

SURVEILLANCE & MONITORING

Haemophilus influenzae disease

Annual Epidemiological Report for 2024

Key facts

- In 2024, 5 856 confirmed cases of invasive *Haemophilus influenzae* disease were reported in the EU/EEA, representing a continued increase compared to the previous years (5 520 in 2023 and 4 002 in 2022) and a substantial rise from COVID-19 pandemic-era figures (1 693 in 2021, 1 838 in 2020), coinciding with the post-COVID-19 return to typical respiratory disease transmission patterns.
- The notification rate rose to 1.3 cases per 100 000 population, the highest observed in the past five years, up from 1.2 in 2023, 0.9 in 2022 and 0.4 in both 2020 and 2021.
- Age-specific rates remained highest among infants under one year old (6.8 per 100 000 population), followed by those aged 65 years and older (3.6 per 100 000 population).
- Serotyping data were available for 55% of cases. Among cases with known serotype, non-capsulated strains continued to dominate, accounting for 82% of infections. Serotype b was the most frequent capsulated strain, responsible for 6% (191 cases) of all cases, followed by serotype f detected in 5.7% (183) cases.
- In 2024, serotype b (Hib) represented 6% of known serotyped cases, a slight increase from 5% in 2023. The relatively low proportion of serotype b (Hib) reported continues to reflect the strong effect of the Hib vaccination programmes in EU/EEA countries.

Introduction

Invasive *Haemophilus influenzae* is a bacterium that can cause severe bacterial infections, particularly in the case of the type b strain, which affects both children and adults, with young children being most at risk. The bacteria can cause a number of serious conditions including meningitis, septicaemia, pneumonia, and epiglottitis [1].

Invasive *Haemophilus influenzae*, particularly type B (Hib), causes severe infections such as meningitis, pneumonia, septicaemia, and epiglottitis, especially in young children. Humans are the only known reservoir, and transmission occurs through respiratory droplets or secretions. Although the incubation period is not well defined, disease usually develops within a week of exposure. The mortality rate can be to 5-10% in industrialised countries and as high as 40% in low-resource settings. Survivors may experience long-term complications, including neurological and developmental impairments. Since the introduction of the Hib vaccine in the 1980s, routine immunisation in the EU/EEA has nearly eradicated Hib-related meningitis in young children. Nevertheless, vigilance remains essential, with treatment relying on antibiotics; antibiotic prophylaxis is recommended for close contacts.

Suggested citation: European Centre for Disease Prevention and Control. Annual Epidemiological Report for 2024 – *Haemophilus influenzae* disease. Stockholm: ECDC; 2026.

Stockholm, September 2026

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Methods

This report is based on data for 2024 retrieved from EpiPulse cases on 7 April 2026. EpiPulse Cases is a newly introduced system for the collection, analysis and dissemination of data on communicable diseases that replaced The European Surveillance System (TESSy) in October 2024. An overview of the national surveillance systems is available online [2]. A subset of the data used for this report is available through ECDC's online Surveillance atlas of infectious diseases and downloadable [3].

In 2024, 30 EU/EEA countries reported data on invasive *H. influenzae* disease to ECDC. Most countries reported data using the EU case definition (Commission Implementing Decision 2018/945/EU of 22 June 2018 of the European Parliament and of the Council) or a case definition compatible with the EU case definition for confirmed cases. Germany used another case definition [2]. Most countries reported data from comprehensive, passive surveillance systems with national coverage. Belgium reported aggregated data [2].

Haemophilus influenzae type b vaccination coverage estimates presented in this report were retrieved from the WHO Global Health Observatory website [4].

Epidemiology

In 2024, 30 EU/EEA countries reported a total of 5 856 confirmed cases of invasive *Haemophilus influenzae* disease, marking a continued increase from the 5 520 cases reported in 2023, 4 002 cases reported in 2022, and more than tripling the numbers seen in 2021 (1 698) and 2020 (1 838) (Table 1). The overall notification rate for the EU/EEA reached 1.2 cases per 100 000 population. The highest notification rates were observed in Sweden (2.4 per 100 000), Denmark (2.2 per 100 000), Germany (2.0), and the Netherlands (1.9) (Table 1, Figure 1).

