

Letters

Tetanus From Ocular Injuries

The incidence and mortality of tetanus has exhibited a marked decrease since 1924 after the introduction of tetanus toxoid vaccine and postexposure prophylaxis (T-PEP), which consists of the tetanus booster and, in some cases, tetanus immunoglobulin.¹ T-PEP has not been properly addressed in the ophthalmic literature, and current practices vary by emergency department. We are writing to clarify T-PEP following ophthalmic trauma.

It is extremely unlikely that superficial nonpenetrating trauma, including corneal abrasions, lead to a risk of tetanus infection. No cases of tetanus have ever been reported following corneal abrasion, and a single animal study in 1993 showed no cases of tetanus following topical inoculation of *Clostridium tetani* following superficial injuries.² We recommend that patients with corneal abrasions and corneal foreign bodies without penetration into the anterior chamber not receive T-PEP.

The CDC guidelines recommend that a tetanus booster be administered after a clean wound if less than three tetanus

vaccinations in a series were administered, or if the last booster was more than 10 years ago.¹ For all other wounds, tetanus toxoid is recommended if the last booster took place more than five years previously. If tetanus vaccination status is unknown or there are fewer than three tetanus vaccinations in a series for a patient with a contaminated wound, both tetanus toxoid and tetanus immunoglobulin should be administered.¹ As with any vaccine, it takes time for tetanus toxoid to stimulate an immune response, with B-cell protection reaching a maximum one to two weeks following tetanus toxoid administration.

Previously reported ophthalmic cases that resulted in tetanus infection include open globe injury and periorbital dog bite.^{3,4} Our experience has been that a reliable tetanus vaccination history is infrequently available for acute ophthalmic trauma patients. For patients with contaminated, high-risk wounds with either unknown tetanus vaccination history or less than three tetanus vaccinations in a series, we advise administration of 500 IUs of tetanus immunoglobulin (TIG) along with tetanus toxoid, especially if there is devitalized tissue or a delay to surgical repair. If TIG is unavailable, 200

to 400 mg/kg of intravenous immunoglobulin may be substituted.³

In summary, tetanus is a highly preventable fatal disease that may result from penetrating ocular injuries. It is imperative to ask about tetanus vaccine history and consider administration of T-PEP when treating patients with open globe injuries, intraocular foreign bodies, and periorbital skin trauma.

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CDC Recommendations for T-PEP

The table below shows CDC recommendations for T-PEP following “clean” and “all other” wounds.¹ Of note, the distinction between “clean” and “all other” wounds in CDC recommendations remains poorly defined.

History of tetanus immunization	Clean, minor wounds		All other wounds*	
	Tetanus-containing vaccine	TIG	Tetanus-containing vaccine	TIG
Unknown or if less than 3 doses in vaccine series	Yes	No	Yes	Yes
3 or more doses in vaccine series and less than 5 years since last booster dose	No	No	No	No
3 or more doses in a vaccine series and between 5 and 10 years since last booster dose	No	No	Yes	No
3 or more doses in vaccine series and more than 10 years since last booster dose	Yes	No	Yes	No

* Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.

1 www.cdc.gov/tetanus/clinicians.html. Accessed Oct. 28, 2021.

1 www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html. Accessed Oct. 28, 2021.

2 Benson WH et al. *Am J Emerg Med.* 1993; 11(6):677-683.

3 Erickson BP et al. *Orbit.* 2019;38(1):43-50.

4 Iyer MN, Kranias G, Daun ME. *Am J Ophthalmol.* 2001;132(1):116-117.