

NATIONAL WEEKLY INFLUENZA BULLETIN OF THE RUSSIAN FEDERATION

week 16 of 2024 (15.04.24 - 21.04.24)

Summary.

Influenza and ARI incidence data. Influenza and other ARI activity in Russia increased in comparison with previous week. The nationwide ILI and ARI morbidity level (51.7 per 10 000 of population) was lower than national baseline (70.0) by 26.1%.

Etiology of ILI & ARI. Among 8583 patients investigation 109 (1.3%) respiratory samples were positive for influenza, including 1 case of influenza A(H1N1)pdm09 in 1 city, 7 cases of influenza A(H3N2) in 6 cities, 19 cases of untyped influenza A in 3 cities and 82 cases of influenza B in 16 cities.

21 influenza viruses were isolated on MDCK cell culture, including: 1 case of influenza A(H1N1)pdm09 in Moscow, 19 cases of influenza A(H3N2): Veliky Novgorod (1), Krasnodar (9), Lipetsk (4), Moscow (1), Saint-Petersburg (4) and 1 case of influenza B in Saint-Petersburg (2). Since the beginning of the season 1119 influenza viruses were isolated on MDCK cell culture, including: 7 influenza viruses A(H1N1)pdm09, 1071 viruses A(H3N2) and 41 viruses B.

Antigenic characterization. Since the beginning of the season 709 influenza have been antigenically characterized by the NICs, including: 3 influenza A(H1N1)pdm09 viruses in Moscow (2) and Saint-Petersburg (1), 688 influenza A(H3N2) viruses in Moscow (186) and Saint-Petersburg (502) and 18 influenza B viruses in Moscow (8) and Saint-Petersburg (10). 2 influenza A(H1N1)pdm09 viruses were similar to the vaccine strain for the Northern Hemisphere countries for the 2023-2024 season A/Victoria/4897/22 (H1N1)pdm09, 1 strain was its drift variant; 444 influenza A(H3N2) viruses were antigenically similar to vaccine strain for the Northern Hemisphere countries for the 2023-2024 season A/Darwin/09/2021 and 244 viruses were a drift variant of the vaccine strain A/Darwin/09/2021 and reacted with antiserum to it in a reduced titer (1:8 and low). 11 influenza B viruses were antigenically similar to vaccine strain for the Northern Hemisphere countries for the 2023-2024 season A/Austria/1359417/2021 and 7 were its drift variants.

Genetic analysis. Since the beginning of the season 2023-2024, sequencing of 5 A(H1N1)pdm09 influenza isolates, 1364 influenza viruses and isolates from primary clinical materials from patients and 2 B influenza isolates were performed by NIC (Saint-Petersburg). According to phylogenetic analysis, 5 A(H1N1)pdm09 influenza isolates were assigned to genetic clade 6B.1A.5a.2a and similar to the vaccine strain A/Victoria/2570/2019, 1364 influenza A(H3N2) viruses were assigned to genetic clade 3C.2a1b.2a.2a.3a.1 and similar to the reference strain A/Thailand/08/2022, 1 virus was assigned to genetic clade 2a.3b and similar to the reference virus A/Sydney/732/2022, 2 B influenza isolates were assigned to genetic subclade 6B.1A.5a.2a and similar to the vaccine strain B/Austria/1359417/2021. All viruses were sensitive to neuraminidase inhibitors (oseltamivir, zanamivir).

Susceptibility to antivirals. Since the beginning of the season 2023-2024, the sensitivity of 469 influenza viruses to neuraminidase inhibitors (oseltamivir, zanamivir) was studied in two NICs (Moscow, Saint-Petersburg), including 468 A(H3N2) influenza viruses and 1 influenza B virus. All studied viruses were sensitive to neuraminidase inhibitors, except for one strain of A(H3N2) isolated in Moscow, which showed reduced sensitivity to oseltamivir.

ARVI detections. The overall proportion of respiratory samples tested positive for other ARVI (PIV, ADV, RSV, RhV, CoV, MPV, BoV) was estimated in total as **19.0%** (PCR).