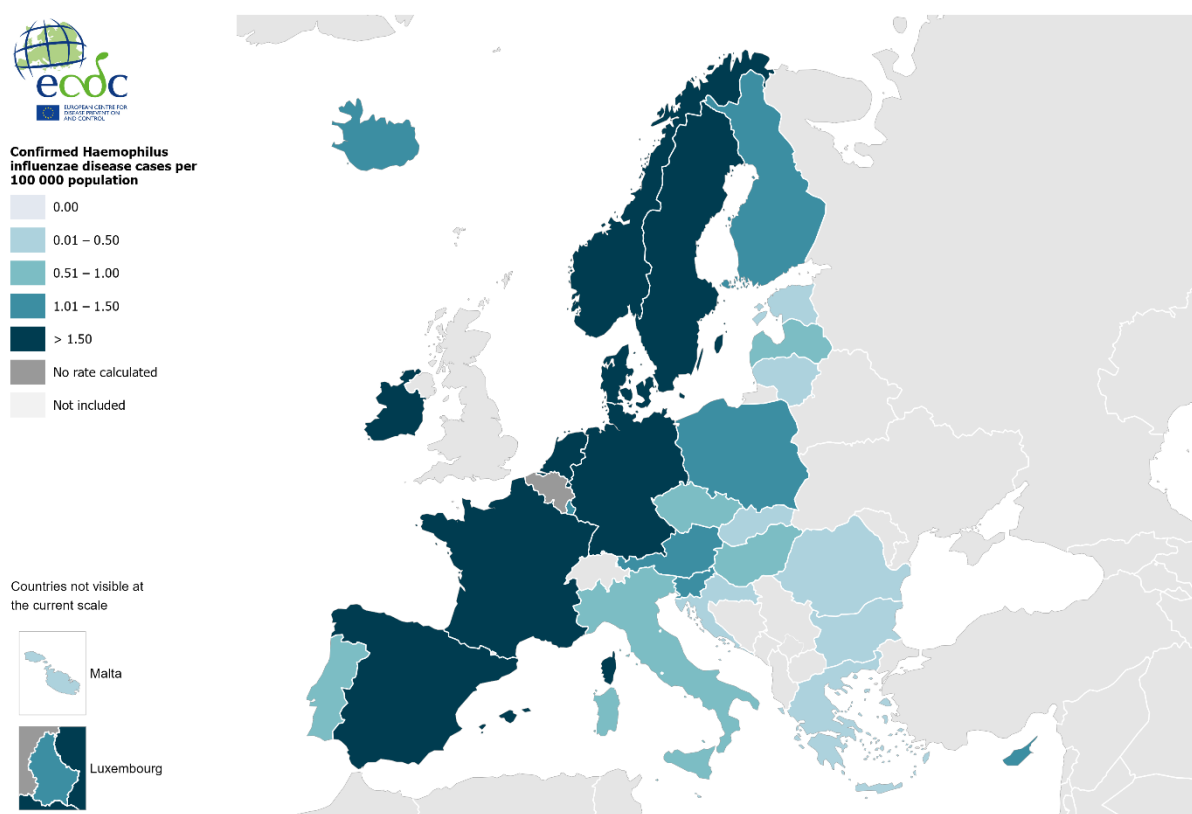
France (1 038 cases), Germany (1 699), and Spain (785) together accounted for 60% (3 522 cases) of all confirmed cases in the EU/EEA. By contrast, countries such as Bulgaria (4), Croatia (5), Estonia (6), Greece (7) and Malta (1) continued to report very few cases, Lichtenstein reported zero cases in 2024.

Table 1. Confirmed *Haemophilus influenzae* disease 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	28	0.3	31	0.3	77	0.9	115	1.3	94	1.0	0.9
Belgium	27	NRC	38	NRC	146	NRC	205	NRC	182	NRC	NRC
Bulgaria	0	0.0	0	0.0	1	0.0	2	0.0	4	0.1	0.1
Croatia	0	0.0	0	0.0	0	0.0	1	0.0	5	0.1	0.1
Cyprus	0	0.0	1	0.1	3	0.3	2	0.2	11	1.1	1.1
Czechia	22	0.2	10	0.1	46	0.4	54	0.5	63	0.6	0.5
Denmark	59	1.0	101	1.7	117	2.0	137	2.3	133	2.2	2.0
Estonia	2	0.2	1	0.1	7	0.5	3	0.2	6	0.4	0.4
Finland	41	0.7	15	0.3	78	1.4	55	1.0	73	1.3	1.1
France	399	0.7	434	0.7	731	1.2	883	1.5	1 038	1.8	1.6
Germany	509	0.6	366	0.4	1 002	1.2	1 738	2.1	1 699	2.0	1.7
Greece	2	0.0	6	0.1	9	0.1	17	0.2	7	0.1	0.1
Hungary	10	0.1	15	0.2	40	0.4	65	0.7	73	0.8	0.7
Iceland	5	1.4	7	1.9	8	2.1	6	1.5	5	1.3	1.3
Ireland	31	0.6	16	0.3	65	1.3	71	1.3	82	1.5	1.5
Italy	76	0.1	66	0.1	191	0.3	315	0.5	339	0.6	0.5
Latvia	1	0.1	1	0.1	13	0.7	6	0.3	11	0.6	0.5
Liechtenstein	NDR	NRC	2	5.1	0	0.0	0	0.0	0	0.0	0.0
Lithuania	0	0.0	2	0.1	58	2.1	60	2.1	10	0.3	0.3
Luxembourg	3	0.5	3	0.5	10	1.5	11	1.7	7	1.0	1.1
Malta	0	0.0	0	0.0	0	0.0	2	0.4	1	0.2	0.2
Netherlands	203	1.2	166	0.9	320	1.8	316	1.8	332	1.9	1.7
Norway	40	0.7	58	1.1	133	2.5	126	2.3	96	1.7	1.7
Poland	78	0.2	52	0.1	149	0.4	264	0.7	376	1.0	1.0
Portugal	35	0.3	42	0.4	62	0.6	93	0.9	95	0.9	0.8
Romania	1	0.0	0	0.0	12	0.1	18	0.1	29	0.2	0.2
Slovakia	5	0.1	1	0.0	9	0.2	24	0.4	26	0.5	0.5
Slovenia	11	0.5	15	0.7	29	1.4	31	1.5	26	1.2	1.0
Spain	161	0.4	171	0.4	462	1.0	675	1.4	785	1.6	1.5
Sweden	89	0.9	78	0.8	224	2.1	225	2.1	248	2.4	2.1
EU/EEA (30 countries)	1 838	0.4	1 698	0.4	4 002	0.9	5 520	1.2	5 856	1.3	1.2

