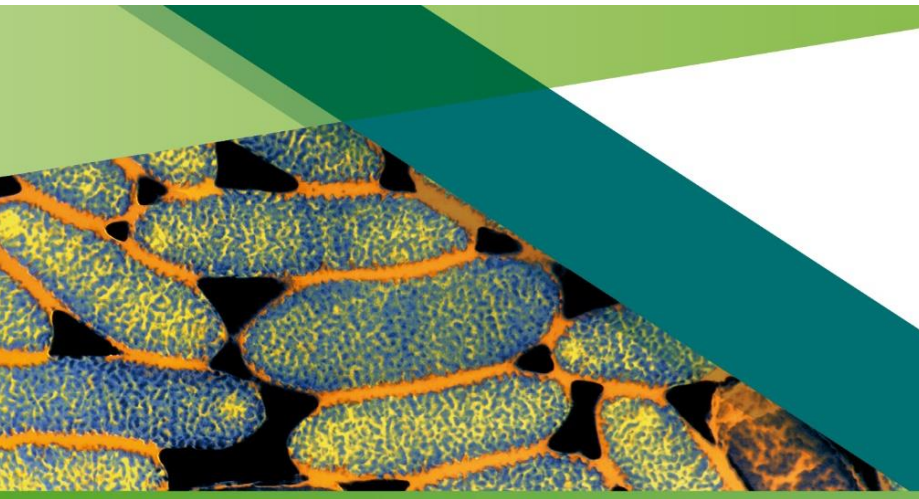

SURVEILLANCE & MONITORING

Annual Epidemiological Report for 2024

Legionnaires' disease

Key facts

- In 2024, the annual notification rate for Legionnaires' disease increased to 3.4 cases per 100 000 population, up from the 3.2 cases per 100 000 population reported in 2023.
- Notification rates remained heterogenous across the EU/EEA, varying from less than 0.5 per 100 000 population to the highest crude rate of 9.6 cases per 100 000 population reported by Slovenia. Four countries (France, Germany, Italy, and Spain) accounted for 71% of all notified cases.
- Males aged 65 years and above were the most affected (13.0 cases per 100 000 population).
- Eight countries reported a total of 32 community- or hospital-acquired outbreaks with a total of 365 cases.

Introduction

Legionnaires' disease is a multi-system disease that causes pneumonia due to an infection with Legionella bacteria, most commonly of the species *Legionella* pneumophila. The bacteria are found in the natural environment, soil and water, but they can become a health risk when they grow within engineered systems that can produce inhalable water aerosols. Cooling towers, evaporative condensers, humidifiers, decorative fountains, hot tubs and showers are examples of water systems with identified *Legionella* risks. Conditions that are favourable for *Legionella* growth are water temperatures in the range of 25–42 °C, stagnant water with sediment build-up, and low biocide levels. The aerosolization of the bacteria-contaminated water may cause sporadic cases or outbreaks.

Methods

This report is based on data for 2024 retrieved from EpiPulse Cases on 23 September 2025 for the annual data (LEGI) and the outbreak reporting scheme as of 18 December 2025. A summary of data collated through the Travel Associated Legionnaires' disease surveillance scheme is not included in this year's report.

The methods used to produce this report are published online by ECDC [1] together with an overview of the national surveillance systems [2]. A subset of the data used for this report is available through ECDC's online *Surveillance atlas of infectious diseases* [3].

The surveillance data and presented here in this report were collected through two different schemes:

- Annual retrospective data collection of Legionnaires' disease (LD) cases reported in EU countries, as well as in Iceland, Liechtenstein and Norway; the time periods in results presented are based on reported dates for statistics.

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Stockholm, May 2026

- Annual retrospective data collection of outbreak events detected and reported in EU countries, as well as in Iceland, Liechtenstein and Norway. The following thresholds for reporting outbreaks are used:
  - ≥ five cases, if these are not exposed in the same building, nor evidence of exposure to the same aerosol-producing installation/device, nor microbiological evidence of linked cases;
  - ≥ three cases, if these are exposed in the same building, or if evidence for exposure to the same aerosol-producing installation/device, or if microbiological evidence of linked cases;

Legionnaires' disease cases should be reported to these surveillance schemes in accordance with the 2018 EU/EEA case definition for confirmed cases or probable cases, that includes at least one positive laboratory test and a clinical diagnosis of pneumonia.

