

Respiratory Viruses in Luxembourg (ReViLux)

Sentinel Network Report -Week 10 and Spotlight

Mycoplasma pneumoniae

Summary of Sentinel Network activities

At the end of week 2024/10, rates of influenza-like illness indicate decreasing trends and the sentinel network detected a baseline epidemic activity, based on 4.1% of consultations being associated with influenza-like illness. Among the specimens collected by the sentinel network over the last week, the percentage of positive tests for Human rhinovirus was 29.9%, 13.4% for Metapneumovirus and 11.8 % for Influenzavirus A. RSV and SARS-CoV-2 positivity have remained low over the past two weeks.

Influenza A positivity rates increased from 3.1% to 11.8% compared to previous week, but overall still below 20% (EU/EEA level: 22%, week 2024/09). This season, 80% of Influenzavirus A strains have been subtyped. Among those A viruses subtyped (N=304) there was a mix of A(H1)pdm09 viruses with 90.8% and A (H3) 9.2% .

Overall during this season (23/24) the sentinel network detected 211 RSV cases with 73% of samples subtyped. Genotyping analyses showed that the most frequent RSV strain during this season is RSV-A (86.2%).

Sentinel Surveillance Network

The Sentinel Surveillance aims to monitor circulating respiratory viruses, from traditional ones like Influenza to more recent ones like SARS-CoV-2, and hence underpin public health actions. The Sentinel Network is a group of general practitioners and paediatricians spread across the country. They report the weekly number of patients showing symptoms suggestive of acute respiratory infection (ARI) and influenza-like illness (ILI), and those patients are then sampled and tested for a panel of respiratory viruses. The circulation of respiratory viruses in the north hemisphere is generally monitored by seasons that go from week 40 to week 20. The period between weeks 20 and 40 is usually called inter-season.

Clinical results

Last week (2024/10), 4.1% of the consultations were reported as ILI, representing a baseline epidemic activity for Luxembourg, according to ECDC and the Moving Epidemic Method. Since week 2023/02 reported rates were at medium levels. Over the past three weeks downward trends in ILI rates have been observed. The history of ILI consultations is displayed in Figure 1, and a detailed summary of the number of ARI and ILI cases during the last four weeks is included in Table 1.

Laboratory results

Over the last week, the most frequently detected viruses (according to positivity rates) were Human rhinovirus (29.9%), followed by Metapneumovirus (12.9%) and Influenzavirus A (11.8%). Positivity rates of Influenza A decreased from 35.3% (2023/52) to 22.5% (2024/02), but rates nearly doubled to 43.3% in week 2024/03, peaked in week 2024/06 (52.7%) and decreased to 3.3 % in 2024/09, but increased to 11.8 % in 2024/10. The increase can be due to sample variation. However, overall Influenzavirus A levels are stable, but not yet below sentinel threshold for Influenza A (10%).

Three hundred and four of 380 (80%) samples have been further characterized with 90.8% as A (H1)pdm09 and 9.2% as A (H3). Thirty samples from the sentinel network were genetically characterised with 13 (H1) samples reported as clade 5a.2a (A/Sydney/5/2021), 13 (H1) samples as subclade 5a.2a.1 (A/Victoria/4897/2022) and 4 (H3) samples as clade 2a.3a.1 (A/Thailand/8/2022). All of the genetically characterised clades belong to clades of the recommended vaccine components.

Over the past week, low circulation of Influenza B has been detected.

During week 2024/10, a low number of RSV cases were detected in the sentinel network. Overall, this season (23/24), the highest impact of RSV was seen among the 1-4 years age

group (Figure3). To date, 153 RSV detections were further subtyped as either RSV A (N=132, 86.8%) or RSV B (N=21, 13.7%).

SARS-CoV-2 positivity has decreased since the start of 2024, from 14.1% in week 2024/01 to 2.4% in week 2024/07. Over the past three weeks, SARS-CoV-2 activity has been very low within the sentinel network.

An overview of the circulating viral pathogens during the current and previous inter- season is displayed in Figure 2 and Table 2.

