

## NATIONAL WEEKLY INFLUENZA BULLETIN OF THE RUSSIAN FEDERATION

*week 11 of 2023 (13.03.23 - 19.03.23)*

### Summary.

**Influenza and ARI incidence data.** Influenza and other ARI activity increase of influenza and other ARI activity in Russia in comparison with previous week. The nationwide ILI and ARI morbidity level (72.3 per 10 000 of population) was higher than national baseline (70.0) by 3.3%.

**Etiology of ILI & ARI.** Among 8023 patients investigation 444 (5.5%) respiratory samples were positive for influenza, including 9 cases of influenza A(H1N1)pdm09 in 5 cities, 2 cases of influenza A(H3N2) in 2 cities, 8 cases of influenza A untyped in 4 cities and 425 cases of influenza B in 41 cities.

52 influenza viruses were isolated on MDCK cell culture, including: 4 influenza A(H1N1)pdm09 viruses in Birobidzhan (2), Yekaterinburg (1), Tomsk (1); 1 influenza A(H3N2) virus in Birobidzhan; 47 influenza B viruses in Astrakhan (3), Birobidzhan (2), Yekaterinburg (2), Novosibirsk (1), Saint-Petersburg (19), Khabarovsk (20). Since the beginning of the season 1088 influenza viruses were isolated on MDCK cell culture, including: 701 viruses A(H1N1)pdm09, 28 viruses A(H3N2) and 359 viruses B.

**Antigenic characterization.** Since the beginning of the season, 559 influenza A(H1N1)pdm09 viruses have been antigenically characterized by the NICs, including: Moscow (98) and Saint-Petersburg (461), 28 influenza A(H3N2) viruses in Moscow (1) and Saint-Petersburg (27) and 113 influenza B, including: Moscow (10) and Saint-Petersburg (103). All viruses A(H1N1)pdm09 were antigenically similar to reference strain A/Victoria/2570/2019 (H1N1)pdm09. 26 influenza A(H3N2) strains were similar to the reference virus A/Darwin/9/2021 and 2 influenza A(H3N2) viruses reacted with the reference virus antiserum to a 1:8 homologous titer. 111 influenza B viruses were antigenically similar to reference strain B/Austria/1359417/2021 and 2 influenza B viruses reacted with the reference virus antiserum to a 1:8 homologous titer.

**Genetic analysis.** Sequencing of 993 influenza viruses and isolates from primary clinical materials from patients was performed by NIC (Saint-Petersburg). According to phylogenetic analysis, 904 influenza A(H1N1)pdm09 viruses were assigned to genetic subgroup 6 B.1A.5a.2 and similar to reference virus A/Victoria/2570/2019 (H1N1)pdm09; 27 A(H3N2) viruses was assigned to subgroup 3C.2 a1b.2a.2 and similar to reference virus Bangladesh/4005/2020 (H3N2); 62 influenza type B viruses were assigned to genetic subgroup V1A.3a.2 reference virus B/Austria/1359417/2021.

**Susceptibility to antivirals.** The sensitivity of 280 influenza viruses to neuraminidase inhibitors (oseltamivir, zanamivir) was studied in two NICs (Moscow, St. Petersburg), including 224 A(H1N1)pdm09 viruses and 6 A(H3N2) viruses in NIC (Saint-Petersburg) and 45 A(H1N1)pdm09 viruses and 5 B viruses in NIC (Moscow). All the viruses studied were sensitive to oseltamivir and zanamivir.