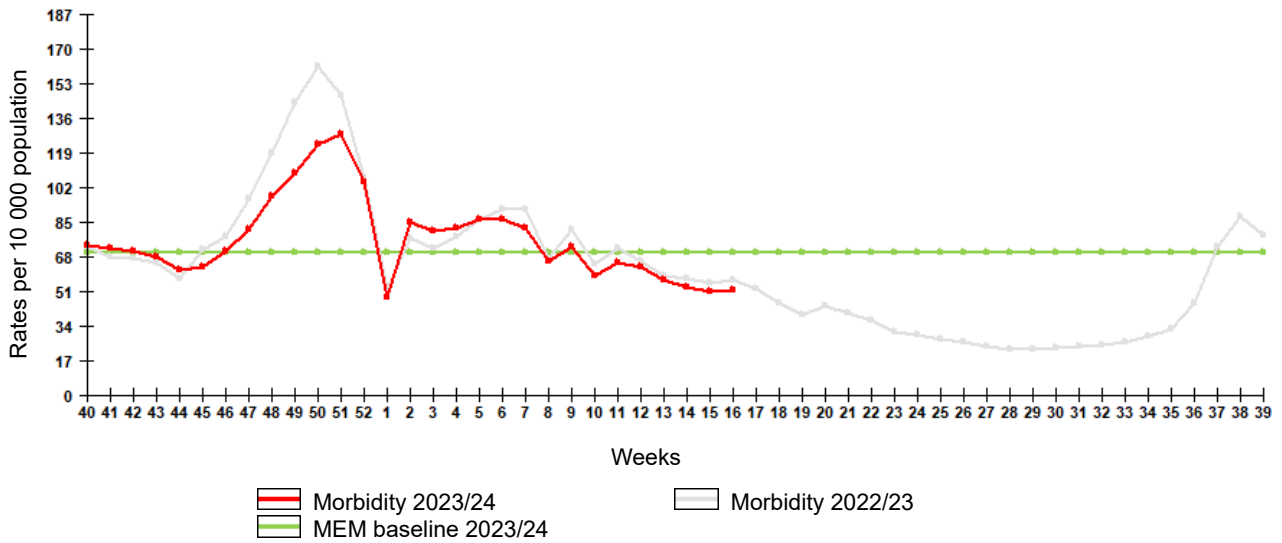
In sentinel surveillance system clinical samples from 29 SARI patients were investigated by rRT-PCR for influenza, no positive cases of influenza were detected. 4 (13.8%) of 29 SARI patients were positive for coronavirus SARS-CoV-2. Among 29 SARI samples 6 (20.7%) cases positive for ARVI were detected including: 4 cases of ADV and 2 cases of RhV infection.

Clinical samples from 23 ILI/ARI patients were investigated for influenza by rRT-PCR, no positive cases of influenza were detected. Among 23 ILI/ARI samples 11 (47.8%) cases positive for ARVI were detected including: 3 cases of PIV, 1 case of ADV, 6 cases of RhV and 1 case of MPV infection. 1 (4.3%) of 23 ILI/ARI patients were positive for coronavirus SARS-CoV-2.

COVID-19. Totally 24 158 632 cases and 402 872 deaths associated with COVID-19 were registered in Russia including 16 280 cases and 55 deaths in week 16. According to the data obtained by NIC in Saint-Petersburg totally 10573 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 430 (4.1%) cases.

