Tetanus Investigation 2013

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About St. Lawrence County, New York
St. Lawrence County, a delightfully rural mix of farms, forests and small towns, is the largest county in New York State and the fifth largest United States county east of the Mississippi River.

Land area: 2,680.38 square miles
Causes and Transmission

Common Ways Tetanus Gets Into Your Body

The bacteria can get into the body through broken skin, usually through injuries from contaminated objects. Certain breaks in the skin that are more likely to get infected with tetanus bacteria. These include:
- Wounds contaminated with dirt, poop (feces), or spit (saliva)
- Wounds caused by an object puncturing the skin, like a nail or needle (puncture wounds)
- Burns
- Crush injuries
- Injuries with dead tissue

Rare Ways Tetanus Gets Into Your Body

Tetanus has also been linked to clean superficial wounds (when only the topmost layer of skin is scraped off), surgical procedures, insect bites, dental infections, compound fractures (a break in the bone where it is exposed), chronic sores and infections, and intravenous (IV) drug use.

The incubation period – time from exposure to illness – is usually 3–21 days (average 10 days), although it may range from 1 day to several months, depending on the kind of wound. Most cases occur within 14 days. In general, shorter incubation periods are seen with more heavily contaminated wounds, more severe disease, and a worse outcome of the disease (prognosis).
Symptoms of Tetanus

- Headache
- Jaw cramping
- Sudden, involuntary muscle tightening – often in the stomach (muscle spasms)
- Painful muscle stiffness all over the body
- Trouble swallowing
- Jerking or staring (seizures)
- Fever and sweating
- High blood pressure and fast heart rate
Tetanus Complications Include:

- Uncontrolled/involuntary muscular contraction of the vocal cords (laryngospasm)
- Break in the bone (fracture)
- Hospital-acquired infections
- Blockage of the main artery of the lung or one of its branches by a blood clot that has travelled from elsewhere in the body through the bloodstream (pulmonary embolism)
- Pneumonia, a lung infection, that develops by breathing in foreign materials (aspiration pneumonia)
- Breathing difficulty, possibly leading to death (10-20% of cases are fatal)

Diagnosis and Treatment

Doctors can diagnose tetanus by examining the patient and looking for certain signs and symptoms. There are no hospital lab tests that can confirm tetanus.

Tetanus is a medical emergency requiring:

- Hospitalization
- Immediate treatment with human tetanus immune globulin (TIG) (or equine antitoxin)
- Tetanus vaccine
- Drugs to control muscle spasms
- Aggressive wound care
- Antibiotics

Depending on how severe the infection is, a machine to help you breathe may be required. A tetanus vaccine should be given along with treatment.
**Tetanus Vaccination**

Tetanus vaccines are recommended throughout your life. There are four combination vaccines used to prevent tetanus:

- DTaP
- Tdap
- DT
- Td

DTaP and DT are given to children younger than 7 years of age, and Tdap and Td are given to older children and adults.

Several other combination vaccines contain DTaP along with other childhood vaccines.

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**Amish Populations**

Location of Amish Groups (undifferentiated) Congregations in the United States, 2010

![Amish Population Map](image)
Estimate: A New Amish Community is Founded Every 3 1/2 Weeks in U.S.

The census counts almost 251,000 Amish in the United States and Ontario, Canada, dispersed among 456 settlements, the communities in which members live and worship. The 1990 census estimated that there were 179 settlements in the United States.

The absence of a centralized church registry makes it complicated to produce an accurate estimate of the Amish population.

Case Study

September 19, 2013 – Day 9

Presentation

- A nine year old Amish child presented at a local pediatrician’s office with complaint of pain in his right foot.
- The child had stepped on a rusty nail 9 days prior to office visit.
- The mother had cleaned the wound and there did not appear to be any infection.

Physician’s Actions

- Physician provided the child with a Tdap vaccination and an antibiotic.
- Parents took the child home.
September 20, 2013 – Day 10

- Child returned to pediatrician’s office complaining of severe leg aches going up his leg and a sore throat.
- Mother stated he was not taking in any fluids and there was no output.