**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 10.0% (PCR).

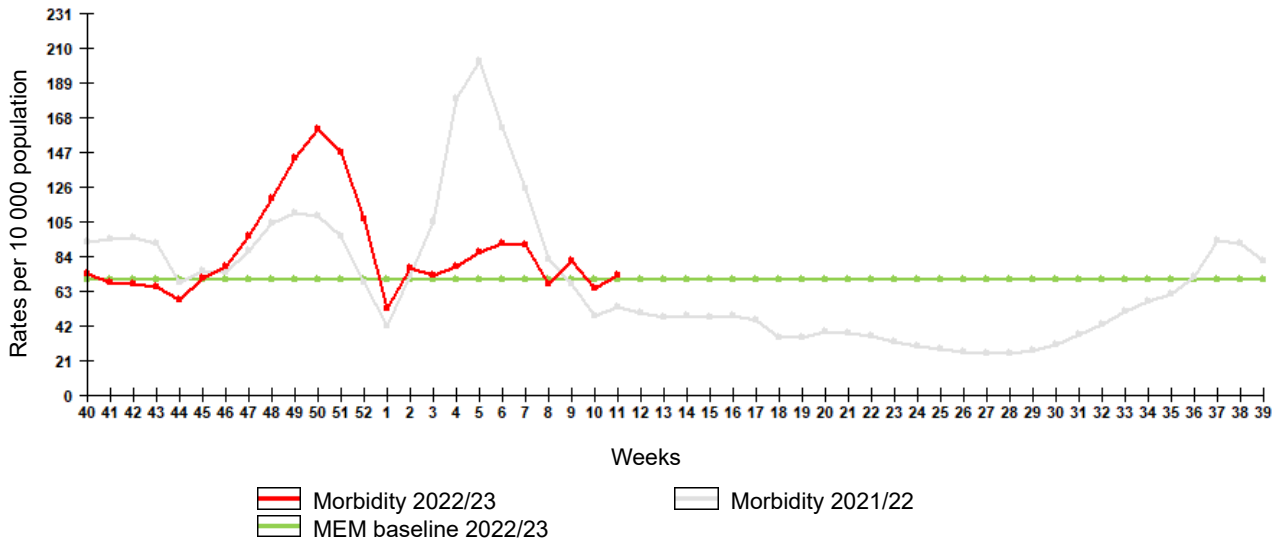
**In sentinel surveillance system** clinical samples from 99 SARI patients were investigated by rRT-PCR for influenza, among them 2 (2.0%) cases of influenza, including 1 case of influenza A(H1N1)pdm09 and 1 case of influenza A(H3N2). Among 89 SARI samples 14 (15.7%) cases positive for ARVI detected including 1 case of ADV, 4 cases of RSV, 1 case of RhV, 1 case of CoV, 6 cases of MPV and 1 case of BoV infection. 2 (2.0%) of 99 SARI patients were positive for coronavirus SARS-CoV-2.

Clinical samples from 58 ILI/ARI patients were investigated for influenza by rRT-PCR, among them 2 (3.4%) cases of influenza, including 1 case of influenza A untyped and 1 case of influenza B. Among 47 ILI/ARI samples 10 (21.3%) cases positive for ARVI detected including 2 cases of ADV, 5 cases of CoV and 3 cases of MPV infection. 7 (13.2%) of 53 ILI/ARI patients were positive for coronavirus SARS-CoV-2.

**COVID-19.** Totally 22 550 395 cases and 396 974 deaths associated with COVID-19 were registered in Russia including 12 512 cases and 36 deaths in last 24 hours (on 12:00 of 23.03.2023). According to the data obtained by NIC in Saint-Petersburg totally 12 728 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 1873 (14.7%) cases.

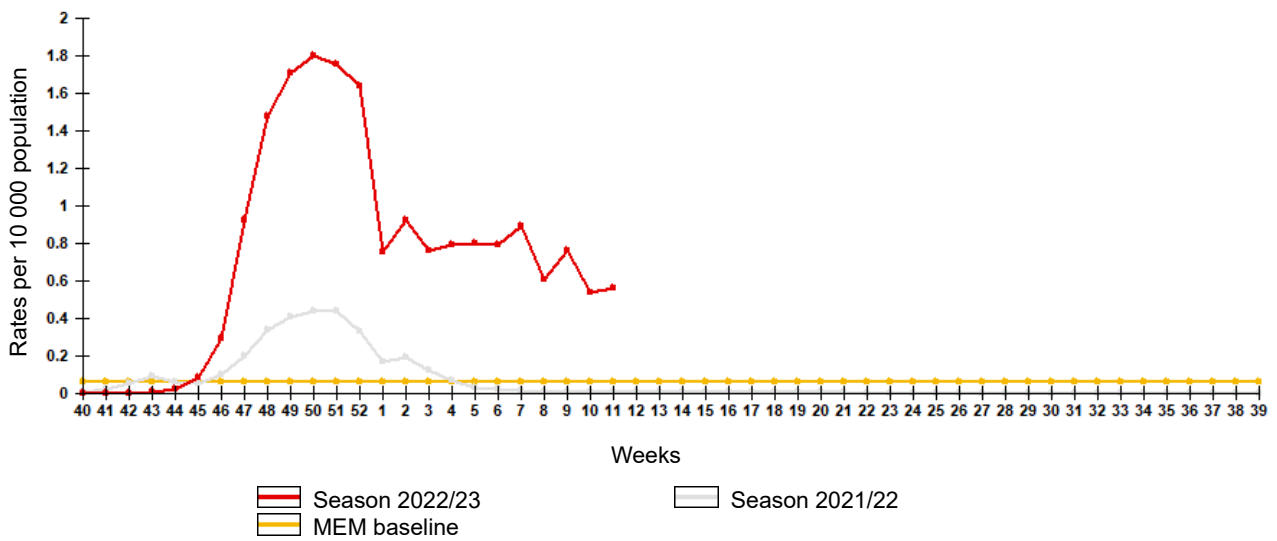
# Influenza and ARI morbidity data

Fig. 1. Influenza and ARI morbidity in 61 cities under surveillance in Russia, seasons 2021/22 and 2022/23