Source: Country reports. NDR: No data reported. NRC: No rate calculated. NA: Not applicable. No data from 2020 onwards were reported by the United Kingdom, due to its withdrawal from the EU on 31 January 2020.

Figure 1. Confirmed *Haemophilus influenzae* disease cases per 100 000 population by country, EU/EEA, 2024



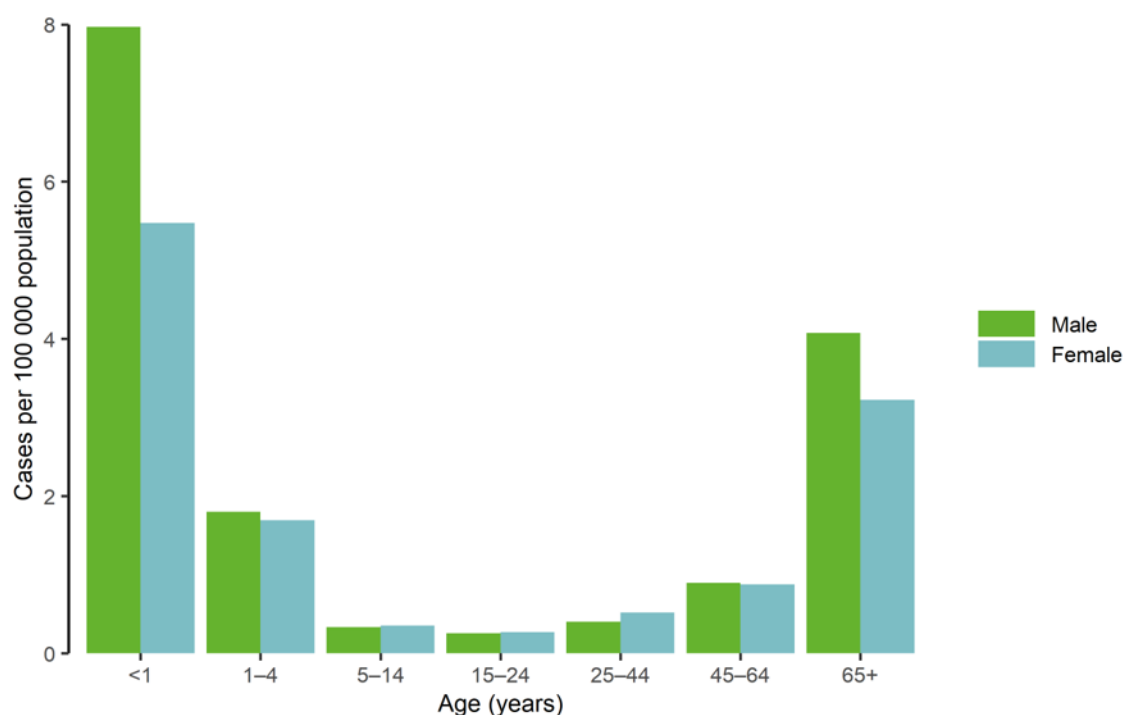
Administrative boundaries: ©EuroGeographics ©UN-FAO. The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union. Map produced by ECDC on 20 April 2026.

Age and gender distribution

In 2024, invasive *Haemophilus influenzae* disease showed a clear age-related pattern. The highest notification rate was reported in infants under one year old (6.81 per 100 000 population). Rates declined steeply thereafter: 1.75 in children aged 1–4 years, 0.34 in those aged 5–14, and 0.26 in the 15–24 age group. A gradual increase followed among older adults, with notification rates of 0.46 in the 25–44 age group, 0.89 in 45–64, and 3.59 among those aged 65 years and over. Case distribution mirrored this trend, with those 65 years and older comprising 58.8% of all reported cases, followed by adults aged 45–64 years (18.8%). Despite the relatively small proportion of cases in infants, the disease burden per population was highest in this age group, indicating a bimodal distribution with peaks in the very young and those over 65 years.