Physician’s Actions

- The Physician personally carried the child to the Emergency Department.
- IV fluids and antibiotics were started
- Rapid Strep Screen was Positive
- While in the ER the child’s condition deteriorated. The child became agitated and began thrashing and yelling in pain.
- The Physician consulted with SUNY Upstate Medical staff.
- The child was intubated and sedated for transport by med-flight to SUNY Upstate.

September 20, 2013 – Day 10, continued

At SUNY Upstate

- Child was given tetanus immunoglobulin (TIG)
- Child was admitted to the Intensive Care Unit (ICU)

September 21, 2013 – Day 11

- St. Lawrence County Public Health Department on-call nurse was notified by Onondaga Public Health Director of a case of tetanus.

September 23, 2013 – Day 13

- The SLCPHD Communicable Disease Coordinator began an investigation.
- Contacted the Infectious Disease Nurse (ICN) at SUNY Upstate and was made aware of the child’s current status.
- Child was exhibiting:
  - tetany
  - severe pain
  - episodes of tachycardia
  - episodes of hypotension
  - jaw spasms
September 24-26, 2013 – Days 14-16
- SLCPHD called daily to speak with the ICU attending physician for updates on child’s status.
- Child’s status remained the same, intubated and sedated for pain control.
- Episodes of tachycardia and hypotension were being controlled with medication.
- Coordinator updated the NYSDOH Regional Communicable Disease Representative, the Immunization Representative and Cindy Shulte, the Vaccine Preventable Disease Surveillance Officer.

September 27, 2013 – Day 17
- A feeding tube and a tracheostomy were put into place for supportive care.

September 30, 2013 – Day 20
- Sedation was suspended for short periods to evaluate the child’s tolerance.
- Child was able to respond to small commands.
- Child was not able to tolerate the symptoms for extended periods and paralytics were continued.

October 6-11, 2013 – Days 26-31
- Medical staff began process of weaning the child from the ventilator.

October 12, 2013 – Day 32
- Child was transferred out of ICU

October 17, 2013 – Day 37
- Child was decannulated

October 20, 2013 – Day 40
- Physicians discussed with the family the recommendation to send the child to re-hab for one month due to the effects of the tetany and his prolonged hospital stay.
- Parents refused transfer to re-hab therapy unit due to cost.
- Physical therapists met with the family and provided a plan for at-home re-habilitation.
- The nutritionist also met with the family and discussed increase in protein and calorie intake during recovery.
October 21, 2013 – Day 41

- Child was discharged to home with instructions to follow-up with his local pediatrician.
- Child continued to have episodes of tetany and was prescribed Valium for pain control.
- Plan of care included gradual weaning from the medication over a six week period.

October 24, 2013 – Day 44

- Parents brought the child to his local pediatrician’s office for follow-up.
- He was ambulatory, using a walker with a seat.

Lessons Learned and Education Provided to Prevent Another Incident
Lessons Learned

Standard treatment is TIG and Tetanus vaccine

This hospital did not have any TIG on hand.

All hospitals in the County were contacted by the Communicable Disease Coordinator to assess their current stock of TIG

The local hospital involved now has a supply of TIG

Amish vaccinate at a lower rate due to:

Lack of understanding of benefits - some Amish may simply see no benefit in this preventative measure

Distrust over safety - some may view immunization as putting themselves at risk through exposure to a disease or fear that a vaccination may cause an illness

Religious grounds - some Amish may see immunization as putting faith in man over God

Prevention

Communicable Disease Coordinator reached out to the Infection Control Nurses at all County hospitals and provided them with the current treatment recommendations for Tetanus exposure.

The ICN's distributed the information in both electronic and hardcopy format to all providers practicing in their facilities.

A Delicate Approach

SLCPHD asked the SUNY Upstate physician to speak with the parents regarding the public health department approaching their Bishop to discuss vaccinations for their community.

SLCPHD nurse went to the Bishop’s house and discussed immunizations with him. He agreed to the nurse bringing him educational information about immunizations for his review.

The Bishop then requested additional copies for distribution to his parishioners.

SLCPHD offered to provide a free immunization clinic to his church but has not yet been invited to provide any clinics.

The child’s family was vaccinated with Tdap at the pediatrician’s office.
Whooping cough, tetanus, and diphtheria are serious diseases... Make sure your child is protected!

What are whooping cough, tetanus, and diphtheria?