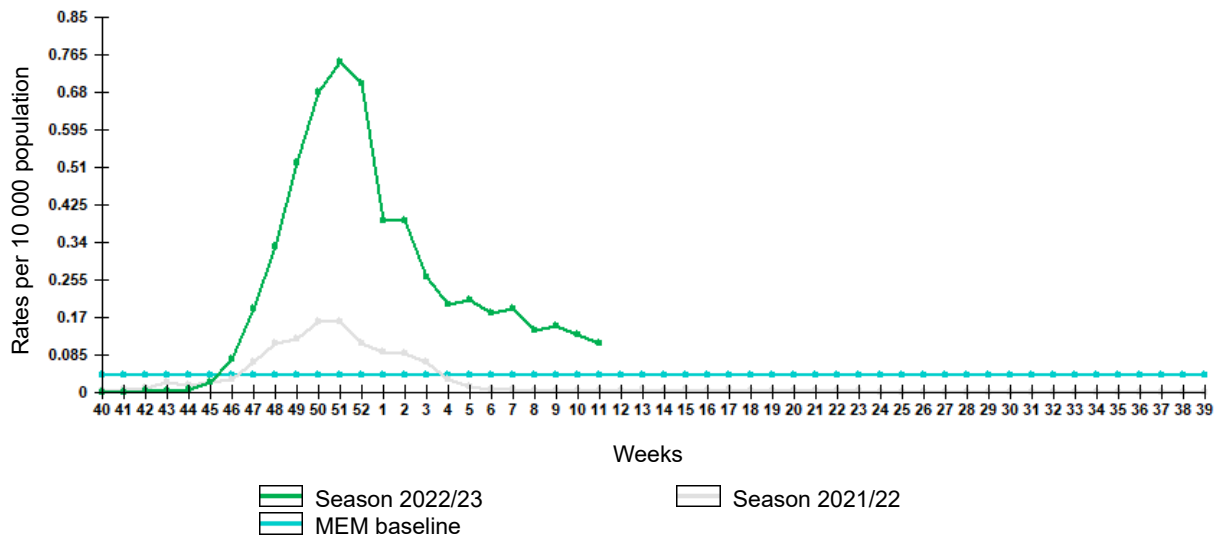
Epidemiological data showed increase of influenza and other ARI activity in Russia in comparison with previous week. The nationwide ILI and ARI morbidity level (72.3 per 10 000 of population) was higher than national baseline (70.0) by 3.3%.

Fig. 2. Comparative data on incidence rate of clinically diagnosed influenza, seasons 2021/22 and 2022/23



Incidence rate of clinically diagnosed influenza increased comparing to previous week and amounted to 0.56 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 2021/22 and 2022/23



Hospitalization rate of clinically diagnosed influenza decreased comparing to previous week and amounted to 0.11 per 10 000 of population, it was higher 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 49 RBLs and two WHO NICs. According to these data as a result of 8023 patients investigation 444 (5.5%) respiratory samples were positive for influenza, including 9 cases of influenza A(H1N1)pdm09 in 5 cities, 2 cases of influenza A(H3N2) in 2 cities, 8 cases of influenza A untyped in 4 cities and 425 cases of influenza B in 41 cities.

52 influenza viruses were isolated on MDCK cell culture, including: 4 influenza A(H1N1)pdm09 viruses in Birobidzhan (2), Yekaterinburg (1), Tomsk (1); 1 influenza A(H3N2) virus in Birobidzhan; 47 influenza B viruses in Astrakhan (3), Birobidzhan (2), Yekaterinburg (2), Novosibirsk (1), Saint-Petersburg (19), Khabarovsk (20). Since the beginning of the season 1088 influenza viruses were isolated on MDCK cell culture, including: 701 viruses A(H1N1)pdm09, 28 viruses A(H3N2) and 359 viruses B.

**Antigenic characterization.** Since the beginning of the season, 559 influenza A(H1N1)pdm09 viruses have been antigenically characterized by the NICs, including: Moscow (98) and Saint-Petersburg (461), 28 influenza A(H3N2) viruses in Moscow (1) and Saint-Petersburg (27) and 113 influenza B, including: Moscow (10) and Saint-Petersburg (103). All viruses A(H1N1)pdm09 were antigenically similar to reference strain A/Victoria/2570/2019 (H1N1)pdm09. 26 influenza A(H3N2) strains were similar to the reference virus A/Darwin/9/2021 and 2 influenza A(H3N2) viruses reacted with the reference virus antiserum to a 1:8 homologous titer. 111 influenza B viruses were antigenically similar to reference strain B/Austria/1359417/2021 and 2 influenza B viruses reacted with the reference virus antiserum to a 1:8 homologous titer.