Epidemiology

In 2024, 29 countries reported 15 362 cases (Table 1), of which 14 126 (92%) were classified as confirmed. The number of notifications per 100 000 population increased to 3.4, which continued an increasing trend observed since 2020. Four countries - France, Germany, Italy and Spain - continued to account for most notified cases (71%), although their combined populations only represent approximately 50% of the EU/EEA population.

Table 1. Legionnaires' 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	249	2.8	278	3.1	305	3.4	325	3.6	354	3.9	3.4
Belgium	143	1.2	274	2.4	268	2.3	378	3.2	423	3.6	3.3
Bulgaria	7	0.1	1	0.0	3	0.0	4	0.1	12	0.2	0.2
Croatia	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	66	1.7	1.5
Cyprus	3	0.3	4	0.4	3	0.3	7	0.7	16	1.7	1.6
Czechia	231	2.2	219	2.1	296	2.8	346	3.2	635	5.8	4.9
Denmark	278	4.8	281	4.8	287	4.9	313	5.3	296	5.0	4.3
Estonia	18	1.4	10	0.8	14	1.1	20	1.5	22	1.6	1.4
Finland	24	0.4	34	0.6	43	0.8	54	1.0	48	0.9	0.8
France	1 328	2.0	2 039	3.0	1 863	2.7	2 172	3.2	1 923	2.8	2.5
Germany	1 270	1.5	1 531	1.8	1 459	1.8	2 155	2.6	2 234	2.7	2.2
Greece	29	0.3	25	0.2	48	0.5	59	0.6	116	1.1	0.9
Hungary	101	1.0	85	0.9	86	0.9	106	1.1	126	1.3	1.1
Iceland	4	1.1	10	2.7	2	0.5	NDR	NRC	6	1.6	1.7
Ireland	12	0.2	4	0.1	23	0.4	34	0.6	28	0.5	0.5
Italy	2 120	3.6	2 726	4.6	3 106	5.3	3 874	6.6	4 617	7.8	5.9
Latvia	27	1.4	61	3.2	66	3.5	78	4.1	0	NRC	NRC
Liechtenstein	NDR	NRC	2	5.1	1	2.5	2	5.0	2	5.0	4.1
Lithuania	12	0.4	4	0.1	21	0.7	71	2.5	45	1.6	1.4
Luxembourg	10	1.6	17	2.7	12	1.9	22	3.3	9	1.3	1.4
Malta	16	3.1	8	1.6	9	1.7	13	2.4	30	5.3	4.9
Netherlands	461	2.6	658	3.8	623	3.5	882	5.0	564	3.1	2.8
Norway	39	0.7	43	0.8	70	1.3	72	1.3	87	1.6	1.5
Poland	46	0.1	46	0.1	109	0.3	424	1.2	454	1.2	1.1
Portugal	307	3.0	254	2.4	245	2.4	361	3.4	501	4.7	3.7
Romania	8	0.0	8	0.0	32	0.2	56	0.3	57	0.3	0.3
Slovakia	98	1.8	148	2.7	131	2.4	75	1.4	108	2.0	1.9
Slovenia	120	5.7	88	4.2	143	6.8	169	8.0	204	9.6	8.1
Spain	1 336	2.8	1 703	3.6	1 966	4.1	2 283	4.7	2 164	4.5	3.7
Sweden	135	1.3	168	1.6	216	2.1	182	1.7	215	2.0	1.8
EU/EEA (30 countries)	**8 432**	**1.9**	**10 729**	**2.4**	**11 450**	**2.6**	**14 537**	**3.2**	**15 362**	**3.4**	**2.8**
United Kingdom	NDR	NRC	NA	NA	NA	NA	NA	NA	NA	NA	NA
EU/EEA (31 countries)	**8 432**	**1.9**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Source: Country reports.
ASR: Age-standardised rate.
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.

Of 12 041 cases with known outcome, 1 117 (9%) were reported to be fatal.

Age-adjusted notification rates ranged from less than 1.0 cases per 100 000 population in five countries (Bulgaria, Finland, Greece, Ireland, Romania) to 3.0 cases per 100 000 population or more in ten countries (Austria, Belgium, Czechia, Denmark, Italy, Liechtenstein, Malta, Portugal, Slovenia, and Spain); see Table 1 and Figure 1.