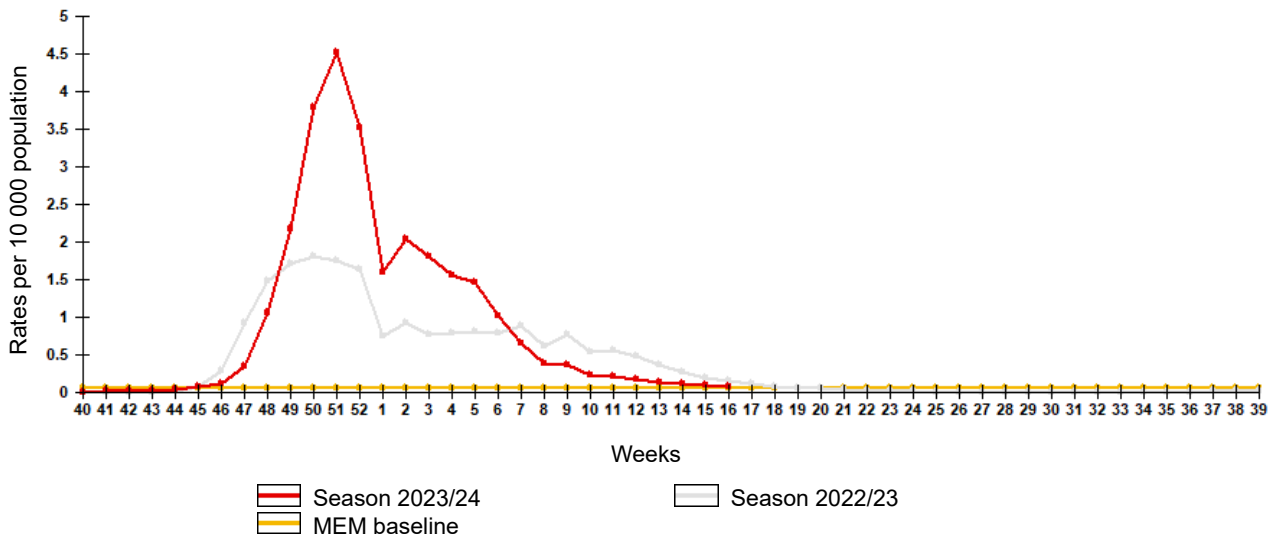
Influenza and ARI morbidity data

Fig. 1. Influenza and ARI morbidity in 61 cities under surveillance in Russia, seasons 2022/23 and 2023/24



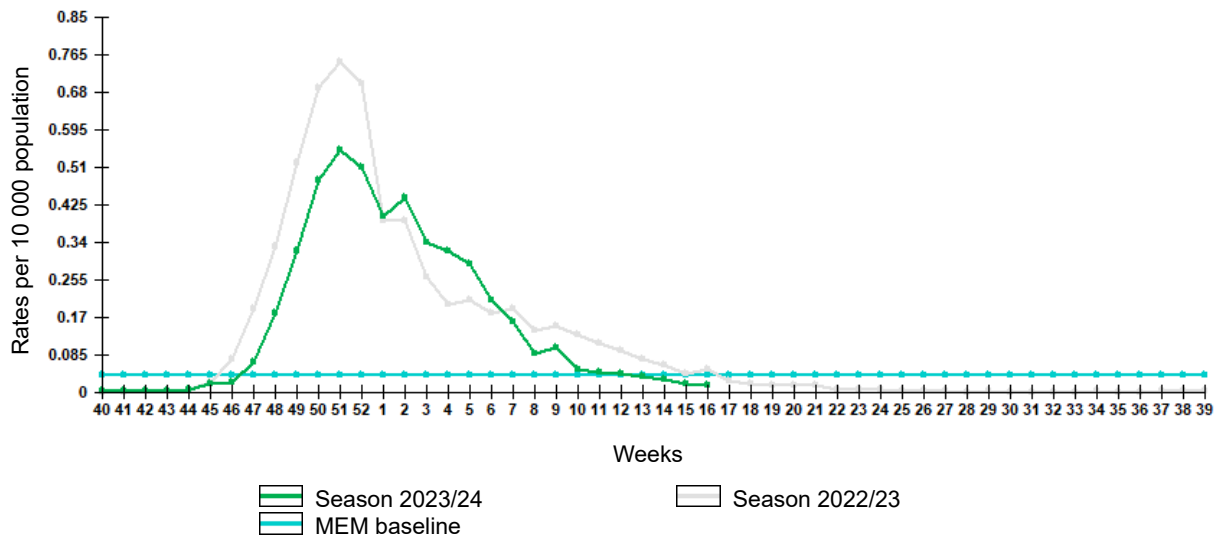
Epidemiological data increased of influenza and other ARI activity in Russia in comparison with previous week. The nationwide ILI and ARI morbidity level (51.7 per 10 000 of population) was lower than national baseline (70.0) by 26.1%.

Fig. 2. Comparative data on incidence rate of clinically diagnosed influenza, seasons 2022/23 and 2023/24



Incidence rate of clinically diagnosed influenza decreased comparing to previous week and amounted to 0.085 per 10 000 of population, it was higher than pre-epidemic MEM baseline (0.060).

Fig. 3. Comparison of hospitalization rate with clinical diagnosis of influenza, seasons 2022/23 and 2023/24



Hospitalization rate of clinically diagnosed influenza decreased comparing to previous week and amounted to 0.017 per 10 000 of population, it was lower than pre-epidemic MEM baseline (0.040).

Influenza and ARVI laboratory testing results

Cumulative results of influenza laboratory diagnosis by rRT-PCR were submitted by 47 RBLs and two WHO NICs. According to these data as a result of 8583 patients investigation 109 (1.3%) respiratory samples were positive for influenza, including 1 case of influenza A(H1N1)pdm09 in 1 city, 7 cases of influenza A(H3N2) in 6 cities, 19 cases of unsubtype influenza A in 3 cities and 82 cases of influenza B in 16 cities.

