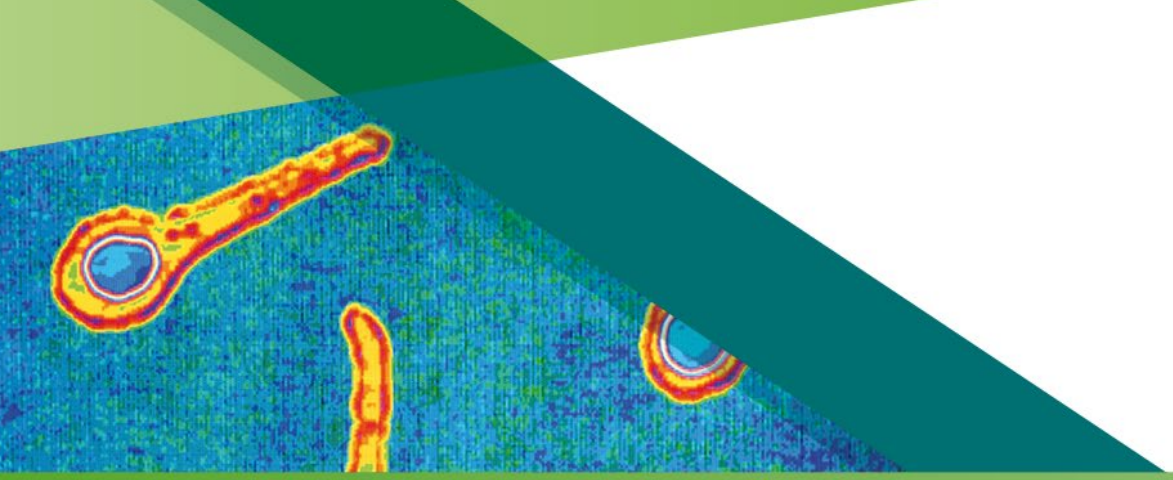


SURVEILLANCE REPORT

Tetanus

Annual Epidemiological Report for 2024

Key facts

- In 2024, 73 tetanus cases were reported in the European Union/European Economic Area (EU/EEA), 15 of which (21%) were confirmed cases.
- The number of reported cases increased from 32 in 2020, to 50 in 2021, 53 in 2022 and 73 in 2023, remaining stable at 73 cases in 2024.
- A higher number of cases were reported among men than women, and adults 65 years and above were the most affected age group.
- In 2024, 19 fatal tetanus cases were reported (representing 28% of the 67 cases with a known outcome), mostly in men over 70 years.
- The current epidemiology in the EU/EEA may be explained by lower vaccination coverage and/or waning immunity among older populations.
- Although the EU/EEA population-weighted average vaccination coverage for diphtheria tetanus toxoid and pertussis (DTP3) among one-year-olds remained high for 2024 (92.6%), there was a slight decline compared with previous years (93.4% in 2020, 93.6% in 2021, 93.4% in 2022, 92.8% in 2023).
- Due to the severity of tetanus, there is a need to maintain high vaccination rates in all age groups and to continue developing and implementing strategies to protect specific groups – particularly the elderly – in countries with higher rates of disease.

Introduction

Tetanus is a severe disease caused by the neurotoxin of the bacterium *Clostridium tetani*, which infects through wounds and thrives in low-oxygen conditions. Unlike other vaccine-preventable diseases, tetanus is not contagious and can only be contracted through direct contamination with spores found in soil, dust and faeces. The neurotoxin affects the nervous system, leading to muscle rigidity and spasms. The disease presents in three forms: generalised, localised, and cephalic, with generalised being the most common.

Vaccination is the primary prevention method, significantly reducing incidence in regions with comprehensive immunisation programmes. Tetanus remains a concern in areas with inadequate vaccination, especially affecting new-borns and mothers. Treatment involves immunoglobulin, antibiotics and wound care, but once the toxin binds to neurons it cannot be neutralised. Despite the decline in cases in Europe, maintaining high vaccination coverage, especially among the elderly and high-risk groups, is essential.

