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Epidemiol. Infect. (2017).

doi:10.1017/S0950268817001741

First published online 14 August 2017

Tetanus vaccination, antibody persistence and decennial booster

Reply to ‘New guidelines about tetanus vaccination schedules in Europe should be evaluated with caution’ by Eldin and co-workers

We are pleased that our recent publication [1] has provoked a debate on the decennial booster schedule for tetanus. The case-report by Eldin and co-workers [2] raises the relevant issue of the tetanus protection carried by individuals who received their last dose of the vaccine more than 10 years ago. In our manuscript, we provided data in line with the French vaccination schedule, which were updated in 2013 with a 20-year interval between boosters. The authors of the letter, in contrast, report on a case of a 50-year-old man who developed tetanus 17 years after receiving his last vaccination, which he received in 1999 aged 33.

This is a case that deserves analysis. The description given by Eldin and co-workers regarding this case of tetanus lacks important information, such as the number of doses received by the patient before his last vaccination in 1999.

This is relevant because our results [1] clearly show that the prevalence of subjects with an antibody titre

below the threshold of protection (0.10 IU/ml) depends not only on the interval since the last dose, but above all on the number of doses of the vaccine received.

According to these data, when a vaccine schedule includes five doses, the prevalence of unprotected subjects is only 3.1%; if the number of doses was >5, no one was found to be unprotected. Indeed, if we further analyse the 16.1% of unprotected subjects who had a gap of over 15 years since their last dose, only 4.5% had actually completed the five-dose schedule, and none had received any further vaccinations (Table 1).

As further shown in Table 1, the prevalence of titres showing no protection is inversely related to the number of vaccine doses.

Our conclusion is that we are correct in our belief that a sixth dose of the tetanus vaccine should be administered around 30 years of age (about 15 years after the fifth dose). According to our results, this should provide protection for a long period of time. In addition, each additional dose should be evaluated based on an antibody titre.

We strongly agree on the requirement for harmonization, at least in the European community, on tetanus

Table 1 Relationships between intervals since the last vaccine dose, number of vaccine doses and percentage of unprotective titres in subjects who received tetanus vaccines

Interval since last dose (years)	Frequency of unprotected subjects	Per cent	Frequency of unprotected subjects after five doses	Per cent	Frequency of unprotected subjects after more than five doses	Per cent	Doses: mean (s.d.)
≤5	0/415	0	0	0	0/415	0	5.49 (0.84)
6–≤10	1/42	0.2	1/42	0.2	0/42	0	5.36 (0.69)
11–≤15	14/241	5.8	5/241	2.1	0/241	0	4.61 (0.71)
>15	57/355	16.1	16/355	4.5	0/355	0	4.42 (0.66)

Columns 2, 3 and 4 are published in [1].

vaccine schedules, as well as the necessity of creating unique guidelines concerning tetanus prevention and the intervals used for tetanus vaccines in light of each country's schedule for those under the age of 14.

References

1. **Borella-Venturini M, et al.** Tetanus vaccination, antibody persistence and decennial booster: a serosurvey of university students and at-risk workers. *Epidemiology and Infection* 2017; **145**: 1757–1762.
2. **Eldin C, et al.** Letter to the Editor: New guidelines about tetanus vaccination schedules in Europe should be evaluated with caution. Comment on: Tetanus vaccination, antibody persistence and decennial booster: a

serosurvey of university students and at-risk workers. By Borella-Venturini *et al.* *Epidemiol Infect* 2017; doi: 10.1017/S0950268817001765.

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