Across most age groups (all groups except 5–14, 15–24, and 25–44 years), males exhibited higher notification rates than females. The most pronounced difference was observed in infants under one year old, with rates of 8.0 per 100 000 for males compared to 5.5 for females. This male predominance persisted among young children, although the difference narrowed in the 5–44 age range, where females slightly outnumbered males. Among adults aged 65 and above, the male notification rate remained higher (4.1 vs 3.2 per 100 000) (Figure 2).

Figure 2. Confirmed *Haemophilus influenzae* disease cases per 100 000 population, by age and gender, EU/EEA, 2024

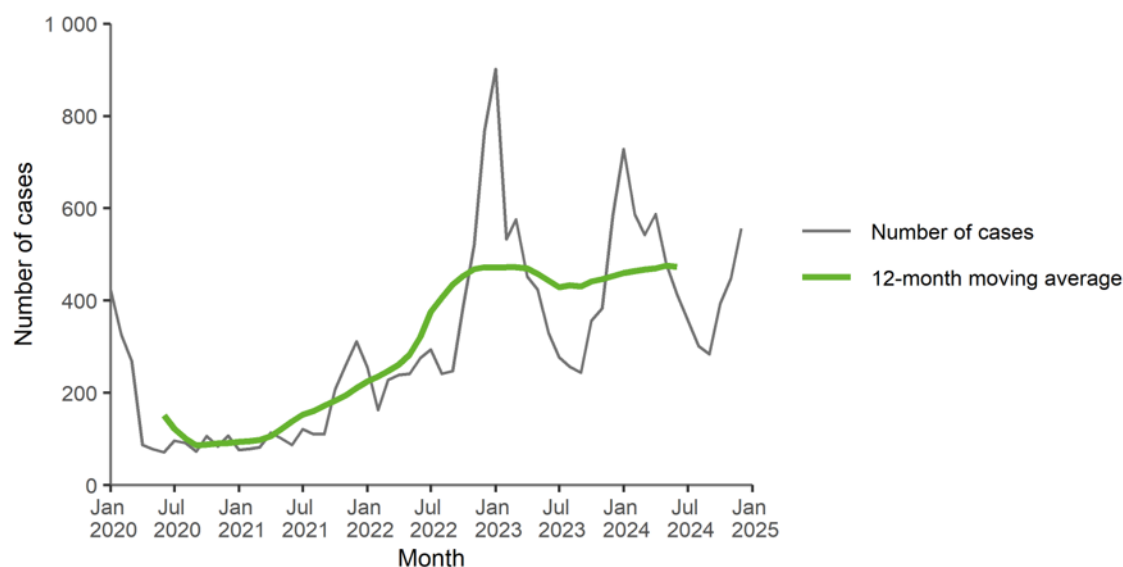


Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain,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

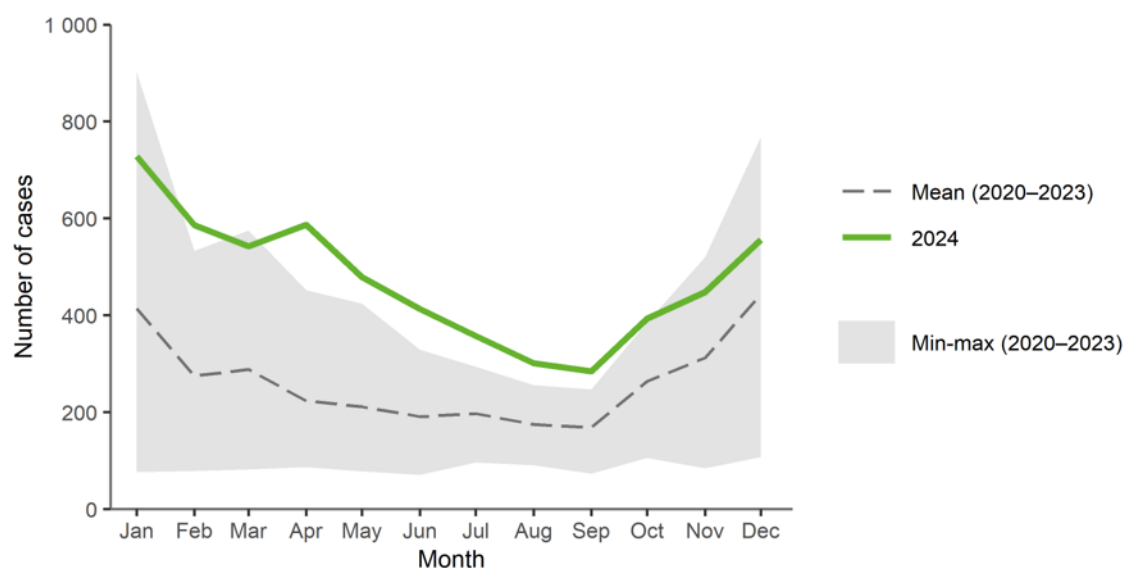
Seasonality and trend

Figure 3 illustrates that the distribution of invasive *Haemophilus influenzae* cases in 2024 returned to a more typical seasonal pattern, with the highest number of cases recorded during the winter months (2022/2023 and 2023/2024), followed by a decline through the summer. Towards the end of 2024, case numbers began to rise again, reflecting the re-emergence of the characteristic winter peak. The 12-month moving average increased from mid-2022, reaching a peak in early 2023 before plateauing and slightly increasing in 2024, confirming a sustained period of elevated transmission.