Suggested citation: European Centre for Disease Prevention and Control. Tetanus. In: ECDC. Annual epidemiological report for 2024. Stockholm: ECDC; 2026.

Erratum: On 28 July 2026, the second sentence in the 'Key facts' section was amended to reflect an error in the number of cases whereby 2022 had been listed twice and 2020 omitted.

Stockholm, July 2026

Methods

This report is based on data for 2024 retrieved from EpiPulse Cases on 18 March 2026. EpiPulse Cases is a system for the collection, analysis and dissemination of data on communicable diseases that replaced The European Surveillance System (TESSy) in October 2024.

For a detailed description of the methods used to produce this report, refer to the Methods chapter of the 'ECDC Annual Epidemiological Report' [1].

An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available and downloadable through ECDC's online 'Surveillance Atlas of Infectious Diseases' [3].

For 2024, 27 EU/EEA countries reported data on tetanus cases to EpiPulse Cases. All countries except Belgium, Denmark, France, Italy and Romania reported data on cases of tetanus in accordance with the 2008, 2012 or 2018 EU case definitions. Denmark, France, Italy and Romania used other cases definitions and Belgium did not specify the case definition [2,4].

Most countries reported case-based data from comprehensive and passive surveillance systems with national coverage; Bulgaria reported aggregated data. Tetanus is not under surveillance in Finland. Germany has never reported tetanus data to ECDC, and Austria last reported tetanus data to ECDC in 2011.

Vaccination coverage estimates presented in this report were obtained from the World Health Organization (WHO) Immunization Data Portal/United Nations Children's Fund (UNICEF) Estimates of National Immunization Coverage (WUENIC) [5]. Vaccination coverage is defined as the percentage of one-year-olds who have received three doses of the combined diphtheria, tetanus toxoid, and pertussis vaccine in a given year. The method for calculating this indicator is outlined in the metadata, which is available online [5].

Epidemiology

In 2024, 27 EU/EEA countries reported 73 tetanus cases, which is the same number as in 2023 but higher than the 53 cases reported in 2022. Of these, 15 cases (21%) were classified as confirmed and 58 (79%) as probable. Italy reported the highest number, accounting for 38% of all cases (Table 1, Figure 1). Spain, Poland and Romania accounted for a further 38% of all notified cases. Sixteen countries reported zero cases (Table 1, Figure 1). Since 2020, an upward trend has been observed in number of reported cases. In 2023 and 2024, case numbers remained stable, at levels higher than those observed in the previous three years (2022: 53 cases; 2021: 50; 2020: 32) which had probably been affected by the COVID-19 pandemic.

The crude EU/EEA notification rate was 0.03 cases per 100 000 population, which is within the range that has been reported since 2012. The highest rate was reported by Lithuania (0.10 cases per 100 000 population) and Estonia (0.07 cases per 100 000 population).

Between 2020 and 2024, Italy reported 41% (n=114) of all the cases reported in the EU/EEA (n=281). From 2020 to 2024, Italy mostly reported probable cases (93%), in comparison with the years before 2018 when it mostly reported confirmed cases. However, the case definition used for reporting was not the EU definition at any time. Of the 114 cases reported by Italy from 2020 to 2024, 89% occurred in the age group 65 years and above.

