

Tetanus

CLINICAL CASE DEFINITION

Acute onset of hypertonia and/or painful muscular contractions (usually of the muscles in the jaw and neck) and generalized muscle spasms without other apparent medical cause.

CASE CLASSIFICATION

Probable

In the absence of a more likely diagnosis, an acute illness with muscle spasms or hypertonia, AND

- diagnosis of tetanus by a health care provider; OR
- Death, with tetanus listed on the death certificate as the cause of death or a significant condition contributing to death

Comment

There is no definition for “confirmed” tetanus

TRANSMISSION

Tetanus is not directly transmitted from person-to-person. Infection occurs when tetanus spores are introduced into the body, usually through a puncture wound contaminated with soil, street dust, or animal or human feces; through lacerations, burns, and trivial or unnoticed wounds; or by injected contaminated street drugs.

INCUBATION PERIOD

Around 8 days, ranging from 3 to 21 days. See [Tetanus Timeline](#), below.

PERIOD OF COMMUNICABILITY

Not communicable from person to person

REPORTING/INVESTIGATION

Health care providers should immediately report cases/suspect cases of tetanus to local health department serving the residence of the case.

Local health department responsibilities:

- ◆ Contact case/guardian and health care provider.
- ◆ Determine if case meets clinical case definition.
- ◆ If definition met, or tetanus is otherwise suspected by a qualified health care provider, investigate using CDC surveillance worksheet and control guidelines below.
- ◆ Notify MDHHS Immunization Division Vaccine-Preventable Disease (VPD) Surveillance Coordinator at 517-335-8159.
- ◆ Assist with coordination of specimen collection and coordination if public health lab resources (MDHHS, CDC, etc) are used.
- ◆ Report/ensure reporting of case to the Michigan Disease Surveillance System (MDSS). [CDC Tetanus Surveillance Worksheet](#) may be helpful in

field investigation to collect data. Obtain immunization history information from provider record or MI Care Improvement Registry (MCIR - state immunization registry).

- ◆ Update the MDSS record in a timely manner with new or additional info as it becomes available. Finalize MDSS record when case investigation is complete.
- ◆ Follow-up with the case or provider 1 month after the onset of disease to determine clinical outcome/patient status (Recovered, Convalescing, or Died). Also collect any previously missing information for the Tetanus Surveillance Worksheet, with special attention to the following:
 - Number days hospitalized;
 - Number days in ICU;
 - Number days received mechanical ventilation;
 - Post-wound therapy (Tetanus toxoid and Tetanus Immune Globulin);
 - Age at onset;
 - Circumstances of any antecedent injury;
 - Tetanus toxoid vaccination history.
- ◆ In the event of death, obtain and send copies of hospital discharge summary, death certificate, and autopsy report to MDHHS Immunization Division.

LABORATORY CONFIRMATION

There are no laboratory findings characteristic of tetanus. The diagnosis is entirely clinical and does not depend upon bacteriologic confirmation. *Clostridium tetani* is recovered from the wound in only 30% of cases, and is occasionally isolated from patients who do not have tetanus. Sera collected before TIG is administered can demonstrate susceptibility of a patient to the disease.

IMMUNITY/SUSCEPTIBILITY

- ◆ Susceptibility to tetanus is general. Immunity is conferred by active immunization with tetanus toxoid and persists for 10 years after full immunization. Booster doses of tetanus toxoid given combined with diphtheria toxoid in the form of Td are indicated every 10 years, with a one-time substitution of Tdap (tetanus, diphtheria toxoids combined with acellular pertussis vaccine) to replace one of the 10-year Td boosters.
- ◆ Because of waning antitoxin titers, most individuals have antitoxin levels below optimal levels 10 years after the last dose of tetanus antitoxin.
- ◆ Serologic studies of the U.S. population demonstrate an excellent correlation between vaccination coverage and immunity to tetanus among children. However, antibody levels decline over time, and a substantial proportion of teens do not have protective antibody levels. Immunity levels are lowest among the elderly.

CONTROL MEASURES

Prompt recognition of tetanus is important because hospitalization may be required. Prompt administration of tetanus toxoid and TIG may decrease the severity of the disease. Because tetanus is a rare disease, public health authorities may be consulted on clinical management issues.

- ◆ Investigate reports of possible tetanus as soon as possible.
- ◆ If clinical case definition is met (clinically compatible, reported by a health care professional), regard as true tetanus case.

- ◆ Provide case treatment information if needed to medical care provider:
 - Tetanus Immune Globulin (TIG) given intra-muscular in doses of 3,000 - 6,000 IU; an optimal therapeutic dose has not been established and some experts recommend 500 IU. Infiltration of part of the dose locally around the wound is recommended, although the efficacy of this approach has not been proven.
 - Wound should be debrided widely and excised if possible.
 - Maintain an adequate airway and employ sedation as indicated.
 - Muscle relaxant drugs together with tracheostomy or nasotracheal intubation and mechanically-assisted respiration may be lifesaving.
 - Anti-microbial therapy (eg. metronidazole) may be effective in decreasing the number of vegetative forms of *Clostridium tetani*.
 - Active immunization should be initiated concurrently with therapy.
 - See Table 1 (below) for routine wound management guidelines.

Table 1. Guide to tetanus prophylaxis in routine wound management

History of adsorbed tetanus toxoid (doses)	Clean minor wounds		All other wounds*	
	Tdap or Td†	TIG‡	Tdap or Td†	TIG‡
<3 or unknown	Yes	No	Yes	Yes
≥ 3 doses¶	No**	No	No††	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.