21 influenza viruses were isolated on MDCK cell culture, including: 1 case of influenza A(H1N1)pdm09 in Moscow, 19 cases of influenza A(H3N2) Veliky Novgorod (1), Krasnodar (9), Lipetsk (4), Moscow (1), Saint-Petersburg (4) and 1 case of influenza B in Saint-Petersburg (2). Since the beginning of the season 1119 influenza viruses were isolated on MDCK cell culture, including: 7 influenza viruses A(H1N1)pdm09, 1071 viruses A(H3N2) and 41 viruses B.

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Fig. 4. Geographic distribution of RT-PCR detected influenza viruses in cities under surveillance in Russia, week 16 of 2024

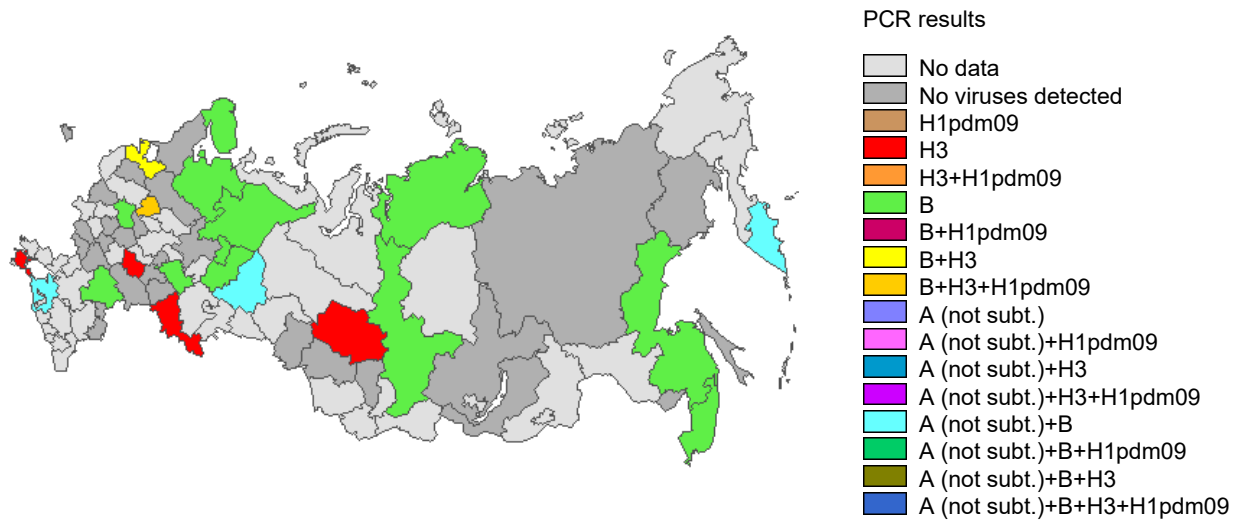


Fig. 5. Monitoring of influenza viruses detection by RT-PCR in Russia, season 2023/24