Table 1. Tetanus cases and rates per 100 000 population by country and year, EU/EEA, 2020–2024

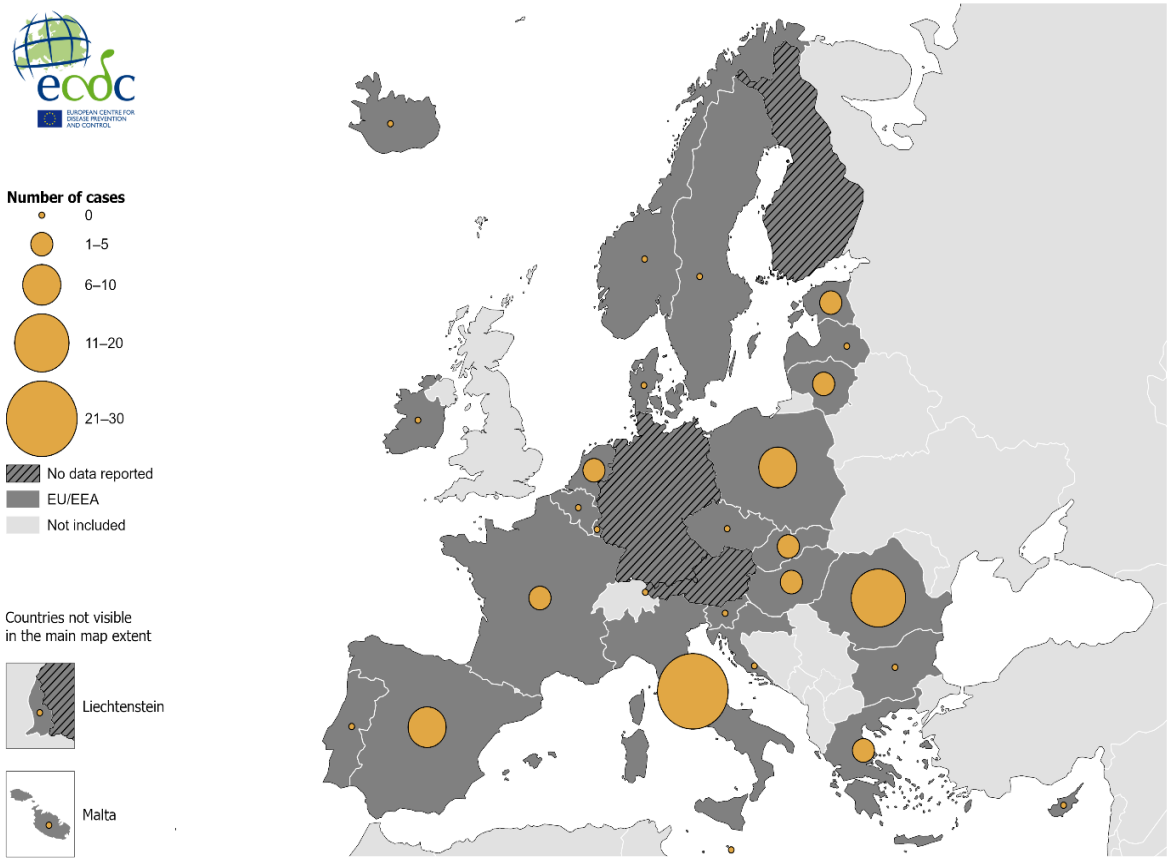
Country	2020		2021		2022		2023		2024		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Belgium	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Bulgaria	0	NRC	0	NRC	0	NRC	2	0.03	0	NRC	NRC
Croatia	0	NRC	0	NRC	0	NRC	1	0.03	0	NRC	NRC
Cyprus	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Czechia	0	NRC	0	NRC	2	0.02	0	NRC	0	NRC	NRC
Denmark	0	NRC	1	0.02	0	NRC	1	0.02	0	NRC	NRC
Estonia	0	NRC	0	NRC	0	NRC	1	0.07	1	0.07	0.06
Finland	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
France	3	0.00	5	0.01	4	0.01	2	0.00	4	0.01	0.01
Germany	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Greece	2	0.02	2	0.02	3	0.03	2	0.02	2	0.02	0.02
Hungary	3	0.03	2	0.02	1	0.01	1	0.01	3	0.03	0.03
Iceland	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Ireland	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Italy	10	0.02	27	0.05	21	0.04	28	0.05	28	0.05	0.03
Latvia	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Liechtenstein	NDR	NRC	0	0.00	0	0.00	0	0.00	0	0.00	0.00
Lithuania	0	NRC	1	0.04	0	NRC	3	0.10	3	0.10	0.09
Luxembourg	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Malta	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Netherlands	2	0.01	0	NRC	2	0.01	5	0.03	3	0.02	0.01
Norway	0	NRC	0	NRC	0	NRC	0	NRC	0	NRC	NRC
Poland	2	0.01	5	0.01	5	0.01	13	0.04	8	0.02	0.02
Portugal	0	NRC	1	0.01	0	NRC	1	0.01	0	NRC	NRC
Romania	3	0.02	4	0.02	5	0.03	5	0.03	12	0.06	0.06
Slovakia	1	0.02	0	NRC	0	NRC	0	NRC	1	0.02	0.02
Slovenia	2	0.10	0	NRC	4	0.19	0	NRC	0	NRC	NRC
Spain	1	0.00	1	0.00	5	0.01	4	0.01	8	0.02	0.01
Sweden	3	0.03	1	0.01	1	0.01	4	0.04	0	NRC	NRC
EU/EEA (30 countries)	**32**	**0.01**	**50**	**0.02**	**53**	**0.02**	**73**	**0.02**	**73**	**0.03**	**0.02**
United Kingdom	NDR	NRC	NA	NA	NA	NA	NA	NA	NA	NA	NA
EU/EEA (31 countries)	**32**	**0.01**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Source: country reports.