**Genetic analysis.** Sequencing of 993 influenza viruses and isolates from primary clinical materials from patients was performed by NIC (Saint-Petersburg). According to phylogenetic analysis, 904 influenza A(H1N1)pdm09 viruses were assigned to genetic subgroup 6 B.1A.5a.2 and similar to reference virus A/Victoria/2570/2019 (H1N1)pdm09; 27 A(H3N2) viruses were assigned to subgroup 3C.2 a1b.2a.2 and similar to reference virus Bangladesh/4005/2020 (H3N2); 62 influenza type B viruses were assigned to genetic subgroup V1A.3a.2 reference virus B/Austria/1359417/2021.

**Susceptibility to antivirals.** The sensitivity of 280 influenza viruses to neuraminidase inhibitors (oseltamivir, zanamivir) was studied in two NICs (Moscow, St. Petersburg), including 224 A(H1N1)pdm09 viruses and 6 A(H3N2) viruses in NIC (Saint-Petersburg) and 45 A(H1N1)pdm09 viruses and 5 B viruses in NIC (Moscow). All the viruses studied were sensitive to oseltamivir and zanamivir.

Fig. 4. Geographic distribution of RT-PCR detected influenza viruses in cities under surveillance in Russia, week 11 of 2023

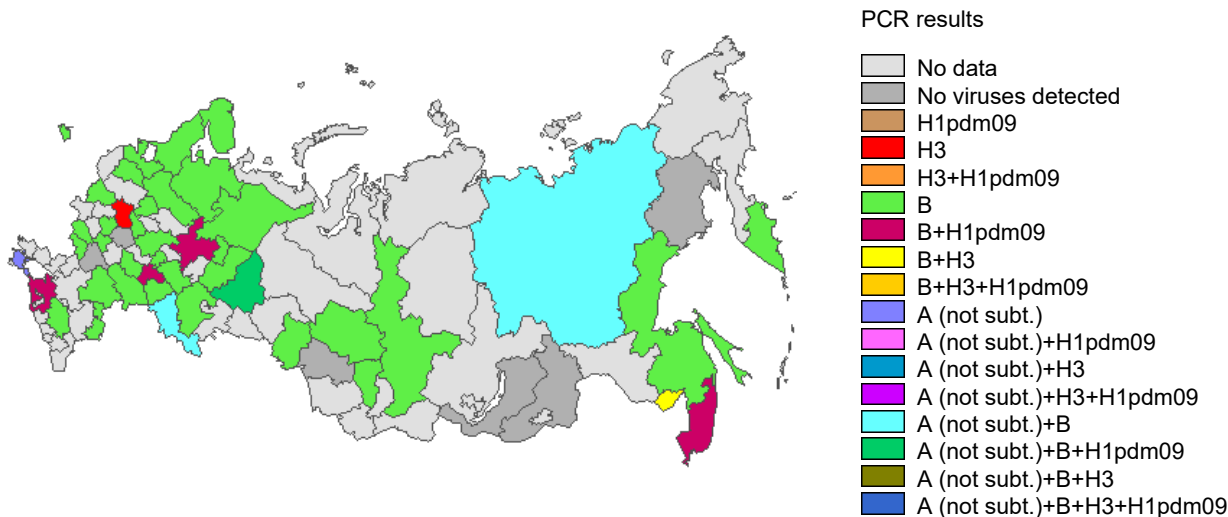


Fig. 5. Monitoring of influenza viruses detection by RT-PCR in Russia, season 2022/23

