Tetanus in England: 2019

Key points

- Tetanus is a potentially life-threatening but preventable infection.
- From January 2019 to December 2019 there were 4 cases reported in England.
- No tetanus related deaths were recorded during this period.

Cases of tetanus in England 2019

This article updates the 2018 HPR report on surveillance data for England covering that period [1] and reiterates current recommendations on diagnosis and clinical management of tetanus. Data sources in England for the enhanced surveillance of tetanus include notifications, reference and NHS laboratory reports, death registrations, and individual case details such as vaccination history, source of infection, and severity of disease obtained from hospital records and general practitioners. Cases of tetanus are known to be under-reported. A comparison of surveillance data to hospital episode statistics during the period 2001 until 2014 suggested that tetanus was under-reported by 88% during that period [2].

Four cases of clinical tetanus were identified in England between January and December 2019. Tetanus is a notifiable disease in accordance with the amended Public Health (Control of Disease) Act 1984 and accompanying regulations [3]. Only one of the cases was formally notified; a second notified case was later discounted as tetanus.

The four cases were aged 39 to 70 years old; 3 were male and 1 was female. Of the four cases, 2 cases were born before 1961 when routine childhood vaccination was introduced in the UK [2,4]. All had a history of injury sustained in a variety of settings, 3 at work (two construction sites and one in a farm environment) and 1 in the home/garden.

Three cases presented with mild symptoms (grade 1) [5], whilst one had very severe symptoms [4]. All cases were hospitalised and two were admitted to ITU, but no cases died.

Vaccination status was not known definitively for any of the cases. One of the milder cases reported having received childhood vaccinations, although they could not be verified from written records, as the patient was non-UK born. One individual who was born before 1961, had a single “booster” dose of tetanus-toxoid recorded, despite no record of primary vaccination, whilst the other mild case had a record of some “childhood vaccination” in the late 1950s, which did not record what they were, and a
single tetanus-toxoid booster within the last 10 years. The patient with severe tetanus was born after 1961 and self-reported having received childhood vaccinations, but this could not be confirmed from primary care records and there was no evidence of the patient having received a booster dose of tetanus-toxoid within the last 20 years.

The 3 milder cases had sought medical advice at the time of injury, 2 were given antibiotics and 2 were given tetanus toxoid booster, but none were recorded as being offered post-exposure prophylaxis with intramuscular preparation of tetanus-specific immunoglobulin (TIG), despite the recommendation that all exposed individuals with unknown vaccination status be offered prophylaxis with TIG following a tetanus-prone wound, including the 2 who were known to have been born before 1961 [5]. All 4 cases received intravenous immunoglobulin (IVIG) or TIG (IM) during their admission to hospital, when clinical symptoms of tetanus were diagnosed.

Only one case had samples tested by PCR detection of the neurotoxin gene or by culture of \textit{C. tetani} [8], but \textit{C. tetani} was not detected. Pre-immunoglobulin blood samples from 3 cases of clinical tetanus were sent to the Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) for anti-tetanus antibody testing. But all 3 cases, including the severe case, were found to have levels of antibodies against tetanus that may be considered to confer protection (>0.1 IU/ml) at the time the sample was taken. Two of these had received a booster dose of tetanus toxoid at the time of injury. Serological testing is not a reliable indicator for diagnosis to confirm or to rule out tetanus [5].

**Background, diagnosis and clinical management**

Tetanus is a life-threatening but preventable disease caused by a neurotoxin (tetanospasmin, TS) produced by \textit{Clostridium tetani}, an anaerobic spore-forming bacterium. Tetanus spores are widespread in the environment, including in soil, and can survive hostile conditions for long periods of time. Transmission occurs when spores are introduced into the body, often through a puncture wound but also through trivial, unnoticed wounds, chronic ulcers, injecting drug use, and occasionally through abdominal surgery. Neonatal tetanus is still common in the developing world where the portal of entry is usually the umbilical stump, particularly if there is a cultural practice of applying animal dung to the umbilicus. Tetanus is not transmitted from person to person. The incubation period of the disease is usually between 3 and 21 days, although it may range from one day to several months, depending on the character, extent and localisation of the wound.

Tetanus immunisation was introduced in the 1950s and became part of the national routine childhood programme in 1961 [7]. Since then, vaccine coverage at 2 years of age has always exceeded 70% in England and Wales and since 2001 has been around or above 95%, the target coverage set by the World Health Organization (WHO). The
objective of the immunisation programme in the UK is to provide a minimum of 5 doses of tetanus-containing vaccine at appropriate intervals for all individuals. As there is no herd immunity effect, individual protection through vaccination is essential. In most circumstances, a total of 5 doses of vaccine at the appropriate intervals are considered to give satisfactory long-term protection, and routine boosters every 10 years are no longer recommended [8].

Recommendations for the treatment of suspected clinical tetanus and management of tetanus prone wounds were updated in Revised Guidelines published by PHE in 2018 [5]. Clinical management of tetanus includes administration of IVIG, wound debridement, antimicrobials including agents reliably active against anaerobes such as metronidazole, and vaccination with tetanus toxoid following recovery.

The revised guidelines emphasise the clinical diagnosis of suspected tetanus. Three diagnostic laboratory tests are available to support diagnosis: detection of *C. tetani* from the infection site by PCR and culture, and detection of tetanus toxin in serum, using a bioassay [5]. Debridement of wounds is clinically beneficial and wound samples provide the diagnostic sample for the isolation of *C. tetani* or detection of toxin by PCR. However, a negative laboratory test does not rule out a case.

The revised guidelines provide updated advice on treatment of clinical tetanus using intravenous immunoglobulin (IVIG) and on the assessment and management of tetanus prone wounds based on age and vaccination status. Revised guidelines highlight that patients born before 1961 in the UK are unlikely to have completed a primary course and this should be taken into account as part of the risk assessment. Since the supply of intramuscular (IM)TIG is limited, for tetanus prone wounds requiring prophylactic (IM)TIG, HNIG for subcutaneous use may be given intramuscularly as an alternative to TIG [5]. Further details are available at: www.gov.uk/government/publications/tetanus-advice-for-health-professionals.
References


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