ASR: age-standardised rate; NA: not applicable; NDR: no data reported; NRC: no rate calculated.

No data were reported by the United Kingdom from 2020 onwards, due to its withdrawal from the EU on 31 January 2020.

Figure 1. Tetanus cases by country, EU/EEA, 2024



Age and gender

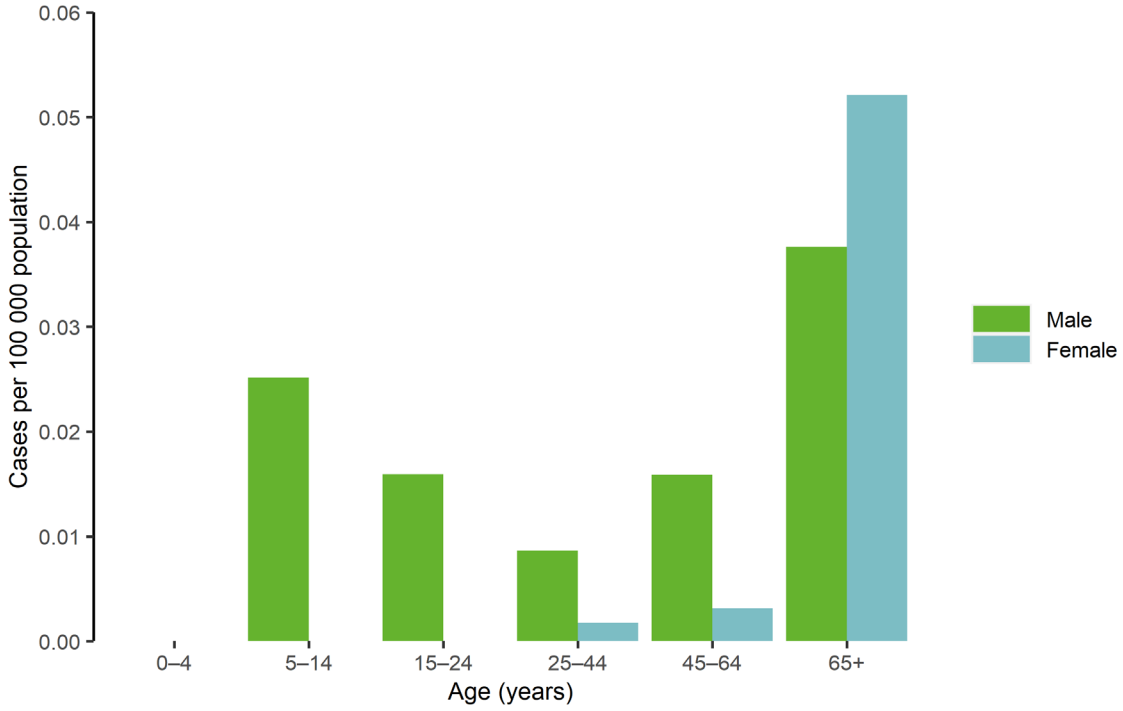
Overall, in 2024, a higher proportion of cases was reported among men (41 cases, 56%) than women (32 cases, 44%). The majority of cases occurred in the age group ≥65 years (45 cases), followed by the age group 45–64 years (12 cases). Six cases were reported in each of the age groups 5–14 years and 25–44 years, while four cases were reported in the age group 15–24 years.