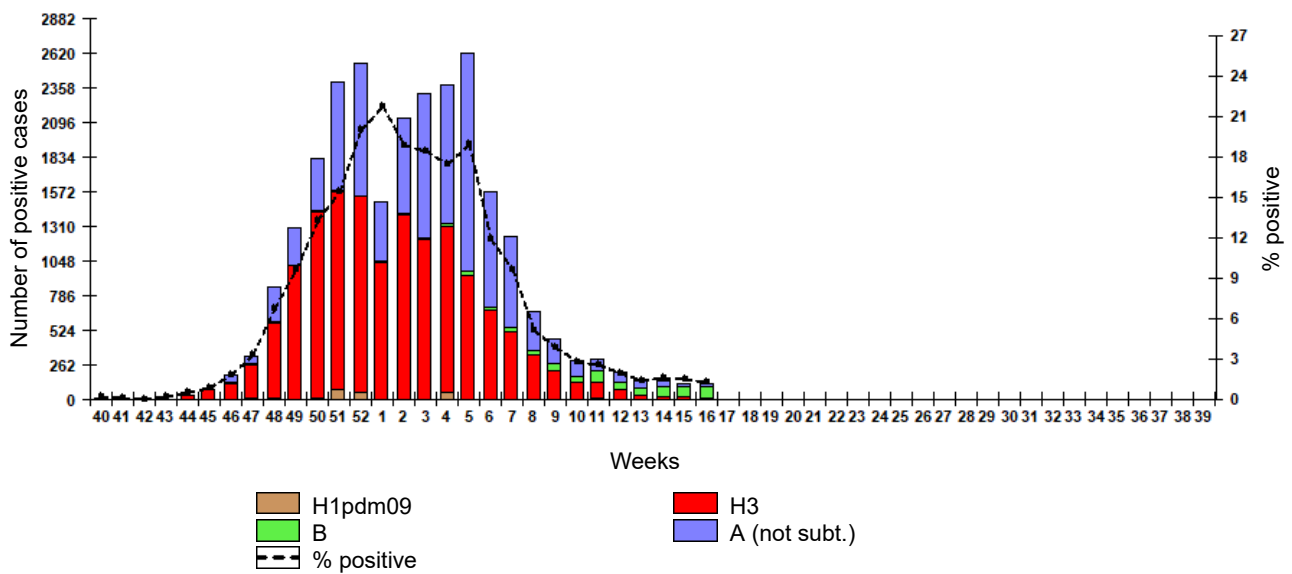
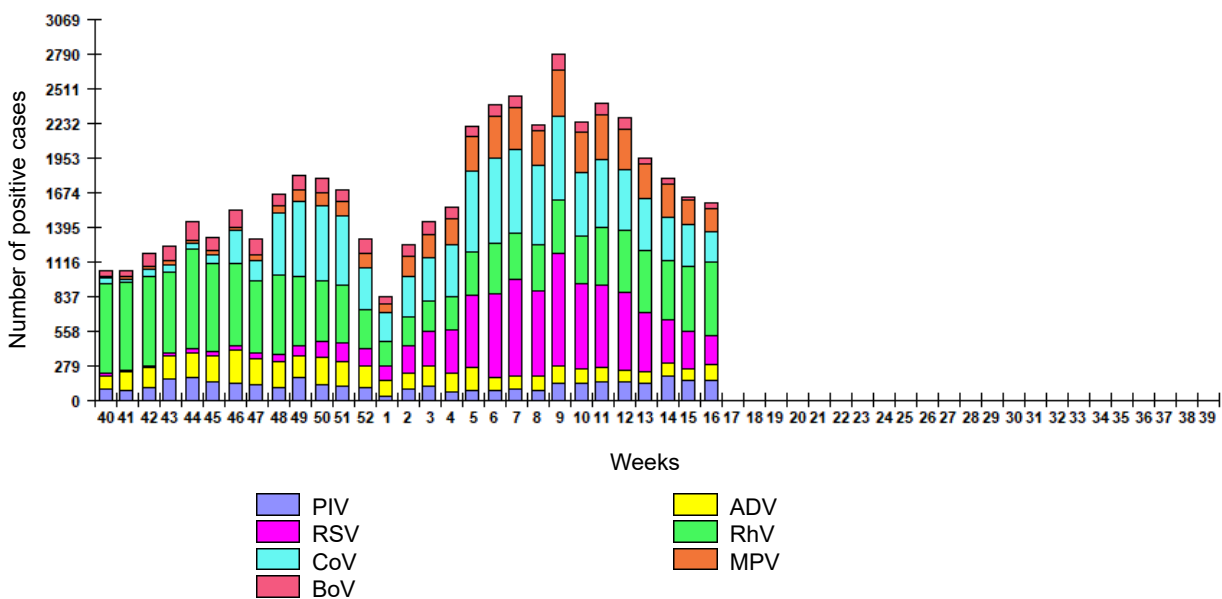


Fig. 6. Monitoring of ARVI detection by RT-PCR in Russia, season 2023/24



ARVI detections. The overall proportion of respiratory samples tested positive for other ARVI (PIV, ADV, RSV, RhV, CoV, MPV, BoV) estimated as **19.0%** of investigated samples by PCR.