Figure 1. Legionnaires' disease cases per 100 000 population by country, EU/EEA, 2024

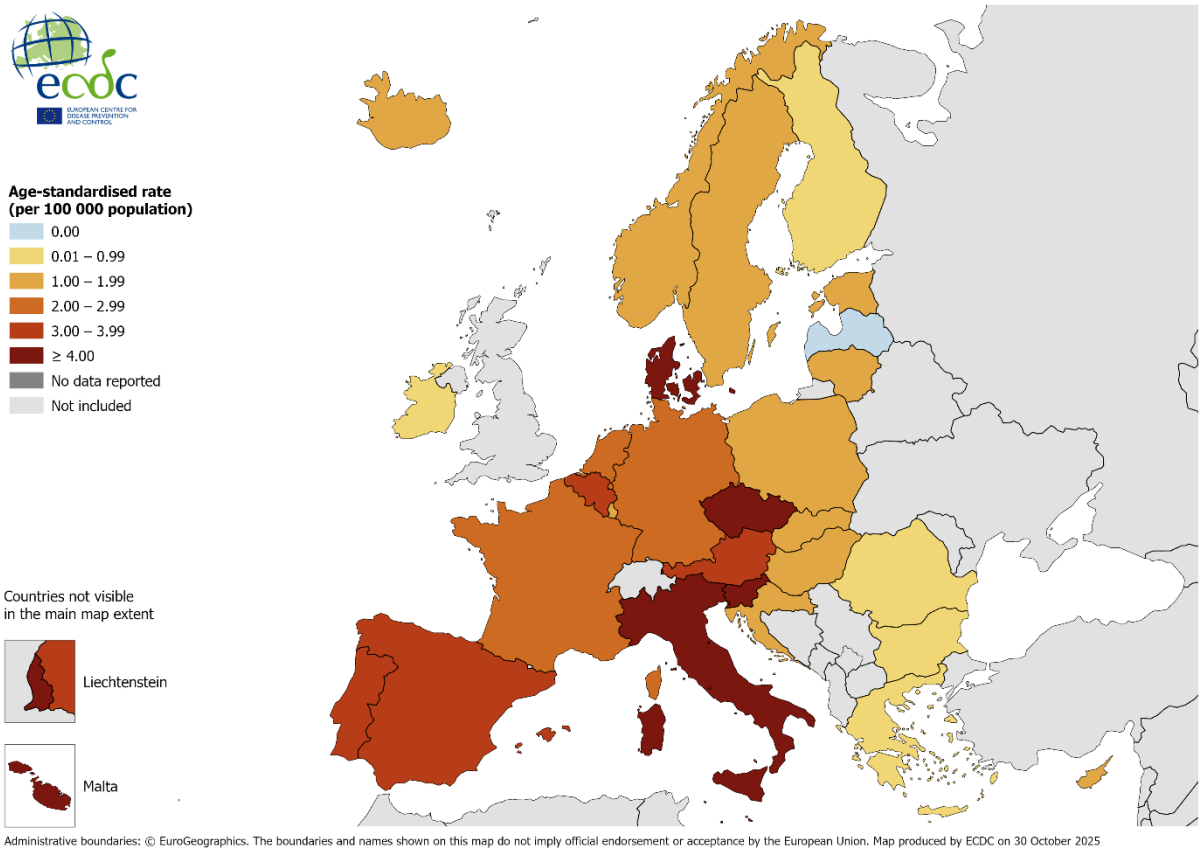
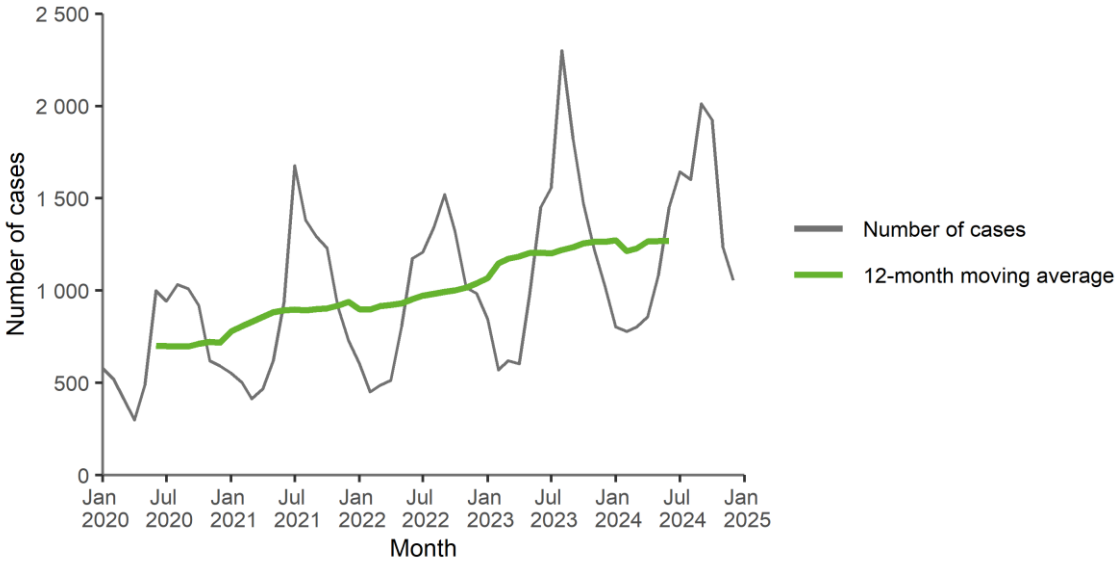