Among those aged ≥65 years, women accounted for the majority of cases (29 cases), while there were only 16 cases in men. In contrast, among individuals under 65 years of age, who accounted for 38% of all reported cases, the majority were in men (25 cases), while only three cases were reported among women.

Consistent with the case distribution, the highest notification rates were observed among those aged ≥65 years in both genders. Notification rates in men were higher than in women for all younger age groups, whereas women had a higher notification rate in the aged group ≥65 years, which was the group most affected (Figure 2).

The overall female-to-male ratio was 1:1.28.

Figure 2. Tetanus cases per 100 000 population, by age and gender, EU/EEA, 2024

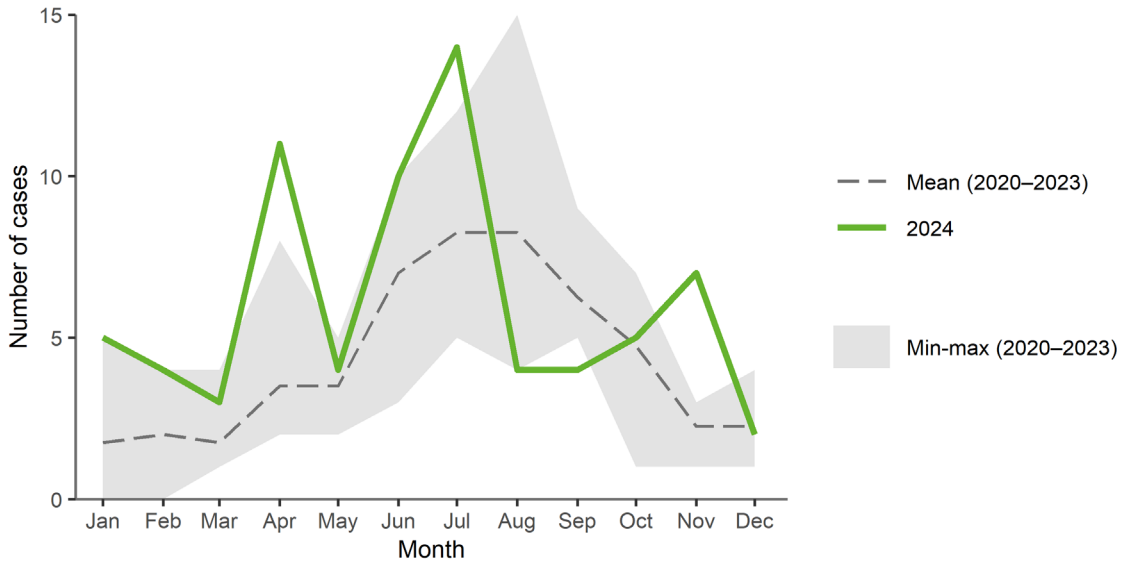


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

Seasonality

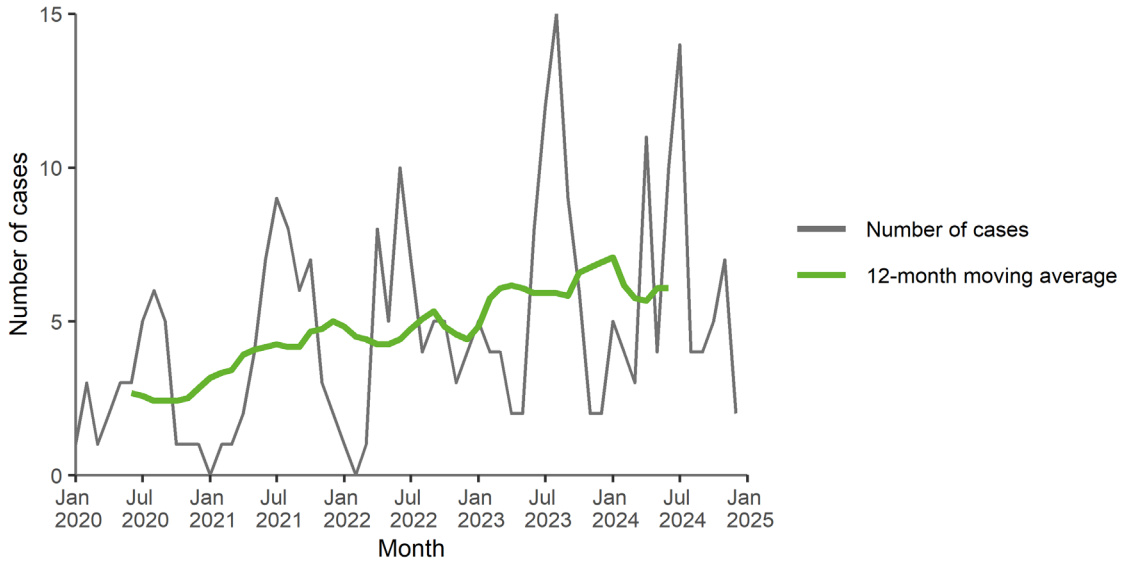
In 2024, the highest number of cases occurred in the months of July (14 cases), April (11 cases) and June (10 cases), accounting for 48% of the total reported cases. Over the past five years, the highest case numbers were usually observed in July and August, however for 2024 the early-year peak in April was similar to the seasonal pattern observed in 2022 (Figures 3 and 4).

Figure 3. Tetanus cases by month, EU/EEA, 2024 and 2020–2023



Source: Country reports from Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

Figure 4. Tetanus cases by month, EU/EEA, 2020–2024



