0x (retinal detachment and defects)</p> <ul style="list-style-type: none"> ➤ 361.00 (retinal detachment with retinal defect, unspecified) ➤ 361.01 (recent detachment, partial, with single defect) ➤ 361.02 (recent detachment, partial, with multiple defects) ➤ 361.03 (recent detachment, partial, with giant tear) ➤ 361.04 (recent detachment, partial, with retinal dialysis) ➤ 361.05 (recent detachment, total or subtotal) ➤ 361.06 (old detachment, partial) ➤ 361.07 (old detachment, total or subtotal) <hr/> <p>363.61 (choroidal hemorrhage, unspecified)</p> <p>363.63 (choroidal rupture)</p> <p>379.23 (vitreous hemorrhage)</p> <p>360.00 (purulent endophthalmitis)</p> <p>360.01 (acute endophthalmitis)</p>	<p><i>(continued on next page)</i></p>



Superficial

Superficial	<p>918.0 (superficial injury of eye and adnexa; eyelids and periocular area)</p> <p>918.1 (superficial injury of eye and adnexa; cornea)</p> <p>918.2 (superficial injury of eye and adnexa; conjunctiva)</p> <p>918.9 (other and unspecified superficial injuries of eye)</p> <hr/> <p>930.x (foreign body on external eye)</p> <ul style="list-style-type: none"> ➤ 930.0 (corneal foreign body) ➤ 930.1 (foreign body of conjunctival sac) ➤ 930.2 (foreign body of lacrimal punctum) ➤ 930.8 (foreign body of external eye; other and combined sites) ➤ 930.9 (foreign body of external eye; unspecified site) 	
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Development and Revisions

- In 2011, this case definition was developed by AFHSC and senior ophthalmology and optometry subject matter experts at TSVCRP at USAPHC.
- A 2008 MSMR article on eye injuries² used a case definition and incidence rules that are the same as the 2011 MSMR article referenced above. The ICD9 code set in the 2011 case definition, however, differs slightly in that ICD9 codes 360.02 - 360.04 (panophthalmitis, chronic endophthalmitis, and vitreous abscesses) are not included here. Further, ICD9 code 941.52 (deep necrosis of underlying tissues due to burn, deep third degree, of eye; with other parts of face head and neck with loss of body part) is included in this case definition. The 2008 case definition was developed by a resident ophthalmologist.
- A 1999 MSMR article on eye injuries³ used a case definition that differed significantly from the one used in the MSMR articles of 2008 and 2011.¹² The 1999 article did not include the codes for injuries to the "anterior segment" (364.41, 364.76, and 366.22), two codes for the "orbit" (802.8 and 376.32), and the numerous codes for the "posterior segment."

Case Definition and Incidence Rule Rationale

- For "superficial" eye injuries, an individual is considered an incident case only *once every 60 days*. Such an individual may be recorded as having another "superficial" eye injury during the surveillance period if more than 60 days have passed since the previous such injury. This rationale is based upon the presumption that superficial injuries are mild in nature and complete recovery should occur within a 60 day period.

Code Set Determination and Rationale

- In August of 2011 the ICD9 code set used in the May 2011 MSMR¹ article was reviewed by AFHSC and TSVCRP and the following changes were made to the code set:
 - ICD9 code 367.32 (aniseikonia) was replaced with 376.32 (orbital hemorrhage) to correct a typographical error.



- ICD9 codes 950.2 (injury to optic pathways) and 950.3 (injury to visual cortex) were removed. These codes refer to parts of the brain that may affect vision without injury to the eye itself.
- ICD9 codes 360.00 (purulent endophthalmitis) and ICD9 code 360.01 (acute endophthalmitis) were reviewed and remain in the code set as codes that are frequently associated with traumatic and post surgical infection.

Reports

AFHSC reports on eye injuries in the following reports:

- Annual MSMR article
- Quarterly: Eye injury report for the TSVCRP.

Review

August 2011	Case definition reviewed and adopted by Surveillance Methods and Standards (SMS) working group.
May 2011	Case definition developed and reviewed by AFHSC MSMR staff.

Comments

None

