Smorodintsev Research Institute of Influenza

NATIONAL WEEKLY INFLUENZA BULLETIN OF THE RUSSIAN FEDERATION

week 4 of 2023 (23.01.23 - 29.01.23)

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 (78.0 per 10 000 of population) was higer than national baseline (70.0) by 11.4%.

Etiology of ILI & ARI. Among 8233 patients investigation 1336 (**16.2%**) respiratory samples were positive for influenza, including 413 cases of influenza A(H1N1)pdm09 in 36 cities, 5 cases of influenza A(H3N2) in 3 cities, 176 cases of influenza A unsubtyped in 10 cities and 742 cases of influenza B in 39 cities.

85 influenza viruses were isolated on MDCK cell culture, including: 58 influenza A(H1N1)pdm09 viruses in Astrakhan (2), Vladivostok (5), Moscow (CEH) (1), Orenburg (9), Samara (3), St. Petersburg (Influenza Research Institute) (18), Tomsk (16), Khabarovsk (4); 2 influenza A(H3N2) viruses in Khabarovsk and 25 influenza B viruses in Astrakhan (4), Vladivostok (8), Samara (1), St. Petersburg (Influenza Research Institute) (6), Tomsk (2), Khabarovsk (4). Since the beginning of the season 747 influenza viruses were isolated on MDCK cell culture, including: 643 viruses A(H1N1)pdm09, 19 viruses A(H3N2) and 85 viruses B.

Antigenic characterization. Since the beginning of the season, 210 influenza A(H1N1)pdm09 viruses have been antigenically characterized by the NICs, including: Moscow (38) and Saint-Petersburg (172), 10 influenza A(H3N2) viruses in Saint-Petersburg and 40 influenza B, including: Moscow (5) and Saint-Petersburg (35). All viruses A(H1N1)pdm09 were antigenically similar to reference strain A/Victoria/2570/2019 (H1N1)pdm09. All A(H3N2) strains were similar to the reference virus A/Darwin/9/2021. 39 influenza B viruses were antigenically similar to reference strain B/Austria/1359417/2021 and 1 influenza B virus reacted with the reference virus antiserum to a 1:8 homologous titer.

Genetic analysis. Sequencing of 218 influenza viruses from primary clinical materials from patients was performed by the NIC (Saint-Petersburg). According to phylogenetic analysis, 208 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; 1 A(H3N2) virus was assigned to subgroup 3C.2 a1b.2a.2 and similar to reference virus Bangladesh/4005/2020 (H3N2); 9 influenza type B viruses were assigned to genetic subgroup V1A.3a.2 reference virus B/Austria/1359417/2021.

Susceptibility to antivirals. All 58 influenza A(H1N1)pdm09 viruses analysed by the NIC (Saint-Petersburg) were susceptible 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 **11.1%** (PCR).

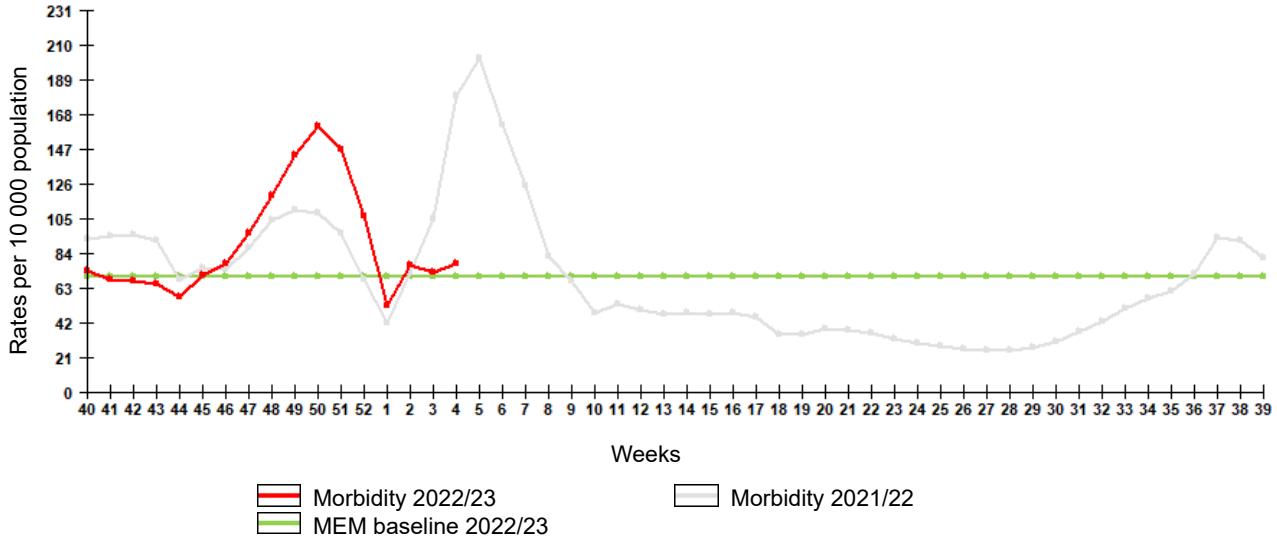
In sentinel surveillance system clinical samples from 72 SARI patients were investigated by rRT-PCR for influenza, among them 17 (**23.6%**) cases of influenza, including 2 cases of influenza A(H1N1)pdm09 and 15 cases of influenza B. Among 62 SARI samples 7 (**11.3%**) cases positive for ARVI detected including 3 cases of RSV, 3 cases of RhV and 1 case of BoV infection. 6 (**8.3%**) of 72 SARI patients were positive for coronavirus SARS-CoV-2.