Source: Country reports from Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

Outcome

Of the 67 tetanus cases in 2024 with a reported known outcome, 19 (28%) were fatal. All of these fatalities occurred in older adults, over the age of 70 years and sixteen of them were reported in individuals aged over 80 years. The other three fatalities were in individuals aged between 70 and 79 years. Of the 19 fatal tetanus cases, the highest number was from Italy (8), followed by Romania (3), then Poland and Spain with two cases each, and Greece, Hungary, Lithuania and the Netherlands with one case each. Thirteen were female and six were male.

The number of fatal cases reported in 2024 was slightly higher than in the previous four years, during which the annual number of deaths ranged from seven to 13. Specifically, 13 fatalities were reported in 2023, seven in 2022, and 10 in 2021.

Vaccination coverage

Vaccination coverage estimates for the third dose of DTP3 among one-year-olds were available from WHO (WUENIC estimates). In 2024, the EU/EEA population weighted average vaccination coverage rate was 92.6%. Three countries (Hungary, Luxembourg and Portugal) reported an estimated 99% DTP3 coverage. Twenty countries reported a decrease in DTP3 coverage (range -1 to -10%) compared with 2019. Two countries (Belgium and France) reported an increase in DTP3 coverage of 1% compared with 2019 (Table 2). Overall, DTP3 coverage among one-year-olds remains high in the EU/EEA.

