Public Health England

Serial number 2018/036 **Date 23/07/2018**

Event: Updated Guidance on use of Tetanus Specific Immunoglobulin (TIG) for management of tetanus prone wounds during current supply shortage

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PHE NIRP Level	**N/A**
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Background and Interpretation:
The incidence of tetanus in the UK has decreased substantially following the introduction of a national tetanus immunisation programme in 1961(1). Immunisation provides individual protection since, as *C. tetani* is an environmentally acquired organism there is no herd protection effect. The highest incidence in England has been observed among individuals aged over 65 years who are at highest risk of being under-immunised, with very few cases of tetanus reported in children.

In the UK, 5 doses of tetanus containing vaccine are routinely offered. In addition, the Men C/Hib vaccine, which is routinely offered to all infants at 12 months and MenACWY offered to adolescents, are conjugated to tetanus toxoid, and also likely to boost immunity. The primary series of tetanus containing vaccine is at 2, 3 and 4 months of age, and then a school-entry booster is recommended at 3 years 4 months (1). Although antibody levels decline around five years after the primary series in infancy, there is an excellent response to the booster at 3 years 4 months of age and antibody levels persist at least until age 14, when the adolescent booster dose results in a further rapid and high increase in antibody. No further routine doses of tetanus containing vaccine are offered in adulthood. Booster doses of tetanus containing vaccine are offered to individuals in specific circumstances including travel, following an exposure and during pregnancy (as part of the maternal pertussis immunisation programme). A recent WHO review concluded that following the primary series, typically immunity persists for 10 years after the fourth dose and for at least 20 years after the fifth dose (1).

National guidelines on the management of tetanus prone injuries and clinically suspected tetanus cases are published and updated by Public Health England (PHE). Based on a risk assessment on the nature of the wound and immunisation status of the individual, a reinforcing dose of tetanus containing vaccine +/- tetanus specific immunoglobulin (TIG) may be recommended. Current guidance recommends that individuals receive a prophylactic dose of intramuscular TIG if they sustain a high risk injury without an additional booster dose. High risk is regarded as heavy contamination with material likely to contain tetanus spores and/or extensive devitalised tissue.

The rationale for using IM-TIG in at-risk individuals is to sufficiently and rapidly raise antibody levels in exposed individuals who cannot rely on immune memory – peak levels are achieved 4 days after an IM dose. In individuals who have completed a full primary course, a measurable increase in antibody titres following a vaccine booster has been observed as early as 4 days, but levels increase substantially from day 7 (1-3).

The median incubation period for tetanus is reported as 7 days but can range from 4-21 days and therefore it is important that either TIG or active boosting occurs promptly following an exposure. It has also been shown that the antibody levels achieved after 5-7 days post reinforcing dose of vaccine likely exceeds the estimated antibody boost from a prophylactic dose of IM- TIG in an adult (2, 3).

Unlike many other immunoglobulin products recommended for post exposure prophylaxis, which are procured centrally and issued by PHE, IM-TIG is sourced directly from the manufacturer by the NHS. Recent usage data suggests it is being widely used in the NHS (approximately 12,000 vials per year in 2016/2017) and for many years there have been supply shortages of TIG. In response to the ongoing supply shortages, in 2013 PHE convened an expert working group to review existing guidelines. Following the testing of the tetanus potency of a Human Normal Immunoglobulin product (Subgam), PHE guidelines were updated to advise the use of Subgam as an alternative, when TIG could not be sourced by local NHS Trusts.

PHE has recently become aware of a severe shortage of TIG and Subgam available in the NHS. Furthermore, the alternative HNIG products that are approved for use by NHS England are also in limited supply. As a consequence, PHE have urgently reviewed the existing evidence and data to prioritise the use of TIG /HNIG for susceptible individuals who have sustained high risk injuries and would gain additional benefit over and above a reinforcing dose of tetanus vaccine. These interim guidelines, which also include revised definitions for tetanus prone wounds, are now published at https://www.gov.uk/government/publications/tetanus-immunoglobulin-recommendations-on-treatment-and-prophylaxis (4).

Implications and Recommendations for PHE Centres

Health Protection Teams (HPTs) may be called for advice regarding the risk assessment for tetanus prone injuries and are asked to note the updated guidance.

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Health Protection Teams should facilitate the cascade of this briefing note to their local Accident and Emergency departments and General Practitioners through local systems, to ensure they are aware of the latest advice.

Implications and Recommendations for PHE sites and services

The Specialist microbiology network is asked to note the current supply issues with im TIG and updated guidance on its use for post exposure prophylaxis. Colleagues may also be asked for advice regarding treatment of clinically suspected cases and are asked to familiarise themselves with the current advice regarding intravenous immunoglobulin (IVIG) for treatment.

Lead Public Health microbiologists are requested to forward this briefing note to their local NHS Laboratories / microbiologists who may be involved in the risk assessment for tetanus prone wounds and providing clinical advice for managing clinically suspected tetanus cases.

Implications and recommendations for local authorities

N/A

References/ Sources of information

1. WHO (Tetanus Working Group), Borrow, R, Basta N & Miller E. The Immunological Basis for immunization series. Module 3: Tetanus. Update 2018 (under review)
2. Simonsen O et al., 1987. J. Trauma 27: 1358-61.
3. Halperin et al., 2011. Clin Infect Dis 53: 885-92.
4. Recommendations on the treatment and prophylaxis of tetanus. https://www.gov.uk/government/publications/tetanus-immunoglobulin-recommendations-on-treatment-and-prophylaxis July 2018.