Fig. 7. Monitoring of influenza viruses isolation in Russia, season 2023/24

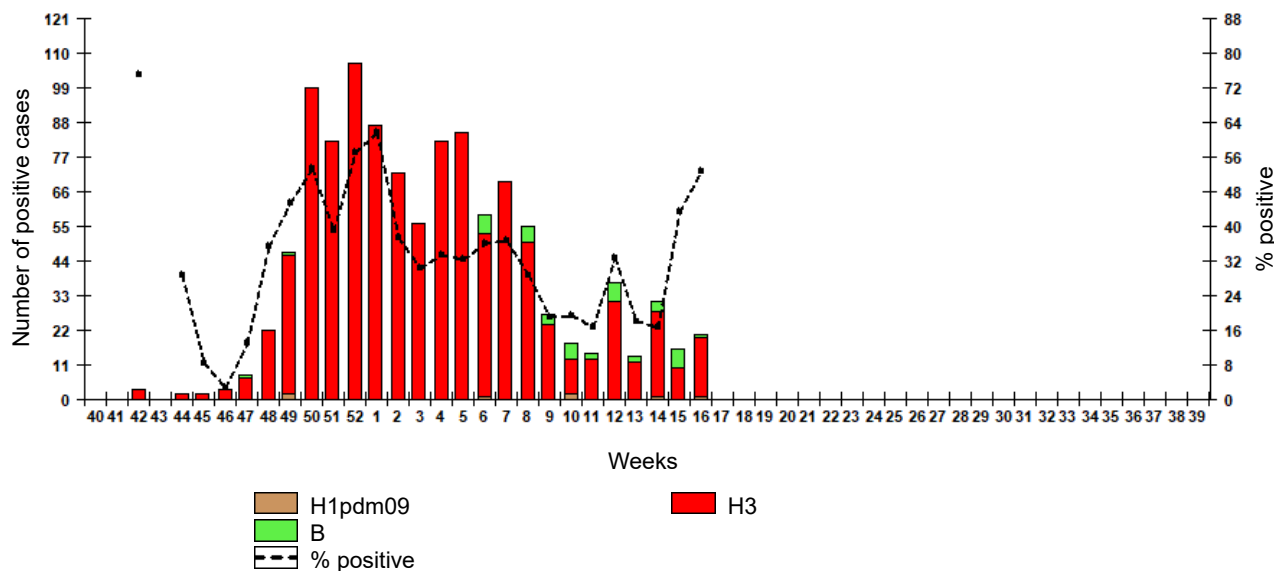
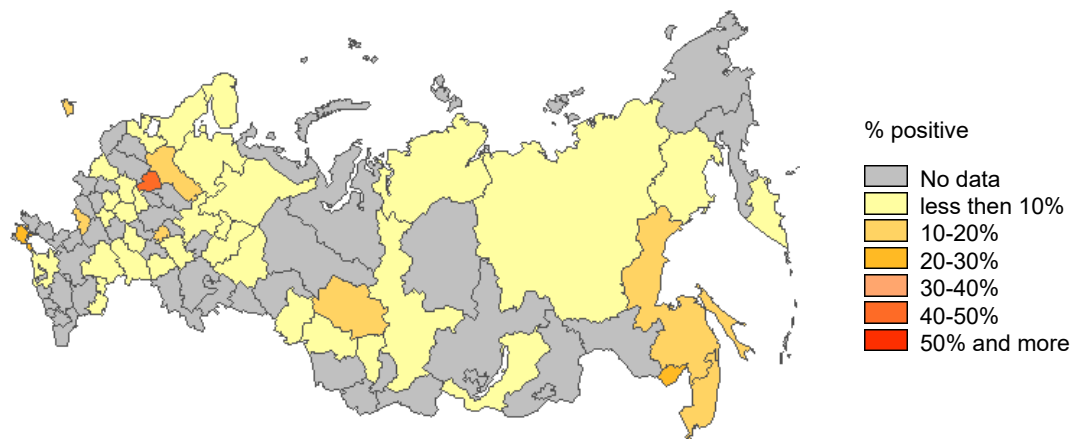


Table 1. Results of influenza and other ARVI detection by RT-PCR in Russia, week 16 of 2024

	Number of specimens / number of positive cases	% positive
<u>Influenza</u>		
Number of specimens tested for influenza	8583	-
Influenza A (not subt.)	19	0,2%
Influenza A(H1)pdm09	1	0,01%
Influenza A(H3)	7	0,08%
Influenza B	82	1,0%
All influenza	109	1,3%
<u>Other ARVI</u>		
Number of specimens tested for ARVI	8391	-
PIV	164	2,0%
ADV	125	1,5%
RSV	235	2,8%
RhV	595	7,1%
CoV	246	2,9%
MPV	185	2,2%
BoV	46	0,5%
All ARVI	1596	19,0%
<u>SARS-CoV-2 (COVID-19)</u>		
Number of specimens tested for SARS-CoV-2	10573	-
SARS-CoV-2	430	4,1%

Fig. 8. Results of PCR detections of SARS-CoV-2 in Russia



COVID-19. Totally 24 158 632 cases and 402 872 deaths associated with COVID-19 were registered in Russia including 16 280 cases and 55 deaths in week 16. According to the data obtained by NIC in Saint-Petersburg totally 10573 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 430 (4.1%) cases.