Table 2. Diphtheria tetanus toxoid and pertussis-containing vaccine (DTP3) immunisation coverage among one-year-olds (%) (WUENIC), EU/EEA, 2020–2024

Country	2020	2021	2022	2023	2024	% change[a] (2020–2024)
Austria	85	86	84	87	85	**0%**
Belgium	98	98	98	98	97	**-1%**
Bulgaria	91	89	91	92	94	**3%**
Croatia	94	92	92	93	92	**-2%**
Cyprus	96	96	96	95	94	**-2%**
Czechia	97	94	94	90	86	**-11%**
Denmark	97	97	97	97	96	**-1%**
Estonia	91	90	87	84	81	**-11%**
Finland	89	89	91	91	91	**2%**
France	96	96	96	96	96	**0%**
Germany	91	92	89	89	89	**-2%**
Greece	99	99	98	95	95	**-4%**
Hungary	99	99	99	99	99	**0%**
Iceland	93	92	92	92	94	**1%**
Ireland	94	94	93	93	92	**-2%**
Italy	94	94	95	95	94	**0%**
Latvia	99	94	95	98	97	**-2%**
Liechtenstein	NDR	NDR	NDR	NDR	NDR	**NDR**
Lithuania	91	90	90	90	89	**-2%**
Luxembourg	99	99	99	99	99	**0%**
Malta	98	99	98	98	97	**-1%**
Netherlands	94	95	93	92	91	**-3%**
Norway	97	97	97	96	97	**0%**
Poland	94	94	94	95	94	**0%**
Portugal	99	99	99	99	99	**0%**
Romania	87	86	85	79	79	**-9%**
Slovakia	97	97	97	96	96	**-1%**
Slovenia	95	86	89	89	90	**-5%**
Spain	94	93	95	93	94	**0%**
Sweden	97	98	94	94	96	**-1%**
EU/EEA[b]	**93.9**	**93.8**	**93.4**	**92.8**	**92.6**	NRC

Source: WHO Immunization Data Portal, WHO and UNICEF Estimates of National Immunization Coverage (WUENIC) [5].

NDR: no data reported; NRC: no rate calculated.

[a] *The percentage of change was calculated for each dose as the percentage of increase or decrease between 2020 and 2024 (i.e. ((coverage in 2024 – coverage in 2020)/coverage in 2020) x 100. Colour code: red indicates a decrease, green indicates an increase, and black indicates no change in %.*

[b] *EU/EEA: population weighted average vaccination coverage rate.*

Discussion

In 2023 and 2024, the number of reported cases remained stable (73 cases each), although it surpassed the 2019 level (69 cases), despite the significant decreases seen during the pandemic. The numbers are still slightly lower than those observed in 2018 (85 cases) and earlier. Despite the fact that the case numbers have not increased to any great extent, it is important to consider that there may be under-reporting or undetected cases, as tetanus has become increasingly rare, and partially immunised patients may present with very mild symptoms that can go unrecognised. The advent of highly protective vaccines has substantially reduced the incidence of tetanus in many countries, making it an uncommon condition in routine clinical practice. As a result, tetanus is now a rare occurrence for most clinicians, which may further contribute to challenges in timely recognition and reporting. The condition is diagnosed based on clinical parameters and is hard to distinguish from many other more common differential diagnoses [6].

Italy accounted for more than one third (n = 111 cases) of the cases reported in the EU/EEA between 2019 and 2023 (total number of cases = 277), however, direct comparisons should be interpreted in the light of differences in case definitions [7]. The second highest number of tetanus cases after Italy was reported by Romania, accounting for part of the 38% of cases concentrated in Spain, Poland and Romania, an observation consistent with recent national findings highlighting Romania's persistently high incidence and case fatality rate [8].