Whooping cough (pertussis), tetanus, and diphtheria are serious diseases caused by bacteria.

How do you catch these diseases?

Whooping cough and diphtheria are spread person-to-person through the air. Tetanus gets into the body through cuts or wounds.

Are they serious?

Yes, whooping cough can trigger such bad coughing that babies can't breathe. Babies are the most likely to die from this disease. Tetanus can cause serious nerve damage. Diphtheria can cause deadly heart problems and paralysis.

Is my child at risk?

Yes, whooping cough is common all over the U.S., and recent outbreaks have caused many hospitalizations and deaths. Tetanus lives in the soil, so a child who plays outside can get infected even from a small injury. Diphtheria is rare in the U.S., but outbreaks still happen in other countries.

How can I protect my child from whooping cough, tetanus, and diphtheria?

You can protect your child from these serious diseases with vaccines.

All children should get 3 doses of DTaP vaccine, beginning when they are 2-months old. This vaccine protects against diphtheria, tetanus, and pertussis (whooping cough). If your child misses a dose or gets behind schedule, make sure they get the next dose as soon as possible.

For more information, visit www.vaccinesinformation.org

Hib is a serious disease...

Make sure your child is protected!

What is Hib?

Hib (Haemophilus influenzae type b) is a serious disease caused by bacteria. Hib usually infects children younger than 5 years old.

How do you catch Hib?

Hib is spread person to person through the air. Your child can get Hib disease from being around children or adults who have Hib bacteria in their nose or throat. These people may or may not appear sick.

Is Hib serious?

Yes, Hib can cause meningitis (infection of the brain and spinal cord). This can lead to permanent damage to the brain and spinal cord. Hib infection can also cause pneumonia, blood infections, and severe swelling in the throat that can block breathing and lead to death.

Is my child at risk?

Yes, Hib is common throughout the world. Each year, Hib sickens millions of children worldwide and kills more than 300,000. The number of children infected by Hib has decreased greatly in the U.S. because of vaccination, but an unvaccinated child can still get infected.

How can I protect my child from Hib?

You can protect your child from Hib with vaccines.

All children should get 3-4 doses of Hib vaccine (depending on brand), starting at 2 months of age. If your child misses a dose or gets behind schedule, make sure they get the next dose as soon as possible.

For more information, visit www.vaccinesinformation.org
Measles, mumps, and rubella are serious diseases... Make sure your child is protected!

What are measles, mumps, and rubella?

Measles, mumps, and rubella are serious diseases caused by viruses.

How do you catch these diseases?

All of these diseases are spread person-to-person through the air. They are very contagious.

Are they serious?

Yes. Measles can cause pneumonia, seizures, brain damage, and even death. Infections can be severe, even in healthy children. Measles can cause serious birth defects if a pregnant woman gets infected.

Is my child at risk?

Yes. These illnesses are very contagious, so when one person gets infected, it's easy for the disease to spread. These diseases are still common around the world. There have been many recent measles and mumps outbreaks in the U.S. due to infected people bringing the disease in from other countries.

How can I protect my child from measles, mumps, and rubella?

You can protect your child from these serious diseases with vaccination.

All children should get 2 doses of WMM (measles-mumps-rubella) vaccine starting at 1 year of age. Some teens may also need MMR vaccine if they didn’t get 2 doses when they were younger.

For more information, visit www.vaccinesforchildren.org

Cocooning Protects Babies

Everyone in a baby’s life needs to get vaccinated against whooping cough and flu!

What is cocooning?

Baby's younger than 3 months old are especially vulnerable to catching serious illnesses than older children. Cocooning means protecting infants from getting diseases from the people around them—people they may not want to be around.

Why is cocooning important?

Babies have less developed immune systems than older children. Cocooning helps to keep them safe and healthy.

How can we protect babies?

- Infants have the opportunity to prevent getting vaccinated themselves. Cocooning is an easy and effective way that people can work together to prevent the spread of whooping cough and flu to infants.
- Infants should not be around anyone who has been sick with pertussis or flu within 6 months of age.

Cocooning: How to Protect Your Baby

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Child’s Current Status

While the child has not returned to the Pediatrician’s office for follow-up, an office staff person has seen the family in the community and the child is doing well.
Questions?

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