Figure 4 shows the monthly case counts in 2024 compared to the mean and range from the previous four years (2019–2022). Case numbers started the year well above the five-year average, particularly in January, and remained elevated through the first half of the year. From September, cases began increasing again; the number of cases remained above the five-year average, but at the same time below the maximum number of cases reported for the same period in the past four years.

Figure 3. Confirmed *Haemophilus influenzae* disease cases by month, EU/EEA, 2020–2024

Source: Country reports from Austria, Bulgaria, 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.

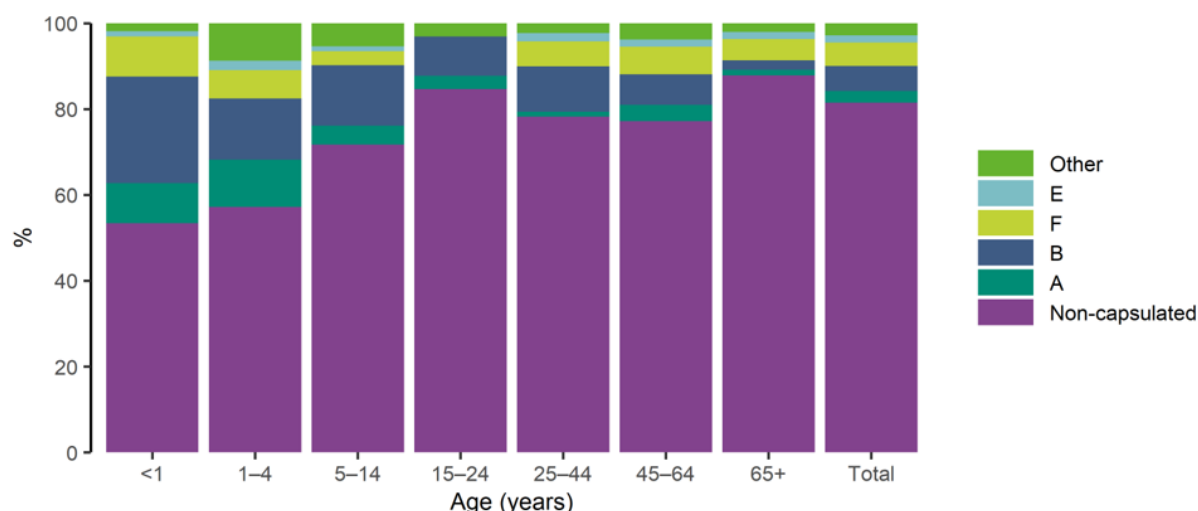
Figure 4. Confirmed *Haemophilus influenzae* disease cases by month, EU/EEA, 2024 and 2020–2023

Source: Country reports from Austria, Bulgaria, 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.

Serotype

In 2024, there were 3 227 cases of invasive *Haemophilus influenzae* disease cases with known serotype (55%). The non-capsulated was the main type with 2 633 cases (82%), Serotype b (Hib) was registered in 191 cases (6%) and was more apparent among the youngest, particularly in children under one year old (39 cases) which represent (28%) of the cases with known serotype in this age group, children between one and four years (25 cases) which represent (15%) of the cases with known serotype in this age group. Serotype f accounted for 5.7% of cases with known serotype (183 cases), while other types were serotype e (1.5%), serotype a accounted for 2.2% (72 cases), and only one case of serotype c was notified. (Figure 5). The highest proportion of serotype a was observed in children below the age of 5 years and for serotype f the highest proportion were observed in children between one and four years and individuals between 45 and 64 years.