Clinical samples from 65 ILI/ARI patients were investigated for influenza by rRT-PCR, among them 10 (**15.4%**) cases of influenza B. Among 54 ILI/ARI samples 12 (**22.2%**) cases positive for ARVI detected including 2 cases of ADV, 2 cases of RSV, 3 cases of RhV, 3 cases of CoV and 2 cases of MPV infection. 2 (**3.2%**) of 63 ILI/ARI patients were positive for coronavirus SARS-CoV-2.

COVID-19. Totally 21 958 696 cases and 395 108 deaths associated with COVID-19 were registered in Russia including 8 504 cases and 41 deaths in last 24 hours (on 12:00 of 01.02.2023). According to the data obtained by NIC in Saint-Petersburg totally 9 318 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 758 (**8.1%**) cases.

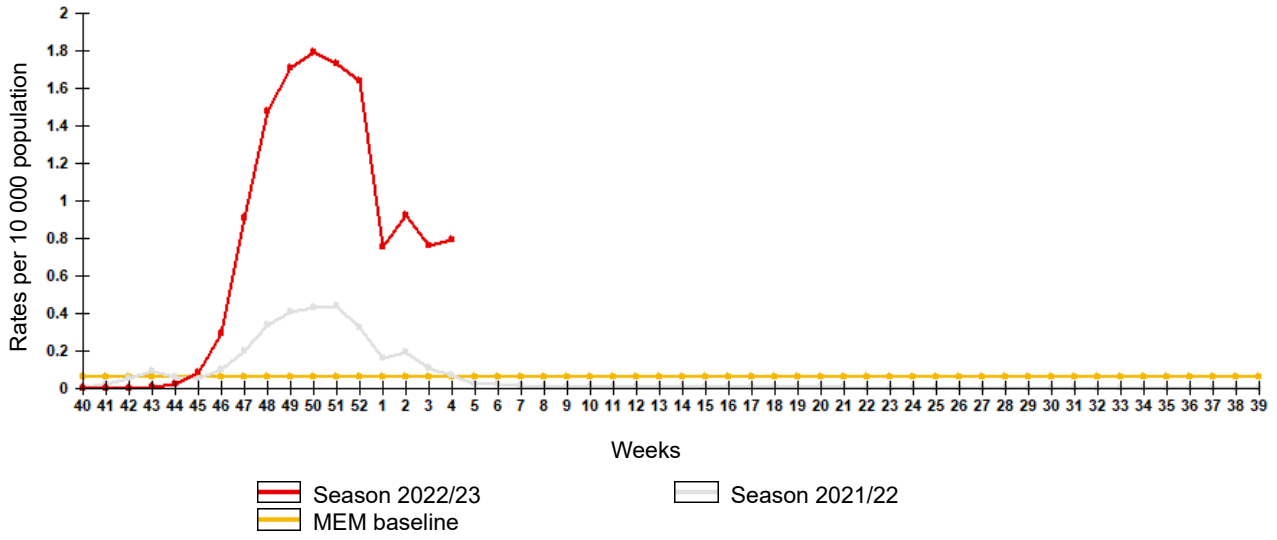
Influenza and ARI morbidity data

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



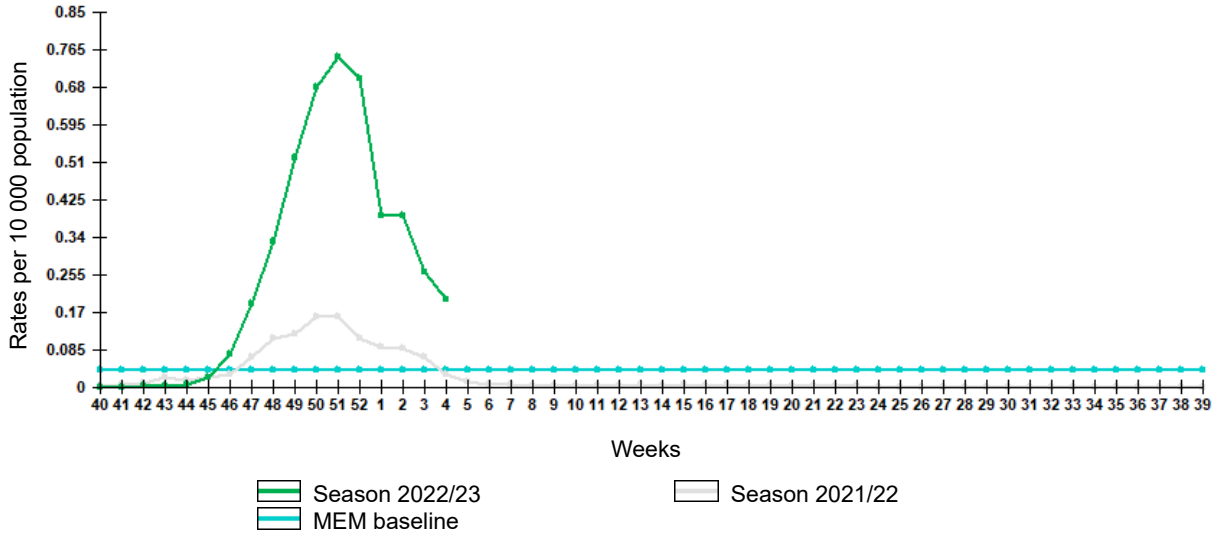
Epidemiological data showed increase of influenza and other ARI activity in Russia in comparison with previous week. The nationwide ILI and ARI morbidity level (78.0 per 10 000 of population) was higer than national baseline (70.0) by 11.4%.

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 0.79 per 10 000 of population, it was higer 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 0.20 per 10 000 of population, it was higer 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 8233 patients investigation 1336 (**16.2%**) respiratory samples were positive for influenza, including 413 cases of influenza A(H1N1)pdm09 in 36 cities, 5 cases of influenza A(H3N2) in 3 cities, 176 cases of influenza A unsubtyped in 10 cities and 742 cases of influenza B in 39 cities.

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Susceptibility to antivirals. All 58 influenza A(H1N1)pdm09 viruses analysed by the NIC (Saint-Petersburg) were susceptible to oseltamivir and zanamivir.