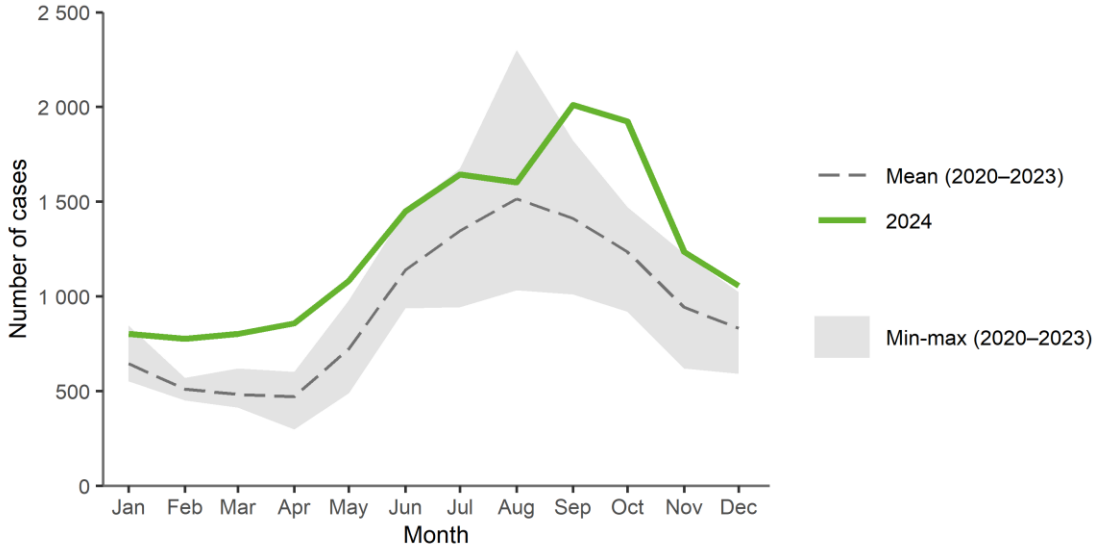
Figure 2. Legionnaires' disease cases by month, EU/EEA, 2020–2024



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

The distribution of cases per month (Figure 2) shows a seasonality trend, with most cases reported during the summer in the EU/EEA. In 2024, most cases (8 689, 57%) occurred between June and October, as in previous years, however the number of monthly cases in the European spring and autumn were consistently above the range observed in the previous four years (Figure 3). The monthly number of cases in September and October were below the highest monthly number of cases ever observed in the previous four years (2 308 cases seen in August 2023 representing 16% of the annual total that year and occurring in the absence of any specific country outbreak event).

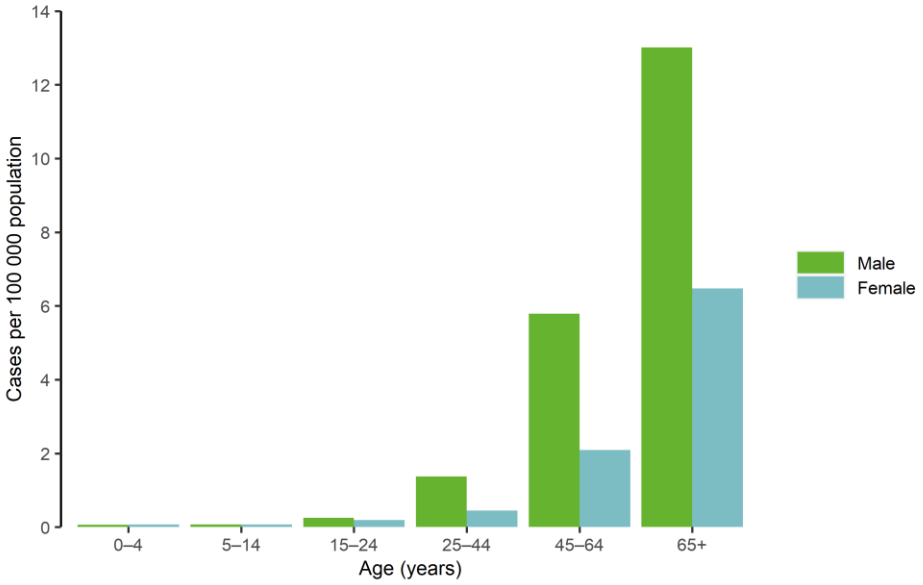
Figure 3. Legionnaires' disease cases by month, EU/EEA, 2024 and 2020–2023