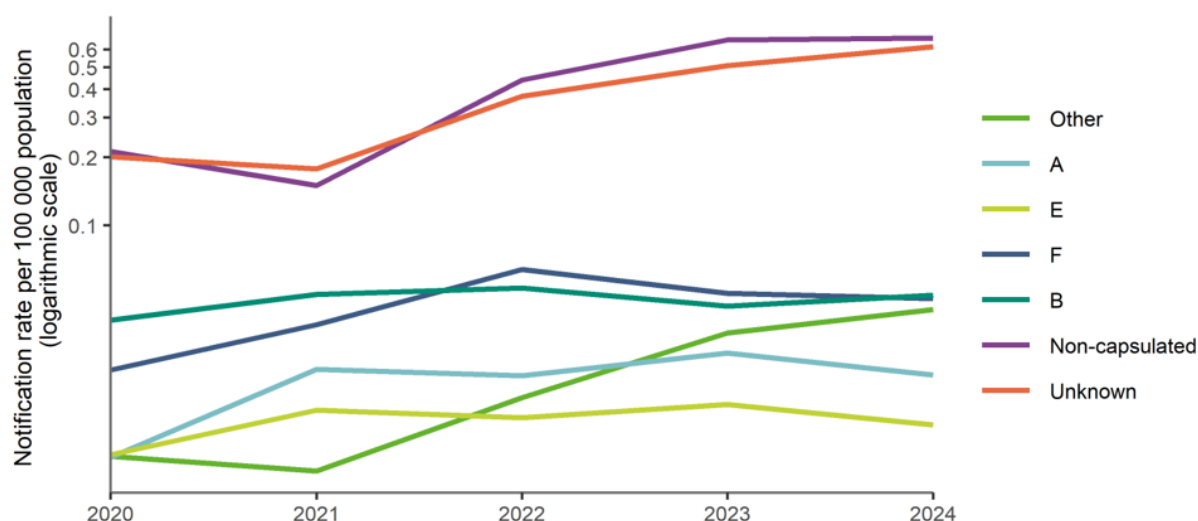
Figure 5. Serotype distribution of confirmed *Haemophilus influenzae* disease cases by age group, EU/EEA, 2024



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

Figure 6 shows the notification rates per 100 000 population for different serotypes of invasive *Haemophilus influenzae* from 2020 to 2024. Non-capsulated strains remained the most prevalent group, with notification rates continuing to rise annually and peaking in 2024 at 0.67 per 100 000 population. For serotype b between 2020 and 2024, incidence has been stable, with small fluctuations. Serotypes f and e incidence was characterised by fluctuating trends: serotype f incidence first increased to a peak in 2022 (0.063) and then decreased to 0.047 in 2024, and serotype e first increased from 0.010 in 2020 to 0.016 in 2023 and slightly decreased to 0.013 in 2024. For serotype a, an increasing trend was observed, from 0.009 in 2019 to 0.022 in 2024. The 'Other' serotypes group rose for a third consecutive year, reaching 0.042 in 2024. Meanwhile, the notification rate for cases with unknown serotype increased again in 2024 to 0.61 per 100 000 population, the highest level in the five-year period.

Figure 6. Notification rate of confirmed *Haemophilus influenzae* disease per 100 000 population, by serotype and year, EU/EEA, 2020-2024



Source: Country reports from Austria, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Liechtenstein, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden.

Clinical presentation

In 2024, out of 5 856 confirmed cases of invasive *Haemophilus influenzae* disease, clinical presentation was reported for 4 283 cases (73%). The most common presentation was pneumonia, recorded in 1 555 cases (36%), followed by septicaemia with 887 cases (21%). Meningitis was reported in 459 cases (11%), while 58 cases (1.4%) presented with both meningitis and septicaemia. Less frequent manifestations included osteomyelitis or septic arthritis (32 cases; 0.7%), epiglottitis (24 cases; 0.6%), and cellulitis (six cases; 0.1%). A significant proportion of cases – 1 262 (29%) – were classified under 'other' clinical presentations. Clinical information remained unknown or unreported for 27% of the reported cases (1 573).

Outcome

In 2024, the outcome was reported for 3 198 cases (55%). Among these, 269 deaths were recorded, resulting in an overall case fatality rate (CFR) of 8.4%. Six deaths occurred in infants under one year old (CFR= 5.7%), and one death was reported among children aged 1–4 years (CFR= 0.6%). Most fatal outcomes were reported in individuals aged 65 years and older, with 218 deaths among 1 904 cases with known outcome in this group (CFR= 11.4%).

When considering the outcome by serotype, CFRs varied across different groups. The highest CFR was observed for serotype e at 13.9% (five deaths among 36 cases), followed by non-capsulated strains at 9.3% (165 deaths among 1 782 cases), serotype f at 7.4% (nine deaths among 121 cases), serotype a at 6.3% (three deaths among 48 cases), and was lowest for serotype b at 4.8% (six deaths among 126 cases).

When indicated, most fatal cases were reported among unvaccinated individuals (n=128), corresponding to a case fatality rate (CFR) of 10%. Among those with known to be vaccinated with three doses of the vaccine, two deaths were reported (CFR = 2.7%), while one death occurred in a case with only one dose (CFR = 3.7%).

When analysing the fatal cases (n=248) per age group and vaccination status, it is notable that the majority of the fatality occurred in unvaccinated individuals (n=128, 52%), particularly among the age groups +65 years where unvaccinated cases accounted for 102 deaths (41% of the total). For 116 deaths (38%) in this age group the vaccination information was missing. Those 65 years and older comprised nearly 80% of all fatal outcomes, followed by age group 45-64 years (n=34, 13.7%), while children <1 year old had eight fatal cases (3.2%), and three deaths (1.2%) were recorded for each of the age groups (1-4 years, and 25-44 years). The age group 5-14 years had the lowest number of fatal cases (n=2, 0.8%).