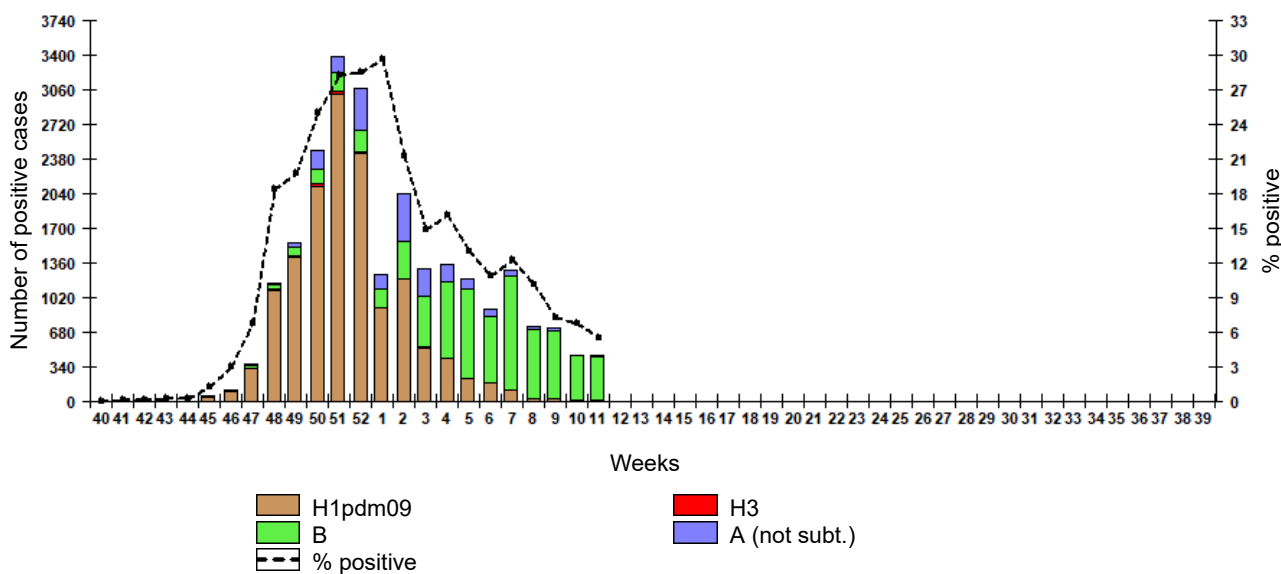
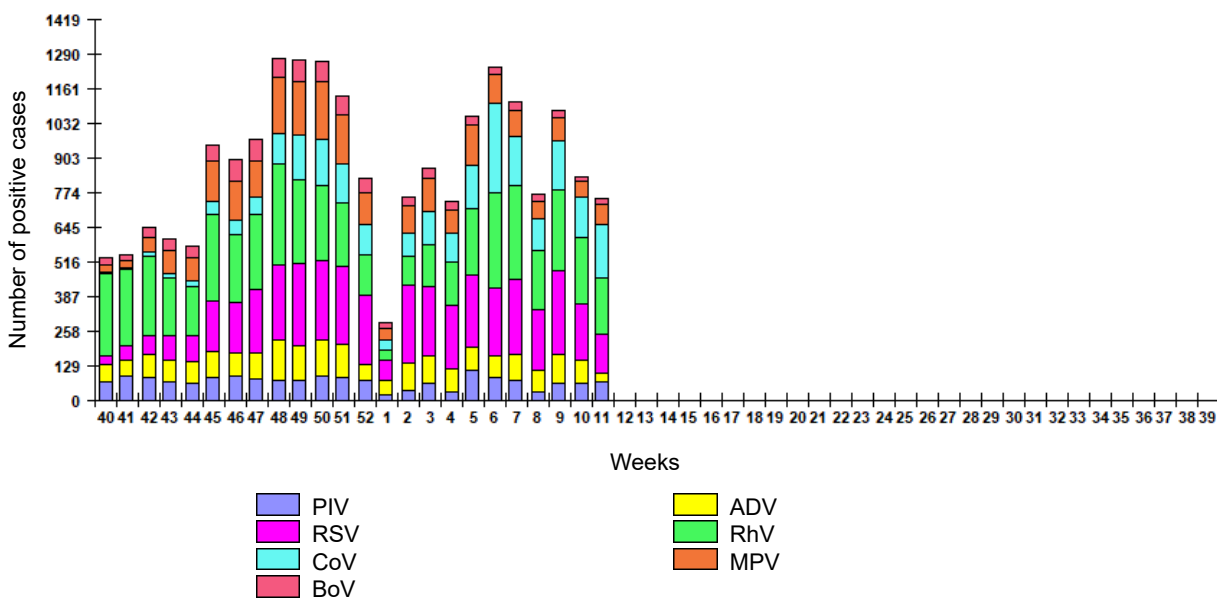


Fig. 6. Monitoring of ARVI detection by RT-PCR in Russia, season 2022/23



**ARVI detections.** The overall proportion of respiratory samples tested positive for other ARVI (PIV, ADV, RSV, RhV, CoV, MPV, BoV) estimated as **10.0%** of investigated samples by PCR.