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

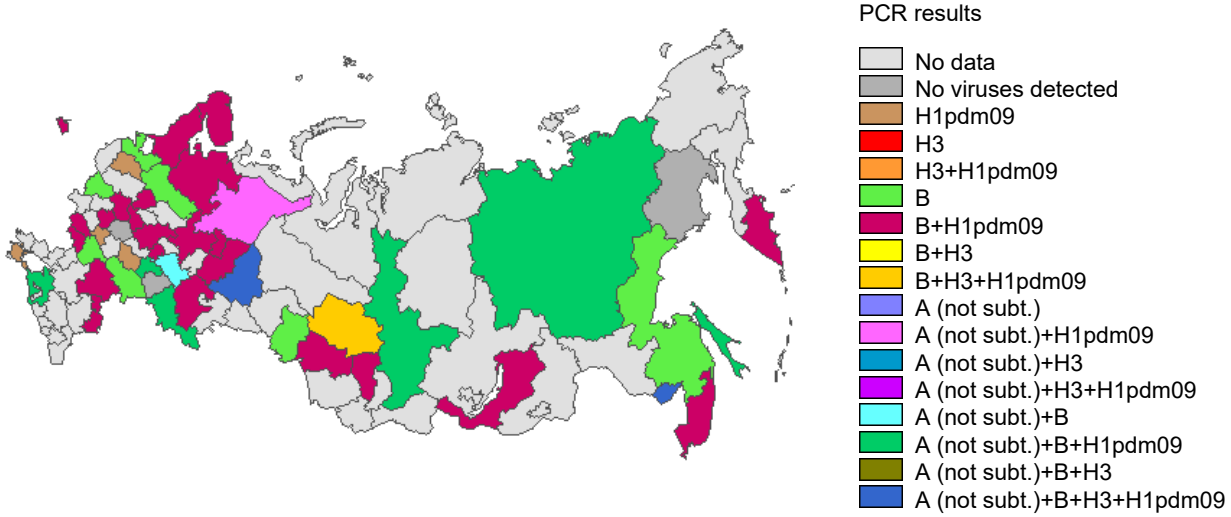


Fig. 5. Monitoring of influenza viruses