

1 **Tetanus: A Reason to Vaccinate**

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I have nothing to disclose

3 **Objectives:**

- Identify the signs and symptoms of tetanus.
- Describe common treatments for tetanus.
- Recall the catch-up immunization schedule for tetanus coverage.

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Vitals:

- Temp: 101.9 °F
- BP: 110/69 mmHg
- HR: 88 bpm
- RR: 22 bpm

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Physical Exam:

- Neck: Supple, Pain with palpation of base of neck. Pain with extension of neck.
- Eye: PERRLA
- Ears, nose, mouth and throat: Dry oral mucosa.
- Cardiovascular: RRR, No murmur.
- Respiratory: CTAB

8 **Background: Tetanus**

Clostridium tetani:

- Anaerobic gram-positive bacillus
 - Two toxins = tetanospasmin and tetanolysin
 - Bacteria in same genus: *Clostridium difficile*, *C. perfringens*, *C. botulinum*

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- At the site of inoculation,
 - tetanus spores enter the body and germinate
 - release tetanospasmin into the bloodstream
- Via retrograde axonal transport: toxin travels to neurons

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- Lockjaw (trismus)
- Grimace facial expression
- Generalized muscle spasms: severe pain
 - Respiratory spasms: respiratory failure
 - Back arching spasm (opisthotonus)

11 **Clinical Symptoms Continued**

Autonomic dysfunction:

- Tachycardia, hypertension, and sweating
 - Episodes of rapidly alternating with bradycardia and hypotension are common
- Associated with generalized tetanus
 - Sx occur when brainstem is affected by toxin

12 13 **Tetanus Classification**

4 types:

1. Generalized
 - a. Muscles of the entire body
 - b. Leads to opisthotonus
2. Neonatal
 - a. Generalized form (< 1 month of age)
3. Local
 - a. Regional muscle spasm
4. Cephalic
 - a. Localized tetanus within the head region

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Acute Therapy:

Tetanus Immunoglobulin (TIg):

- Treatment or prophylaxis
 - After traumatic wound: non-immunized or suboptimally immunized persons

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Intrathecal Administration

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Acute Therapy:

Metronidazole (IV):

- 30-50 mg/kg/day in 3 divided doses for 7 - 10 days

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² Benzodiazepines - augment the effect of GABA on the GABA-A receptors of lower motor neurons

Diazepam - resource limited settings, survival benefit in children

- compared to barbiturates and chlorpromazine

Midazolam - short-acting, limited evidence of use

Lorazepam- Binds to GABA receptor, improves GABA binding

- No head-to-head trials
- Non-specific dosing to response

Baclofen - GABA agonist

- 10 - 15 mg orally in 2-3 divided doses (Max: 40 mg/day)

19 **Magnesium Sulfate To Treat Spasm**

Case Report:

6 Patients Treated

20 **Botulism Toxin To Treat Spasm**

Case Report:

6 Patients Treated

21 **Botulism Toxin To Treat Spasm**22 **The Vaccine Discussion**23 24 **Aluminum**

Typically, adults ingest 7 to 9 milligrams of aluminum per day.

25 **Do We Still Need to Vaccinate After a Patient has acquired Tetanus?**

- Poorly Immunologic
 - Inadequate immune response after natural infection

- Important to get full primary course of immunization

26 **For an unvaccinated patient, 7 years of age or older, how do you complete a full primary course of immunizations to cover tetanus?**

- A. One TDaP, until Td Booster in 10 yrs
- B. Two TDaPs, until Td Booster in 10 yrs
- C. One DTaP, two TDaPs, until Td Booster in 10 yrs
- D. Three TDaPs, until Td Booster in 10 yrs

27 **Vaccination Timeline**28 **Why Must All Individuals Be Vaccinated:**

- Life-Saving
- No herd immunity effect

29 **Return to Patient Case**30 ¹ Blood Cultures:

❖ No Growth (Final)

² Chest Radiograph:

❖ Impression:

- Features of viral lower respiratory tract infection
- No acute consolidative pneumonia

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- 8 y.o., 26.9 kg

32 33 ²34 35 **Attendance Code:**

Text attendance code to 413-200-2444
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