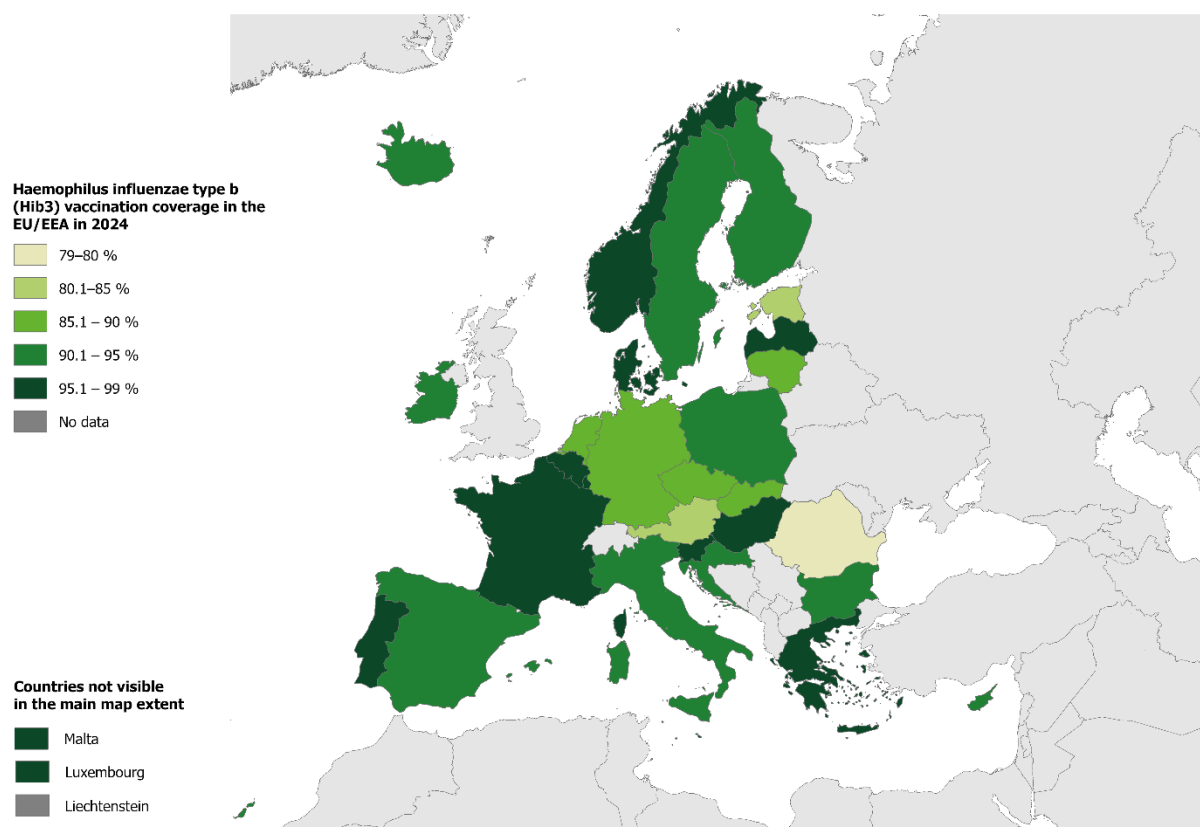
Vaccination status

In 2024, vaccination status was known for 1 667 of the 5 856 confirmed cases (28%) of invasive *Haemophilus influenzae* disease. Among those with known status, 244 cases (14.6%) had received at least one dose of a Hib-containing vaccine, while 1 423 cases (85.4%) were unvaccinated. The number of doses received varied, with 36 cases having received one dose, 30 having received two doses, 111 three doses, 66 four doses, and one case received six doses.

Among the serotype b cases (n= 191), the vaccination status was known for 126 (66%) cases. Of those, seven cases received one dose of the vaccine, 13 cases had two doses, 31 cases had three or more doses, while most of the cases (n=75, 60%) were not vaccinated.

Vaccination coverage

Figure 7 presents the World Health Organization/United Nations Children's Fund (WHO/UNICEF) Estimates of Immunization Coverage for third dose of *Haemophilus influenzae* type b (Hib3) vaccine across EU/EEA countries in 2024 (WUENIC estimates). Median Hib3 coverage in the EU/EEA was 94%, with country-specific estimates ranging from 79% to 99%.

Figure 7. Vaccination coverage of third dose of Hib-containing vaccine, EU/EEA 2024

Map produced on: 31 Jul 2026. Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat. The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union.

Source: WHO/UNICEF Estimates of National Immunization Coverage

Discussion

In 2024, the EU/EEA countries reported 5 856 confirmed cases of invasive *Haemophilus influenzae* disease. Compared to the pre-COVID-19 pandemic period (2 593–3 849 cases reported between 2013 and 2018), the number of cases in 2024 was substantially higher, the highest number of cases reported in one year since the surveillance on EU/EEA level started in 1996 [3]. COVID-19 public health control measures have been associated with a decline in the notification of cases of invasive *Haemophilus influenzae* disease [5]. In 2024 as in previous years, the highest disease burden was seen among infants under one year and adults aged 65 years and over, underscoring the persistent vulnerability of these age groups [6].