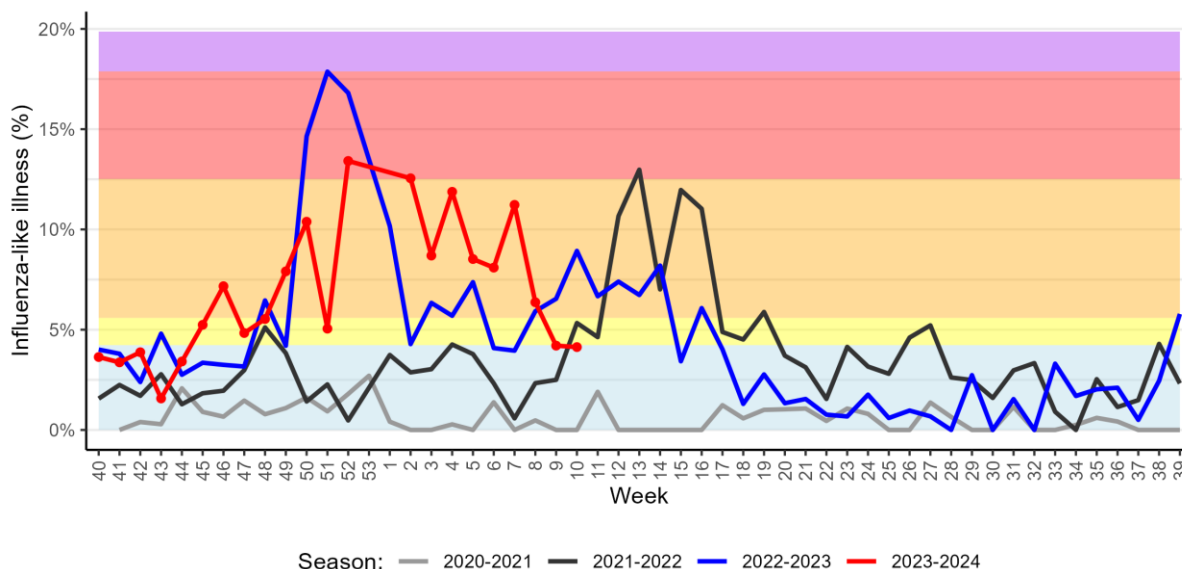


Figure 1. Percentage of patients with influenza-like illness over the last three seasons
Background colours according to intensity of circulation: baseline, low, medium, high, very high. Data from 2024/01 not presented as low return

Table 1. Syndromic surveillance over the last 4 weeks

Week	ARI		ILI		Total consultations
	N	%	N	%	
2024/07	74	37.76	22	11.22	196
2024/08	54	20.22	17	6.37	267
2024/09	52	15.62	14	4.20	333
2024/10	44	18.18	10	4.13	242

ARI: Acute Respiratory Infections; ILI: Influenza-Like Illness.