Table 2. Results of influenza viruses isolation in Russia, week 16 of 2024

	Number of specimens / number of viruses	% isolated viruses
Number of specimens	40	-
Influenza A(H1)pdm09	1	2,5%
Influenza A(H3)	19	47,5%
Influenza B	1	2,5%
All influenza	21	52,5%

Sentinel influenza surveillance

Clinical samples from 29 SARI patients were investigated by rRT-PCR for influenza, no positive cases of influenza were detected. 4 (13.8%) of 29 SARI patients were positive for coronavirus SARS-CoV-2. Among 29 SARI samples 6 (20.7%) cases positive for ARVI were detected including: 4 cases of ADV and 2 cases of RhV infection.

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Fig. 9. Monitoring of influenza viruses detection by RT-PCR among SARI patients in sentinel hospitals, season 2023/24

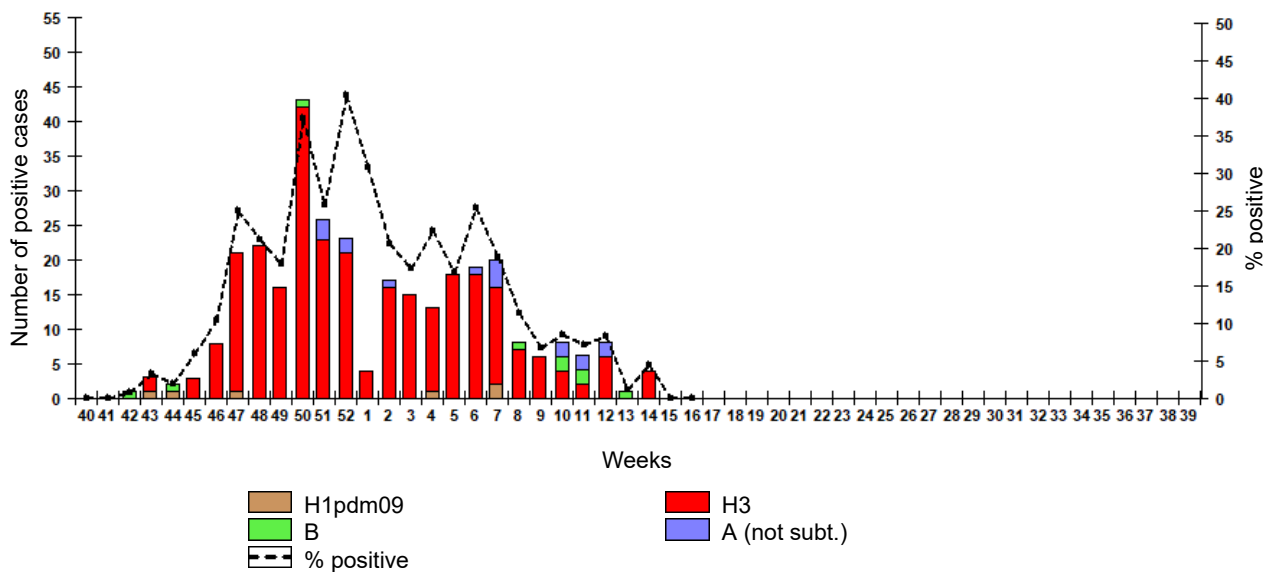


Fig. 10. Monitoring of influenza viruses detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2023/24