† For children younger than 7 years of age, DTaP is recommended; if pertussis vaccine is contraindicated, DT is given. For persons 7–9 years of age, Td is recommended. For persons >10 years, Tdap is preferred to Td if the patient has never received Tdap and has no contraindication to pertussis vaccine. For persons 7 years of age or older, if Tdap is not available or not indicated because of age, Td is preferred to TT.

‡ TIG is human tetanus immune globulin. Equine tetanus antitoxin should be used when TIG is not available.

¶ If only three doses of fluid toxoid have been received, a fourth dose of toxoid, preferably an adsorbed toxoid, should be given. Although licensed, fluid tetanus toxoid is rarely used.

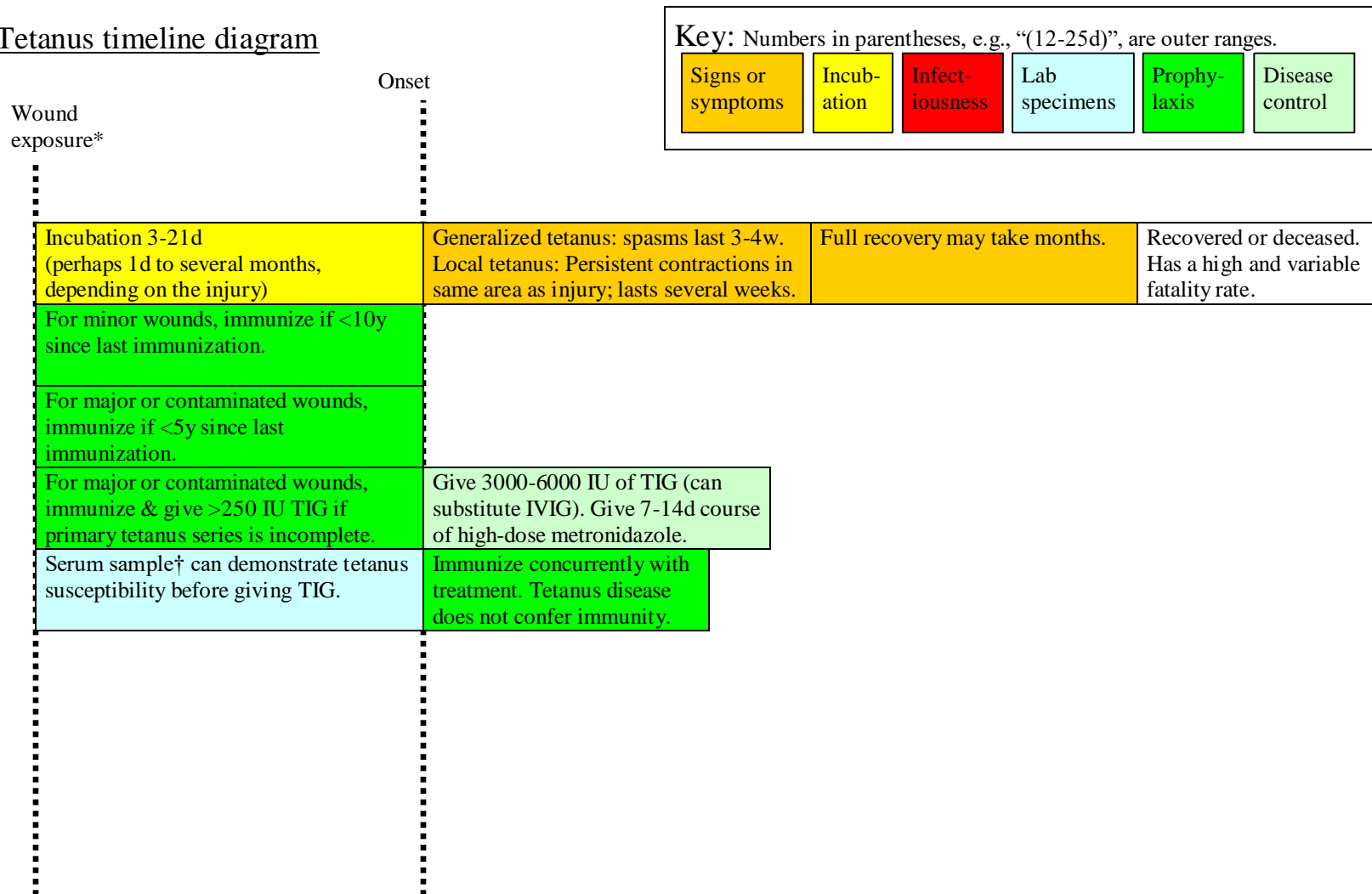
** Yes, if it has been 10 years or longer since the last dose.

†† Yes, if it has been 5 years or longer since the last dose. More frequent boosters are not needed and can accentuate side effects.

- ◆ If needed, consultation assistance is available through the following:
Contact information:
MDHHS VPD Surveillance Coordinator: 517-335-8159
MDHHS Communicable Disease Epidemiology Office: 517-335-8165
MDHHS after hours: 517-335-9030
CDC consultation (National Center for Immunization and Respiratory Diseases)
404-639-8257
CDC after-hours: 770-488-7100 or 404-639-2888 or 404-639-2889.
MDHHS Laboratory: 517-335-8067
- ◆ Provide information about tetanus to persons at risk and/or the general public. A question-&-answer [tetanus information sheet](#) in .PDF format is available from the Immunization Action Coalition.



Tetanus timeline diagram



* Tetanus is not communicable between people (though outbreaks have occurred from contaminated drug injection apparatus). It is caused by contaminated material (particularly feces) entering a wound. Tetanus can result from apparently minor wounds. Neonatal tetanus can result from infection at the umbilical stump if the mother is not immune.

† No other laboratory work is needed. Tetanus diagnosis is purely clinical.

Sources: APHA Control of Communicable Diseases Manual, AAP Red Book, CDC Pink Book, CDC VPD surveillance manual