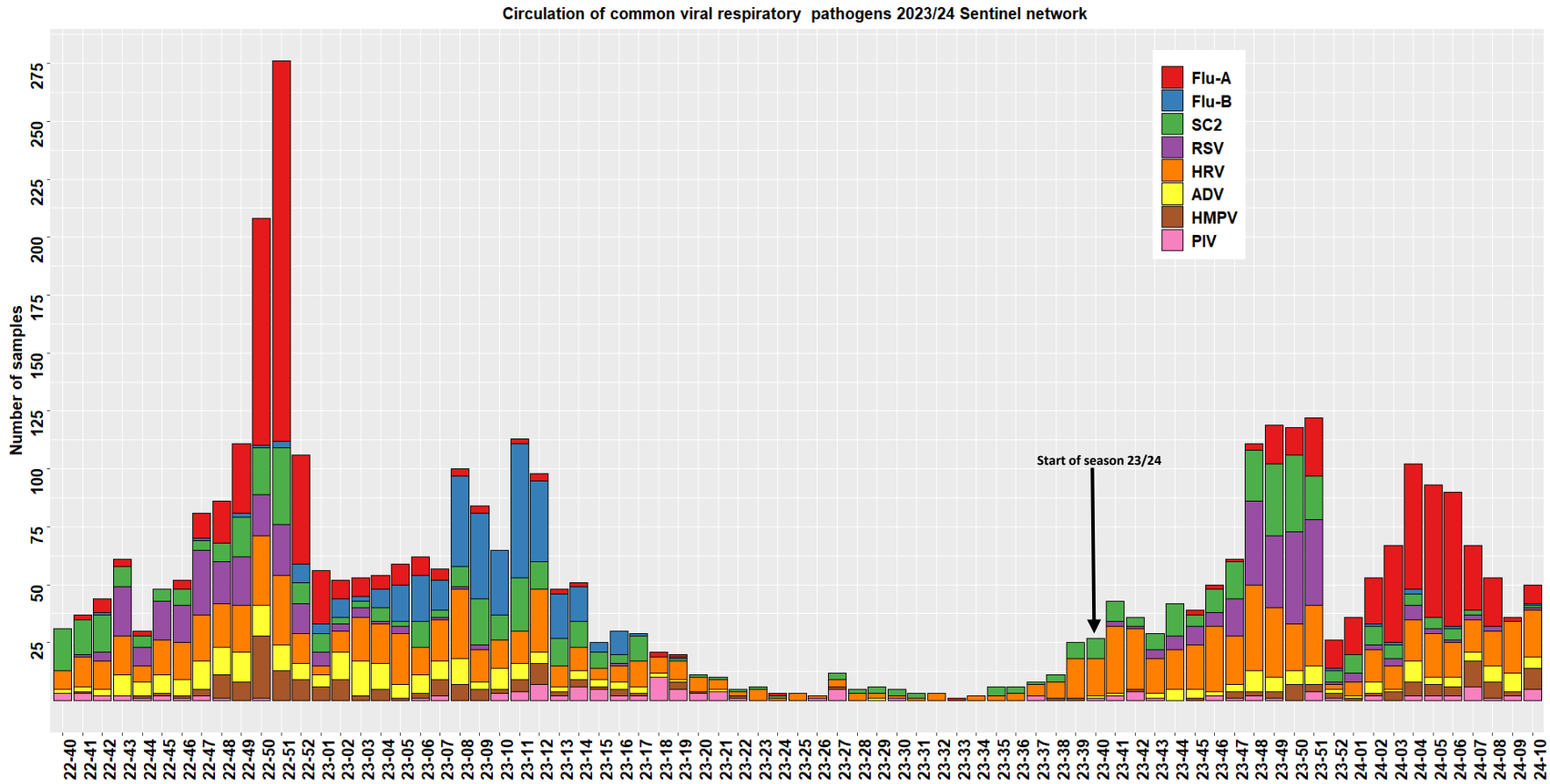


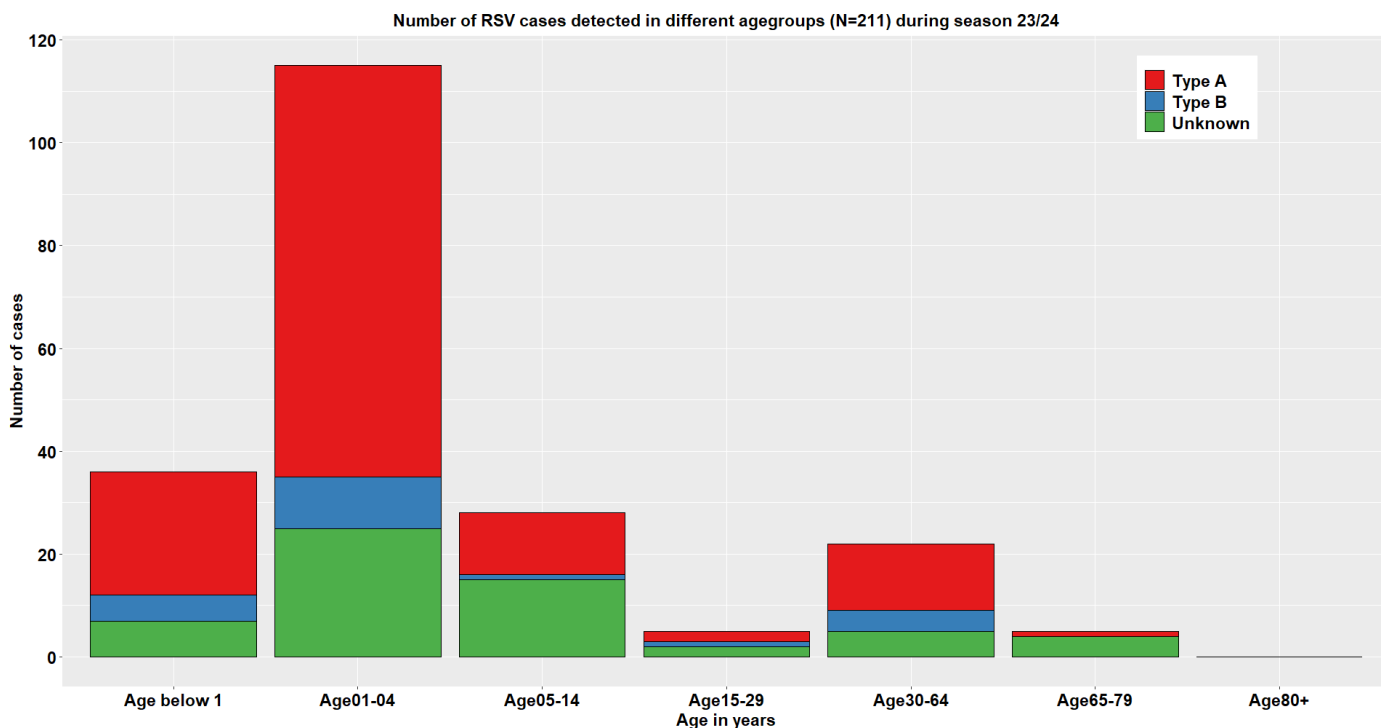
Figure 2. Distribution of respiratory viruses detected within the Sentinel Network, by calendar week. Results from last weeks are not all yet consolidated.
 FLU-A: Influenzavirus A; FLU-B: Influenzavirus B; PIV: Parainfluenzavirus; RSV: Respiratory syncytial virus; ADV: Adenovirus; MPV: Metapneumovirus; HRV: Human rhinovirus; SC2: SARS-CoV-2.

Table 2. Distribution of respiratory viruses detected within the Sentinel Network previous 4 weeks compared to previous year.

Virus	Season 2023/24				Season 2022/23	
	Positivity Rate in %					w10
	w07	w08	w09	w10	Trend	
Human rhinovirus	16.5	18.3	34.4	29.9	↑	13.0
Metapneumovirus	12.9	8.5	3.1	13.4	↑	2.2
Influenzavirus A	32.9	25.3	3.1	11.8	→	0.0
Parainfluenzavirus	7.1	1.2	3.1	7.5	↑	3.3
Adenovirus	4.7	8.5	12.5	7.5	→	9.8
Respiratory syncytial virus	2.4	2.4	0.0	1.5	→	0.0
SARS-CoV-2	2.4	0.0	0.0	1.5	→	11.5
Influenzavirus B	0.0	0.0	0.0	1.5		28.9

*Co-detection counted once for each virus detected.

Figure 3. Displays RSV cases according to different age groups with highest impact among the 1-4 years old.