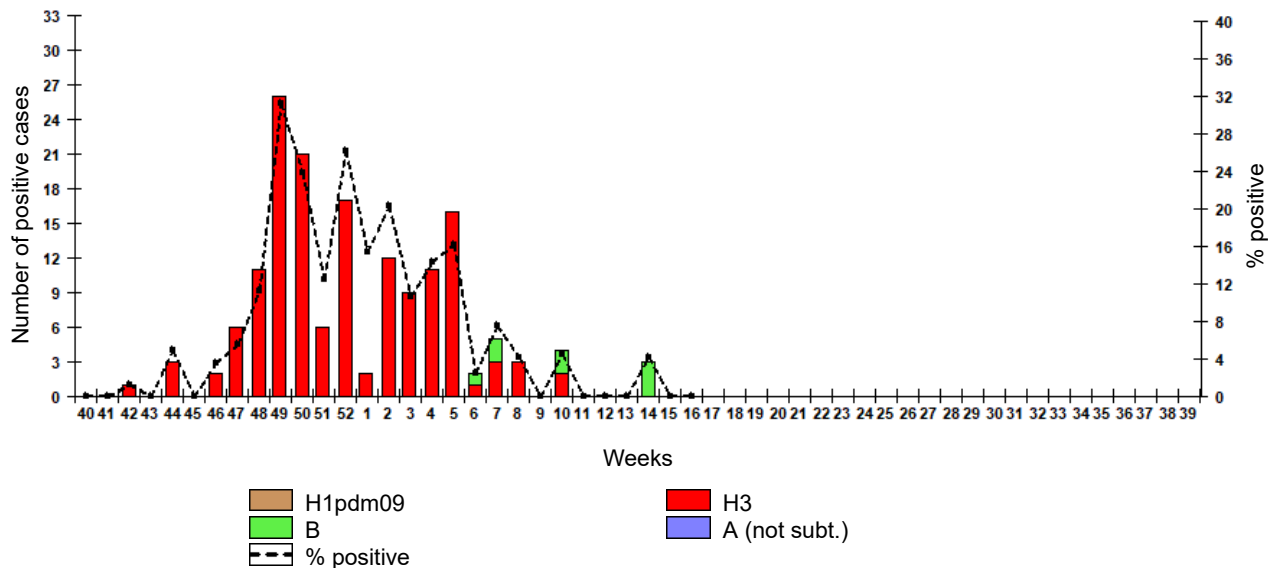


Fig. 11. Monitoring of ARVI detection by RT-PCR among SARI patients in sentinel hospitals, season 2023/24

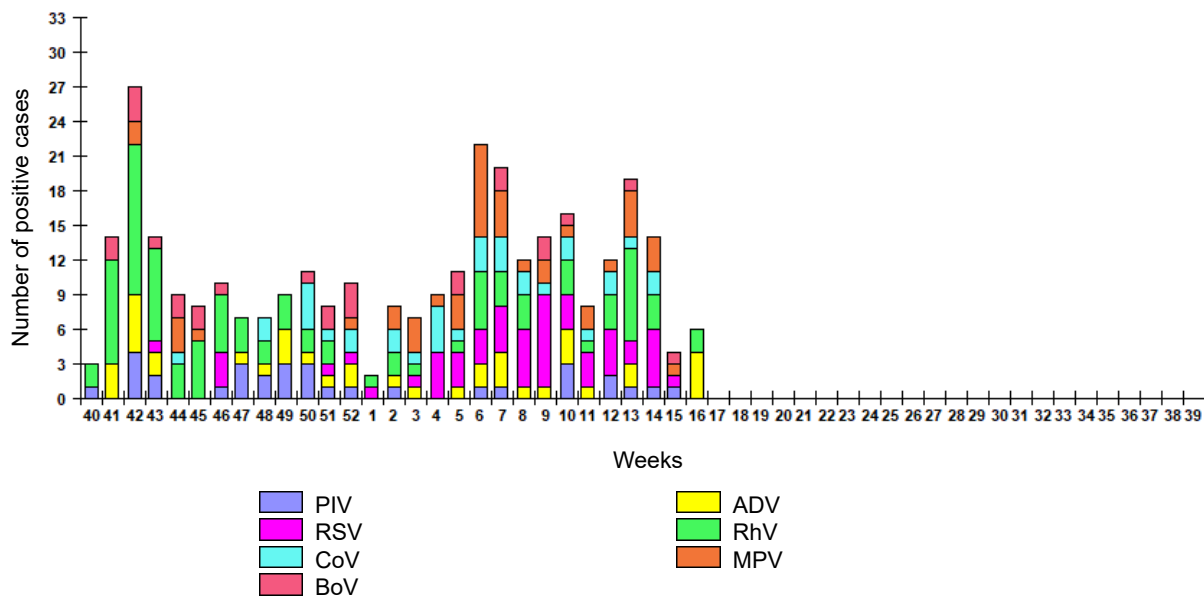


Fig. 12. Monitoring of ARVI detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2023/24