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

In 2024, people aged 50 years and older accounted for 13 369 (87%) of 15 315 cases with known age. The notification rate increased with age, from ≤1.0 cases per 100 000 population in those under 25 years of age to 9.3 cases per 100 000 population in persons aged 65 years and above (13.0 cases per 100 000 population in males and 6.5 in females, Figure 4). The overall male-to-female ratio was 1.9:1, a decrease compared to 2023.

Figure 4. Legionnaires' 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.

More than one test method may be used to establish a Legionnaires' disease diagnosis. Most cases in 2024 (13 561; 88%) were reported as diagnosed by urine antigen test. In comparison, only 8.3% (1 282) were reported having a culture test among methods reported. This low percentage of culture among reported methods was also observed under 2019-2023 (range 8.5-9.6%). The use of a polymerase chain reaction (PCR) method test was reported in 14.1% (2 168) of cases in 2024 which is an increase on the range observed in the same period (9.4-11.8%).

Among culture-confirmed cases (1 282), 1 213 (95%) were reported as *L.pneumophila*. Table 2 further illustrates that although *Legionella pneumophila* isolates of all serogroups are detected and reported annually among culture-confirmed cases, over 75% (n=910) are identified as serogroup 1.

Table 2. Distribution of serogroups reported among culture-confirmed cases of *L. pneumophila*, EU/EEA, 2023 and 2024

Serogroup (SG)	2023		2024	
	Number of cases	%	Number of cases	%
1	1 126	84	906	75
2	17	1	4	<1
3	36	3	51	4
4	2	<1	4	<1
5	8	<1	10	<1
6	13	1	19	2
7	5	<1	10	<1
8	2	<1	3	<1
9	1	<1	0	-
10	2	<1	10	<1
11	0	-	0	-
12	0	-	0	-
13	2	<1	2	<1
14	0	-	0	-
15	0	-	0	-
16	1	<1	0	-
Non-specified, *L. pneumophila* non-serogroup 1	11	<1	7	<1
L. pneumophila serogroup mixed	3	<1	5	<1
L. pneumophila serogroup unknown	111	8	182	15
Total	**1 340**		**1213**	

A total of 50 *Legionella* non-pneumophila species were reported (4%): *L. bozemanii* (8), *L. dumoffii* (1), *L. longbeachae* (38), *L. micdadei* (2), and *L. gormanii (1)*. Eleven cases were reported being diagnosed by culture where the *Legionella* species was not specified.

Outbreaks

In 2024, through the annual outbreak reporting surveillance scheme, eight EU/EEA countries (Belgium, France, Germany, Italy, Netherlands, Portugal, Spain, and Sweden) reported a total of 32 community- or hospital-acquired outbreaks, ranging from one to 24 outbreaks per reporting country. In total, 365 outbreak-related confirmed cases were reported, and the number per outbreak ranged from 3 to 89. Nineteen EU/EEA countries (Austria, Bulgaria, Croatia, Czechia, Denmark, Estonia, Finland, Greece, Hungary, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Romania, and Slovakia) did not detect any outbreak of Legionnaires' disease under 2024.

Two out of the total 32 reported outbreaks were in association with a hospital, and one with a geriatric residence. A cooling tower was found to be the source in one outbreak and the suspected source in two additional outbreaks. In total, a source was reported found in 16% of outbreaks (5/31).

Discussion

The notification rate of Legionnaires' disease increased in 2024, reaching the highest notification rate reported in the last decade. The cause for the continuing increase in notification rates in Europe in recent years remains unknown. Factors that may influence this include: any change in national testing policy and surveillance systems, an aging EU/EEA population, the design and infrastructure maintenance in building water systems, and changes in climate and weather patterns that can impact both the ecology of *Legionella* in the environment and causes of human exposure to water aerosols containing the bacteria.