Fig. 7. Monitoring of influenza viruses isolation in Russia, season 2022/23

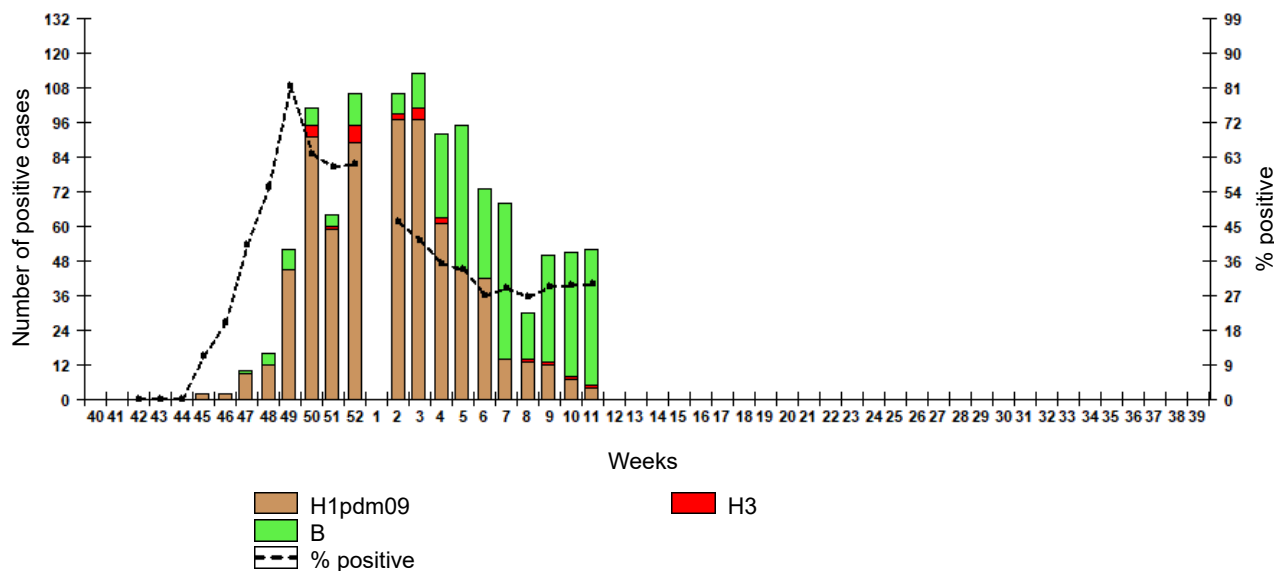
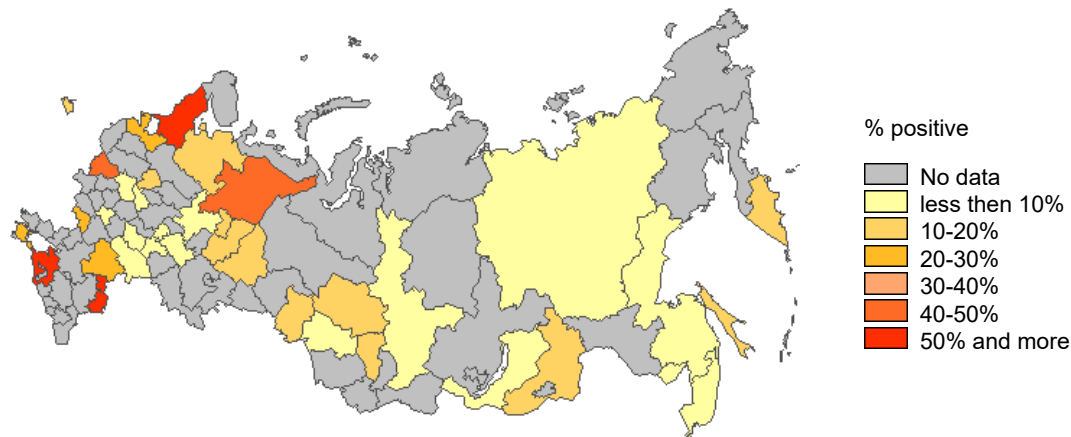


Table 1. Results of influenza and other ARVI detection by RT-PCR in Russia, week 11 of 2023

	Number of specimens / number of positive cases	% positive
<u>Influenza</u>		
Number of specimens tested for influenza	8023	-
Influenza A (not subt.)	8	0,10%
Influenza A(H1)pdm09	9	0,1%
Influenza A(H3)	2	0,02%
Influenza B	425	5,3%
All influenza	444	5,5%
<u>Other ARVI</u>		
Number of specimens tested for ARVI	7528	-
PIV	72	1,0%
ADV	34	0,5%
RSV	143	1,9%
RhV	207	2,7%
CoV	200	2,7%
MPV	77	1,0%
BoV	22	0,3%
All ARVI	755	10,0%
<u>SARS-CoV-2 (COVID-19)</u>		
Number of specimens tested for SARS-CoV-2	12728	-
SARS-CoV-2	1873	14,7%

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



**COVID-19.** Totally 22 550 395 cases and 396 974 deaths associated with COVID-19 were registered in Russia including 12 512 cases and 36 deaths in last 24 hours (on 12:00 of 23.03.2023). According to the data obtained by NIC in Saint-Petersburg totally 12 728 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 1873 (**14.7%**) cases.

