Tetanus in England: 2018

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Key points

- tetanus is a potentially life-threatening but preventable infection
- from January to December 2018 there were seven cases reported in England
- three tetanus related deaths were recorded during this period.

Cases of tetanus in England in 2018

This article updates the 2017 HPR report on surveillance data for England and Wales covering that period [1] and reiterates current recommendations on diagnosis and clinical management of tetanus. Data sources 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 underreported. A comparison of surveillance data to hospital episode statistics during the time period 2001 until 2014 suggested that tetanus was under-reported by 88% during that period [4].

Seven cases of clinical tetanus were identified in England between January and December 2018. Tetanus is a notifiable disease in accordance with the amended Public Health (Control of Disease) Act 1984 and accompanying regulations [2].

The seven cases were aged 31 to 88 years old; three were male and four were female. Of the seven cases, six cases were born before 1961 when routine childhood vaccination was introduced in the UK [3, 4]. Cases occurred in January, February, May, August and October. All but two of the cases had a history of injury sustained in a variety of settings, four in the garden, and one had wounds due to pressure sores. One case had no apparent wound but the case was reported to be a keen gardener. The other case was an intravenous drug user with no obvious wounds, but had a history of recent injection.

Two presented with localised tetanus/mild symptoms (grade 1) [8], one presented with moderate symptoms (grade 2), three had severe symptoms [3a] and two, had very severe symptoms [3b]. One case had sepsis in addition to tetanus symptoms. Three of the cases died from their infection, all with severe cases of tetanus [3a, 3a and 3b].
Vaccination status was likely to be associated with severity of disease: the three cases who died were all individuals born before 1961. One had an unknown vaccination status and the other two had a single tetanus-containing vaccine recorded, but no recorded history of primary vaccination. The other two severe cases who survived were also in individuals born before 1961; one was not thought to be vaccinated, and the other had a single dose of tetanus-toxoid recorded, but again no history of primary vaccination. The localised and moderate cases were in younger individuals who were reported to have received the recommended doses of tetanus-toxoid containing vaccine, although neither case could be verified from written records.

Four of the cases had sought medical advice at the time of exposure, two were given antibiotics and three 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. Three of these individuals were known to have been born before 1961 with no documented history of primary vaccination [8].

All seven of the cases received intravenous immunoglobulin (IVIG) or TIG (IM) during their admission to hospital. Of the three fatal cases, two presented for the first time with severe tetanus symptoms. The other case had presented at the time of injury and received a booster dose of tetanus toxoid but no prophylactic dose of IM-TIG or HNIG.

Only one case was confirmed PCR detection of the neurotoxin gene or by culture of C. tetani [8]. Pre-immunoglobulin blood samples from three cases of clinical tetanus were sent to the Respiratory and Vaccine Preventable Bacteria Reference Unit (RVPBRU) for anti-tetanus antibody testing. One severe and one moderate case had very low levels of anti-tetanus antibodies and were not considered immune (<0.01IU/ml). One of the cases who later died was 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, having 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.

**Background, diagnosis and clinical management**

Tetanus is a life-threatening but preventable disease caused by a neurotoxin (tetanospasmin, TS) produced by *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 three 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 [6]. Since then, vaccine coverage at two 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 five 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 five 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 [7].

Recommendations for the treatment of suspected clinical tetanus and management of tetanus prone wounds were updated in Revised Guidelines published by PHE in 2018 [8]. 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 [8]. 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 [8].

Further details are available at: https://www.gov.uk/government/publications/tetanus-advice-for-health-professionals.

References


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Health Protection Report is a national public health bulletin for England and Wales, published by Public Health England. It is PHE’s principal channel for the dissemination of laboratory data relating to pathogens and infections/communicable diseases of public health significance and of reports on outbreaks, incidents and ongoing investigations.

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