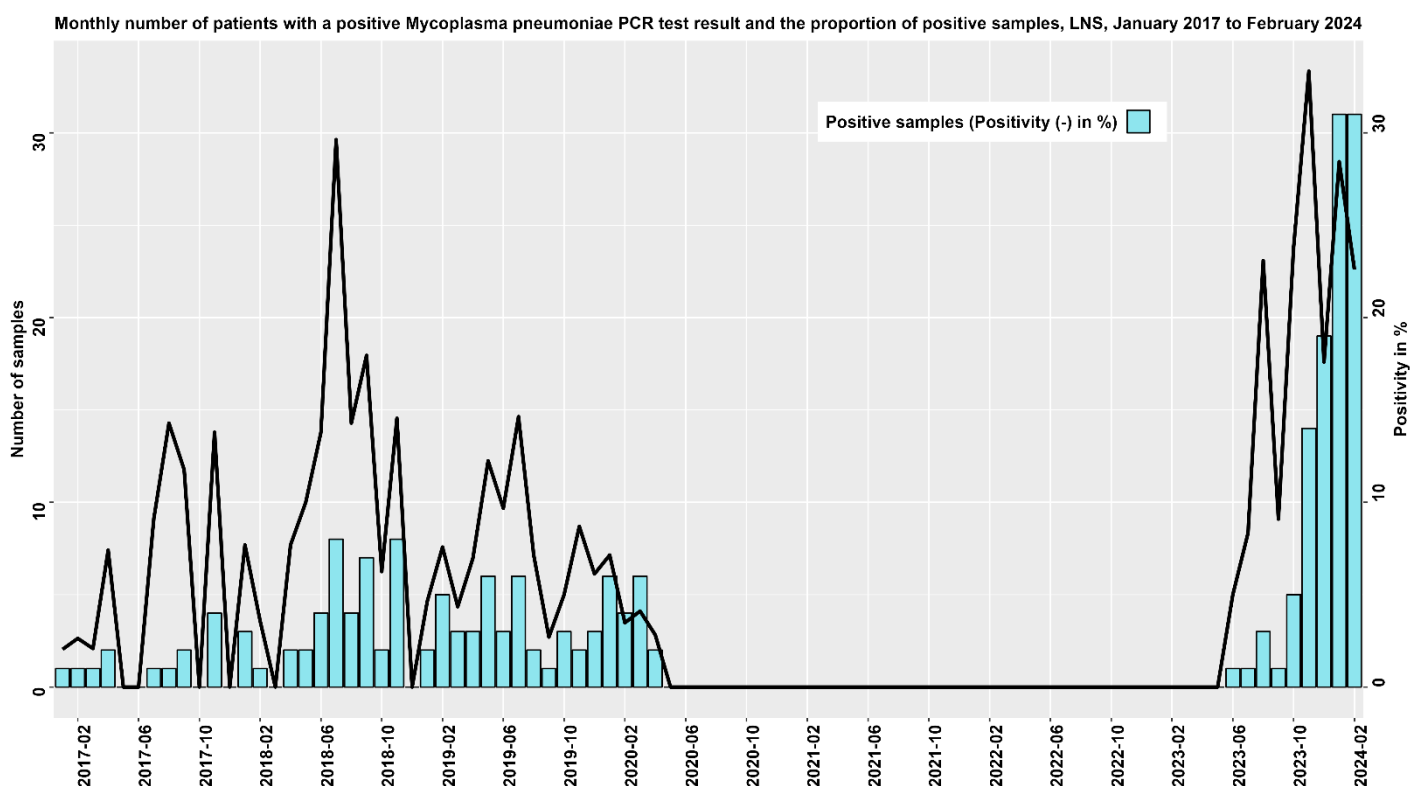
In the SPOTLIGHT: Re-emergence of *Mycoplasma pneumoniae*

Since October 2023 several countries reported the re-emergence of *M. pneumoniae*, which is a common cause of mild respiratory illness, especially in school- aged children, but some patients also suffer from severe infections. The number of infections vary over time and most cases occur late summer/ early autumn with peaks every 1 to 3 years.

M. pneumoniae is usually detected by nucleic acid amplification techniques, primarily PCR, because culture is difficult and results can take several days or even weeks. Single real time PCR or multiplex respiratory PCR assay are the 2 options to detect *M.pneumoniae* in respiratory samples. Here at LNS, we conduct PCR testing upon physician request, using a multiplex PCR assay for *bacterial* respiratory pathogens.

Between April 2020 and May 2023, circulation of *M. pneumoniae* has nearly been absent in Luxembourg. In June 2023, however first cases were detected and gradually numbers increased with peak in November 2023. Positivity rates declined in December but increased in January 2024 (figure 4). Overall 44 cases were reported in 2023 (18.2% positivity) and 62 cases (45.2% positivity) in 2024 with median age of 11 years (range 1-75 years).

Figure 4. Displays *Mycoplasma pneumoniae* cases detected at LNS from 2017 to February 2024



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