Table 2. Results of influenza viruses isolation in Russia, week 11 of 2023

	Number of specimens / number of viruses	% isolated viruses
Number of specimens	173	-
Influenza A(H1N1)pdm09	4	2,3%
Influenza A(H3)	1	0,6%
Influenza B	47	27,2%
All influenza	52	30,1%

## Sentinel influenza surveillance

Clinical samples from 99 SARI patients were investigated by rRT-PCR for influenza, among them 2 (**2.0%**) cases of influenza, including 1 case of influenza A(H1N1)pdm09 and 1 case of influenza A(H3N2). Among 89 SARI samples 14 (**15.7%**) cases positive for ARVI detected including 1 case of ADV, 4 cases of RSV, 1 case of RhV, 1 case of CoV, 6 cases of MPV and 1 case of BoV infection. 2 (**2.0%**) of 99 SARI patients were positive for coronavirus SARS-CoV-2.

Clinical samples from 58 ILI/ARI patients were investigated for influenza by rRT-PCR, among them 2 (**3.4%**) cases of influenza, including 1 case of influenza A untyped and 1 case of influenza B. Among 47 ILI/ARI samples 10 (**21.3%**) cases positive for ARVI detected including 2 cases of ADV, 5 cases of CoV and 3 cases of MPV infection. 7 (**13.2%**) of 53 ILI/ARI patients were positive for coronavirus SARS-CoV-2.

Fig. 9. Monitoring of influenza viruses detection by RT-PCR among SARI patients in sentinel hospitals, season 2022/23

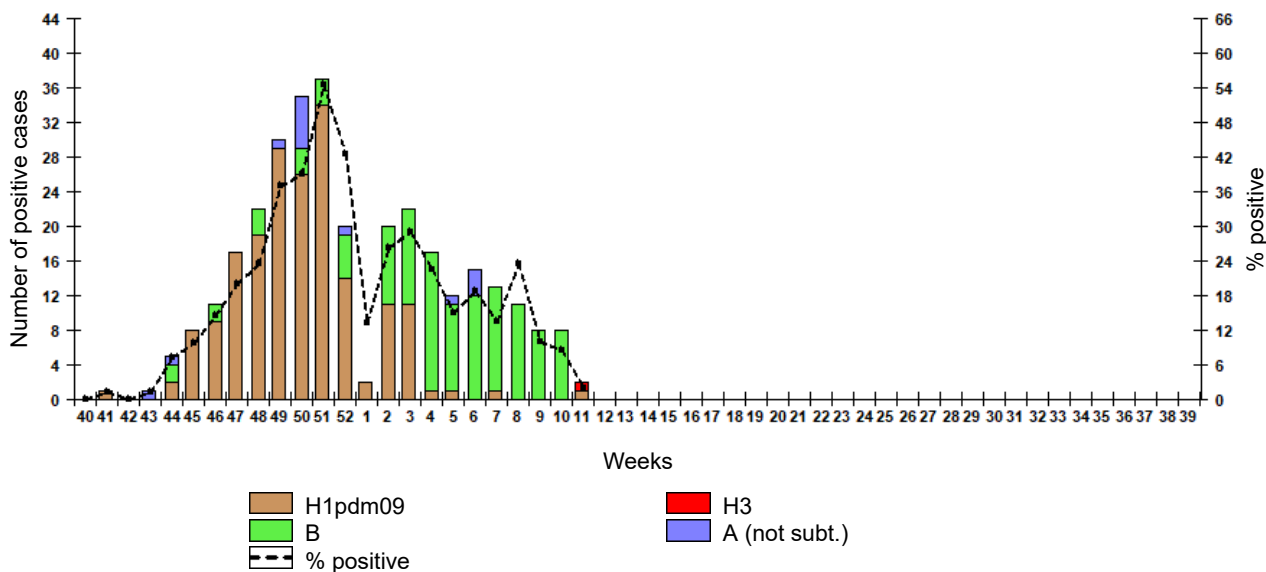


Fig. 10. Monitoring of influenza viruses detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23