detection by RT-PCR in Russia, season 2022/23

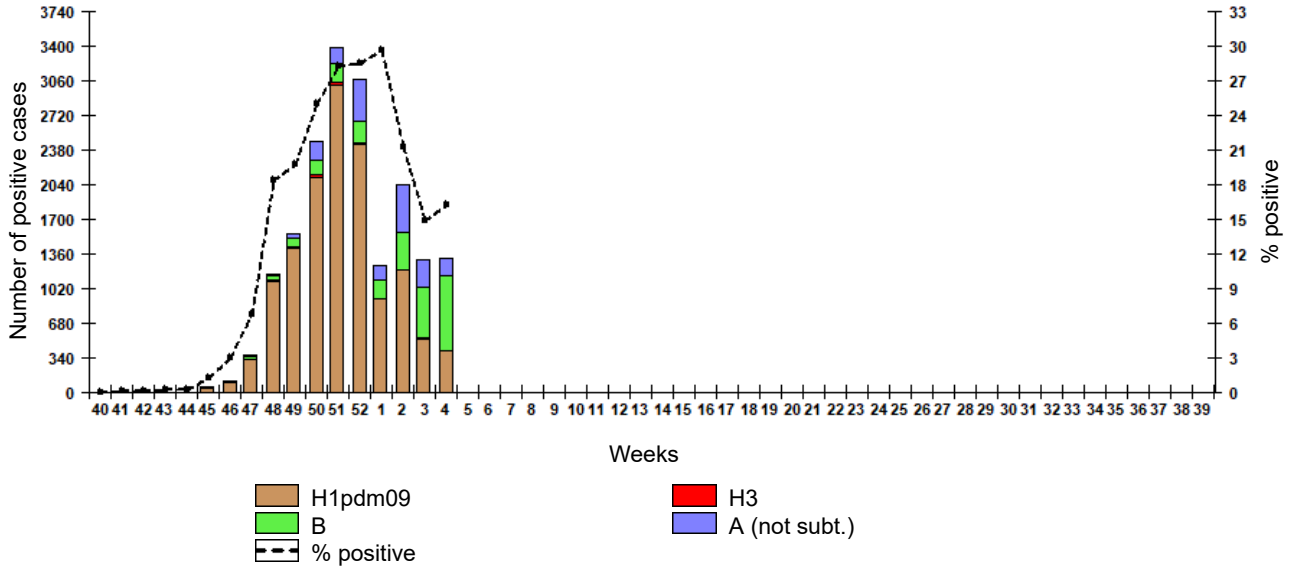
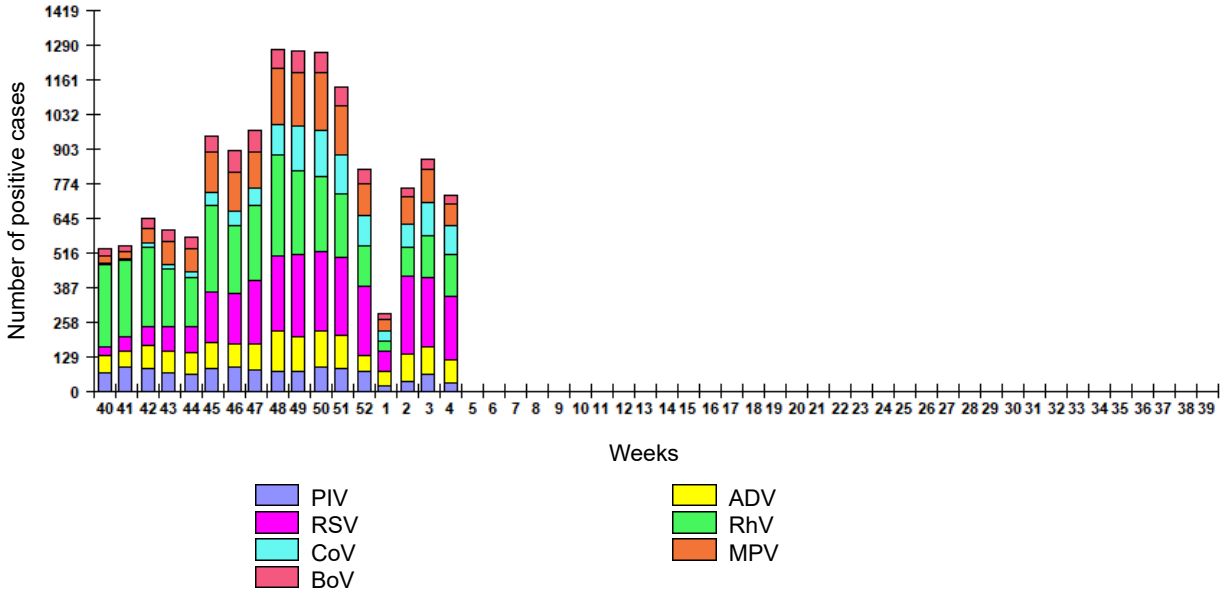