Several countries continue to have very low notification rates of below 0.5 cases per 100 000 population, which likely represents an underestimation of the incidence in these countries, but may also reflect temperate, climate or infrastructure conditions that affect the likelihood of *Legionella* growth and aerosol dispersion. The countries reporting the highest notification rates continue to be similar each year. Higher notification rates observed in these EU/EEA countries likely reflect a combination of good awareness and testing in pneumonia patients, and an increasing exposure risk from sources affected by environmental and behavioural factors such as warm temperatures and water usage or exposure.

The main characteristics of Legionnaires' disease cases reported in 2024 were very similar to 2023, with most cases being sporadic and from sources in the built or population-related environment (community-acquired) and the disease mostly affecting males aged 65 years and above. However, notification rates are increasing in females and among the most elderly age groups. The observed trend of an aging EU/EEA population, particularly among females, may be a contributing factor for those countries reporting most Legionnaires' disease cases, as older age is a known risk factor for infection.

The type of tests reported in notified cases continue to be dominated by rapid tests and particularly urine antigen testing, though the use of nucleic methods such as PCR tests are increasing, as observed in 2024. The decreasing use of culture as a method is of concern, considering the value of culture in cluster or outbreak investigations. There may however be information bias in reported methods as a case notification may be considered complete for EU-level surveillance purposes based on inclusion of at least one laboratory method that meets the surveillance case definition.

Legionella longbeachae was the species most reported among the few *Legionella* non-pneumophila cases notified. As only less than 10% of cases are reported with a culture-confirmed diagnosis, there is likely an underestimation of the burden of disease caused by *Legionella* species across the EU/EEA other than by *Legionella pneumophila.* With rapid tests often aiming to diagnose *Legionella pneumophila* infections only, *Legionella* non-pneumophila cases may be missed at diagnosis or not specified. As infection from these species have been found to be associated with exposure to environmental sources including soil or compost mix, patient history to varied environmental sources should be considered.

Legionnaires' disease outbreaks were reported by just under a third of EU/EEA countries in 2024, which was proportionally slightly less than in the previous seven years of the scheme. The identification of a source was reported found only in 16% of outbreaks, demonstrating the challenges in identifying and controlling potential sources of *Legionella* bacteria in outbreak situations.

Public health implications

Legionnaires' disease remains an important cause of preventable morbidity and mortality in Europe.

EU/EEA notification rates were rising prior [4] and since the years of the COVID-19 pandemic 2020-2021, and this trend continued in 2024. However there remains uncertainty on the true incidence of Legionnaires' disease in the EU/EEA. Notification rates vary across EU/EEA countries, and the same four countries annually continue to report around three-quarters of all cases. Over half of the EU/EEA countries report comparatively low notification rates. It is difficult to assess whether these differences reflect population risks or disease prevention and control efforts, or under-diagnosis of the disease in many countries. Surveillance data collected at EU-level remain limited and studies could be of benefit to understand the extent of underdiagnosis and reporting.

The designation of the EURL-PH-LEGI [5] and start of its' activities under 2025 will be an important mechanism to strengthen laboratory methods and reference diagnostic availability across the EU/EEA, for both clinical and environmental samples and subsequently the completeness of surveillance data. Improved detection and characterisation of *Legionella* infections may assist the understanding of the epidemiology of the disease in the EU/EEA and what public health actions should be taken.

Outbreaks of Legionnaires' disease with varying size and cause, continue to be identified and investigated by public health authorities in EU/EEA countries. Due to the relatively high mortality associated with disease and considerable challenges for the rapid identification and control of environmental sources, it remains important to be vigilant through surveillance to detect clusters and outbreak events. Implementation of the recast EU directive on the quality of water intended for human consumption [6] contributes to Member States assessment and monitoring for *Legionella* in priority buildings and drinking water distribution systems that contribute to aerosol sources.

Regular checks for the presence of *Legionella* bacteria and appropriate control measures applied to engineered water systems [7] may prevent cases of Legionnaires' disease at tourist accommodation sites and in hospitals, long-term healthcare facilities or other settings where sizeable populations at higher risk may be exposed. An understanding of the effect of climate change on factors that may influence the abundance of *Legionella* bacteria in engineered water systems and exposure risks to populations susceptible to disease is of increasing public health relevance.

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