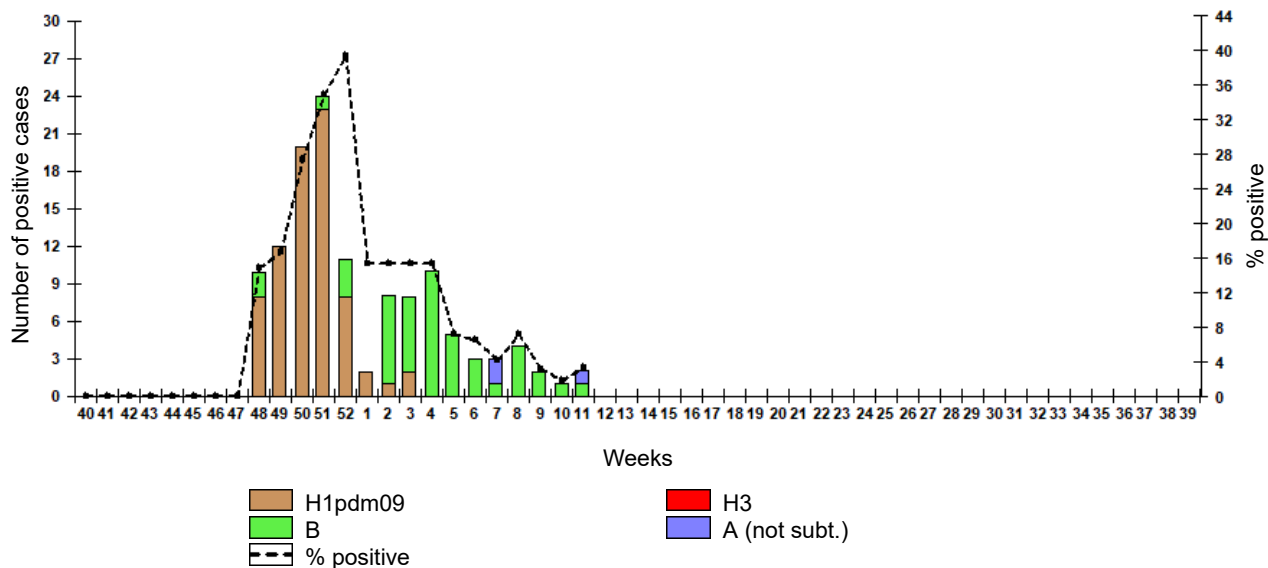


Fig. 11. Monitoring of ARVI detection by RT-PCR among SARI patients in sentinel hospitals, season 2022/23

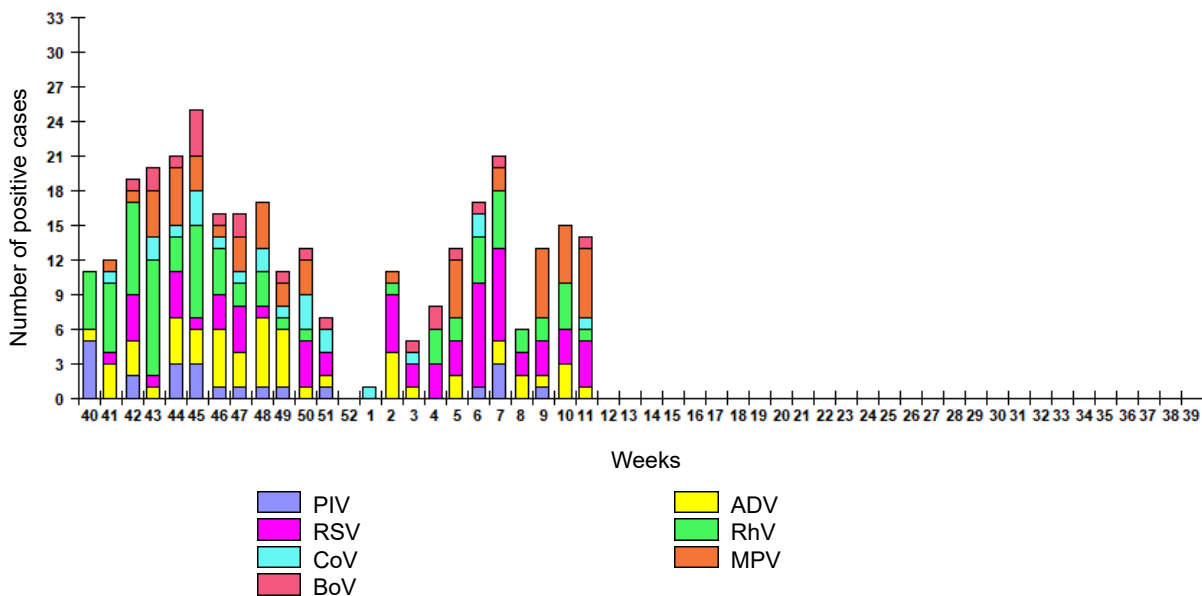


Fig. 12. Monitoring of ARVI detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23