Overall, most cases were reported in older adults (aged 65 years and above), who also accounted for most of the fatal cases, probably due to lower vaccination coverage or waning immunity in this population, with higher notification rates observed in women. It is likely that women aged 65 years and above would have had fewer opportunities for booster vaccination than with men of the same age, who may have received the vaccine during compulsory military service in many countries [7]. This pattern was also observed in a small retrospective case series from Spain, reporting a median age of 67 years, a slight predominance in women, and both fatal cases occurring in elderly women [9]. A study performed in Italy in 2019 and 2020 to assess seroprotection in those aged six to 90 years revealed that 85% of the population had antibodies against tetanus. However, findings indicate that protection rates decreased with age (93.6% in those aged six to 12 years versus 45.3% in those aged 65 years and above) and that there was a significant difference between men and women in the age group 65 years and above (60.8% in men versus 30.4% in women) [10]. An Austrian study based on seroprevalence data highlighted older adults, particularly those with waning immunity, as the most vulnerable group for severe tetanus cases [11].

A study from Poland assessing the epidemiological situation for tetanus between 2020 and 2022 found a decrease in reported cases compared to previous years, with sporadic cases mainly affecting older adults. This may be associated with the lack of booster vaccinations in adults, a fact which emphasises the need to maintain adequate vaccine coverage across all adult age groups [12]. Tetanus immunity among adults is heterogeneous and difficult to predict due to the frequent lack of vaccination records and unreliable self-reported histories [13]. A cross-sectional retrospective seroprevalence study among middle-aged adults in 18 EU/EEA countries found high seroprotection rates against tetanus across Europe, with most countries showing >90% of samples above the protective threshold (0.1 IU/mL). While overall immunity remained strong, modest declines in antibody levels were observed in the older age groups (50–59 years) compared to those aged 40–49 years in 13 countries [14]. All these patterns underscore the importance of sustaining strong adult immunisation strategies across Europe, with particular attention to older populations and gender-based immunity gaps.

A 2025 study focusing on maternal immunisation highlights the fact that tetanus vaccination remains a key component of maternal immunisation policies globally. As of 2023, 63% of WHO Member States reported recommending tetanus-containing vaccines for pregnant women, with uptake especially strong in low- and lower-middle–income countries (73% and 80%, respectively) reflecting sustained commitment to the WHO's Maternal and Neonatal Tetanus Elimination strategy [15]. Although tetanus cases are rare in pregnant women, maintaining high Tdap vaccination coverage in this vulnerable group is essential to ensure protection for themselves and their newborns. Globally, DTP3 coverage reached 85% in 2024 and has remained stable in recent years [5]. While this reflects a recovery from pandemic-related disruptions, coverage remains below the Immunization Agenda 2030 (IA2030) target of 90% [16], indicating the need for efforts to close remaining immunisation gaps.

In the EU/EEA, although some fluctuations were observed in estimates for some countries between 2020 and 2024, overall coverage remained high, with most countries maintaining resilient DTP vaccination programmes. However, the population-weighted average vaccination coverage rate was 92.6% for 2024, with a slight declining trend observed over the past five years (Table 2). Tetanus vaccination is part of the infant primary immunisation schedule (three to four doses in the first two years of life) [17]. According to ECDC's vaccine scheduler, booster doses are recommended for adults at different ages or intervals (e.g. every 10 years) in all EU/EEA countries [17]. WHO recommends a total of six tetanus-toxoid-containing vaccine doses (three primary and three booster doses) to ensure long-term protection against tetanus from childhood to adolescence and adulthood [18]. A 2020 WHO expert consultation reviewing the available evidence on immunogenicity and safety of tetanus-diphtheria (Td) vaccine use in four-to-seven year-olds concluded that giving the second booster dose to children in this age group as part of a six-dose series would provide adequate protection against diphtheria and tetanus [19].

Public health implications

Due to its severity, tetanus poses a risk to unvaccinated or insufficiently vaccinated people. There is a need to maintain high vaccine-induced immunity in all age groups and to increase awareness of the potential threat to non- and under-immunised people. In countries with higher rates of disease, a high clinical suspicion should be maintained and strategies implemented to protect specific groups, particularly the elderly.

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