Fig. 6. Monitoring of ARVI detection by RT-PCR in Russia, season 2022/23



ARVI detections. The overall proportion of respiratory samples tested positive for other ARVI (PIV, ADV, RSV, RhV, CoV, MPV, BoV) estimated as **11.1%** of investigated samples by PCR.

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

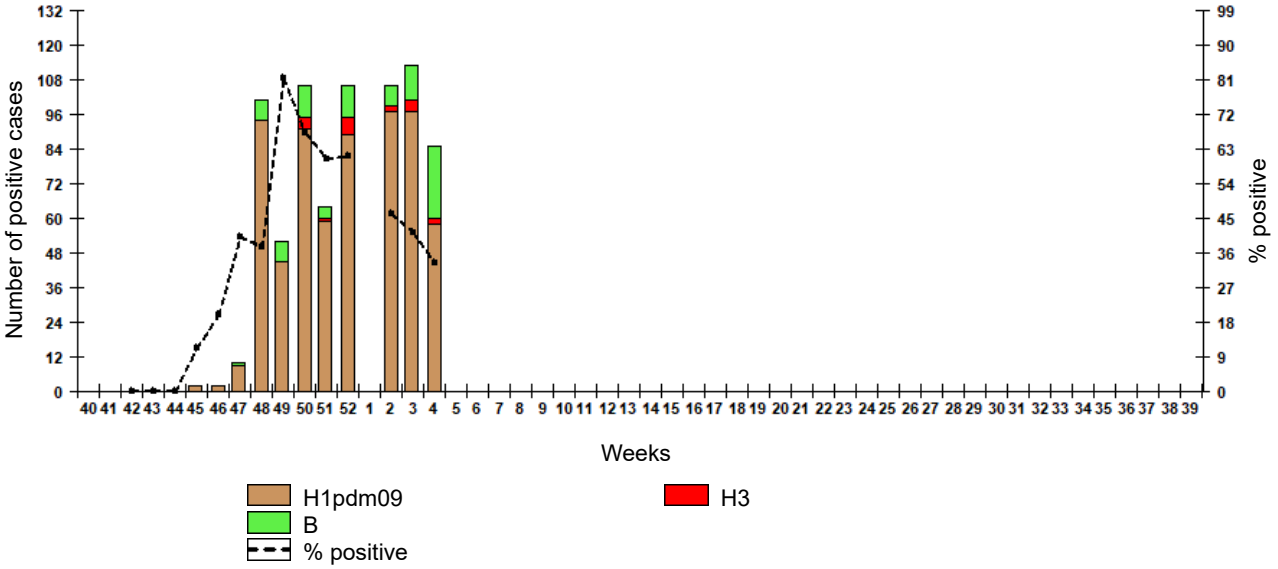
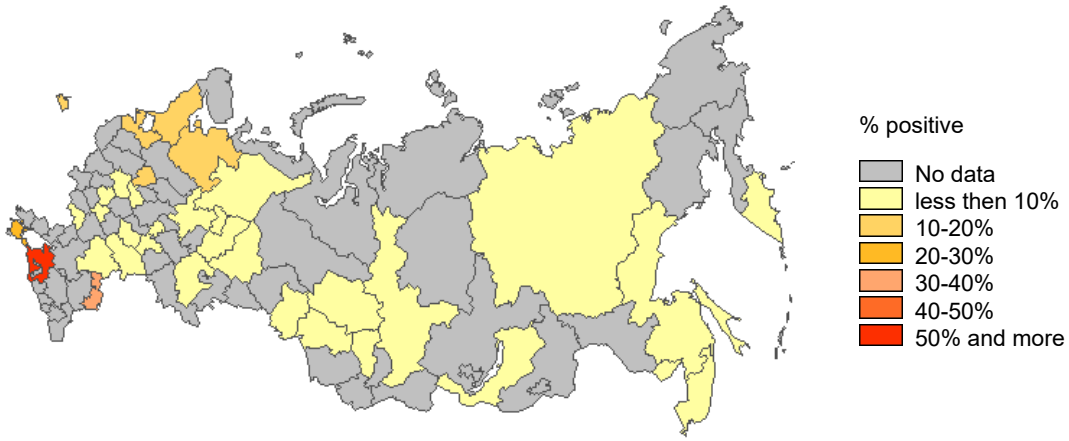