A notably high proportion of serotype b cases were reported in children younger than four years. In infants, our data did not permit to determine which infants were too young to be eligible for the vaccine or if vaccinated cases aged 1-4-year-old received a booster dose of the vaccine. Indeed, the third dose of vaccination against *Haemophilus influenzae* disease may represent the first booster or the third dose of a primary course, depending on the schedule adapted by the country (2+1 or 3+1). The effectiveness of each programme to prevent the disease in young children will benefit to be further documented [7,8].

The continued expansion of non-capsulated *H. influenzae* strains in 2024 further confirms their dominance in populations with universal vaccination against Hib [9]. This shift in serotypes may be partially attributed to strain replacement following the introduction of the Hib vaccines, improved detection methods, improved access to testing and demographic changes such as increased susceptibility among those 65 years and older [10]. Similarly, serotype f, which represented 5.7% of cases in 2024, continues to be among the most common capsulated types, although its notification rate declined slightly compared to the 2022 peak. Moreover, an increasing trend has also been observed in cases grouped under 'other' serotypes, highlighting the need for more exhaustive and detailed serotyping to better understand emerging patterns. These developments support previous findings on serotype replacement and underscore the adaptive nature of *H. influenzae* epidemiology in the post-Hib vaccine era [11,12].

For the data collected in 2024, the case fatality rate (CFR) among cases with known outcome was 8.4%, the infants under one year and older adults comprising the majority of fatal outcomes, a pattern consistent with previous years [6]. Among serotypes, the highest CFR was observed in serotype e (14%), followed by non-capsulated strains (9%), and serotype f (7%). The relatively high CFR among serotype e cases may reflect changing patterns of host susceptibility [7], and a disproportionate impact on adults aged 65 years and older.

The completeness of the data regarding clinical presentation, vaccination status, and outcome would benefit from improvement. Even though the information on clinical presentation was more complete than in previous years [6], vaccination status was only reported in one of four cases, and the outcome was reported in half of the cases, similarly to in previous years. Moreover, the proportion of cases with unknown serotype remained high in 2024 (approximately 45%), limiting an appropriate epidemiological interpretation.

For EU/EEA countries, the Hib median vaccination coverage (third dose) was estimated at 94% in 2024, which is similar to the median vaccination coverage recorded in 2023 and 2022 [4]. This sustained high coverage has been instrumental in maintaining low incidence of serotype b disease across all age groups. In line with this observation, Hib (serotype b) accounted for only 6% of serotyped cases in 2024, a slight increase from 5% in 2023, and significantly lower than pre-vaccination levels. This sustained decline highlights the long-term impact of Hib vaccination in reducing morbidity and mortality in young children.

The occurrence of breakthrough infections among partially and fully vaccinated children – particularly in those under one year old and in the age group 1–4 years – highlights the need for the continued assessment of Hib vaccine effectiveness and the timing of protection during infancy. In 2025, France and the Netherlands investigated the effectiveness of Hib-containing vaccines in their national immunisation programmes following a gradual increase in Hib incidence over the previous decade [13,14]. Their studies found that vaccine effectiveness remained high and suggested that the increase was more likely attributable to factors such as waning immunity and reduced vaccine coverage.

Historically, invasive *H. influenzae* disease predominantly involved serotype b infections in otherwise healthy children. However, following the widespread adoption of Hib vaccination across EU/EEA countries – fully integrated since 2010 – the epidemiological landscape has shifted [15–17]. The ongoing evolution in serotype distribution demands vigilant surveillance, enhanced microbiological monitoring, and continued investment in laboratory capacity to ensure accurate detection and reporting.

In conclusion, the rising burden of non-type b and non-capsulated strains requires continuous monitoring. High immunisation coverage must be maintained to prevent Hib resurgence, particularly among infants, while also exploring the development of expanded-valency or protein-based vaccines that target a broader spectrum of *H. influenzae* strains [18, 19]. The post-pandemic period highlights the interplay between immunity gaps, behavioural changes, and pathogen dynamics, reinforcing the need for flexible and inclusive vaccine policies that address both current and emerging threats.

Public health implications

The number of *Haemophilus influenzae* cases in the EU/EEA continued to rise in 2024, building on the increase observed since 2022 and marking a sustained rebound from the suppressed levels reported in 2020 and 2021, and an increase of over 85% compared to the number of cases recorded in 2018. While serotype b notification rate is plateauing, the incidence of non-capsulated and non-type b strains have increased. Maintaining high Hib vaccination coverage among infants and young children remains essential, but must now be combined with strengthened serotype surveillance, consideration of future vaccine development targeting broader strains, and improved protection strategies for vulnerable adult populations.

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