Table 1. Results of influenza and other ARVI detection by RT-PCR in Russia, week 4 of 2023

	Number of specimens / number of positive cases	**% positive**
Influenza		
Number of specimens tested for influenza	*8233*	-
Influenza A (not subt.)	*176*	*2,1%*
Influenza A(H1)pdm09	*413*	*5,0%*
Influenza A(H3)	*5*	*0,06%*
Influenza B	*742*	*9,0%*
All influenza	*1336*	*16,2%*
Other ARVI		
Number of specimens tested for ARVI	*6646*	-
PIV	*34*	*0,5%*
ADV	*87*	*1,3%*
RSV	*237*	*3,6%*
RhV	*158*	*2,4%*
CoV	*109*	*1,6%*
MPV	*81*	*1,2%*
BoV	*33*	*0,5%*
All ARVI	*739*	*11,1%*
SARS-CoV-2 (COVID-19)		
Number of specimens tested for SARS-CoV-2	*9318*	-
SARS-CoV-2	*758*	*8,1%*

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



COVID-19. Totally 21 958 696 cases and 395 108 deaths associated with COVID-19 were registered in Russia including 8 504 cases and 41 deaths in last 24 hours (on 12:00 of 01.02.2023). According to the data obtained by NIC in Saint-Petersburg totally 9 318 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 758 (**8.1%**) cases.

Table 2. Results of influenza viruses isolation in Russia, week 4 of 2023

	Number of specimens / number of viruses	**% isolated viruses**
Number of specimens	*254*	-
Influenza A(H1)pdm09	*58*	*22,8%*
Influenza A(H3)	*2*	*0,8%*
Influenza B	*25*	*9,8%*
All influenza	*85*	*33,5%*

Sentinel influenza surveillance

Clinical samples from 72 SARI patients were investigated by rRT-PCR for influenza, among them 17 (**23.6%**) cases of influenza, including 2 cases of influenza A(H1N1)pdm09 and 15 cases of influenza B. Among 62 SARI samples 7 (**11.3%**) cases positive for ARVI detected including 3 cases of RSV, 3 cases of RhV and 1 case of BoV infection. 6 (**8.3%**) of 72 SARI patients were positive for coronavirus SARS-CoV-2.

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

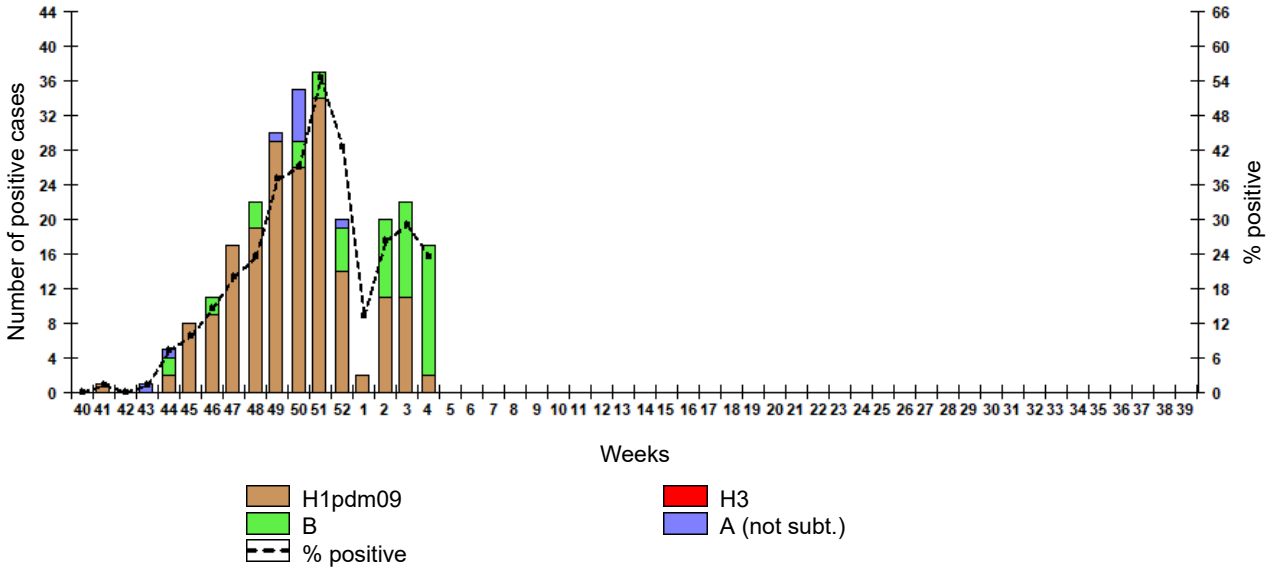

Fig. 10. Monitoring of influenza viruses detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23

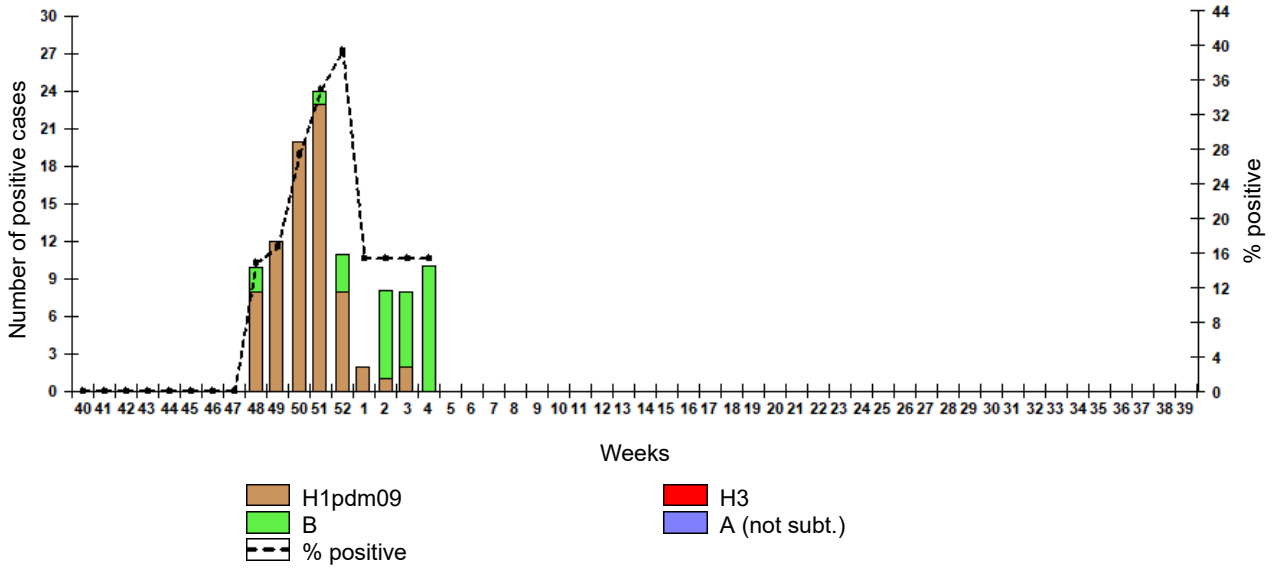

Fig. 11. Monitoring of ARVI detection by RT-PCR among SARI patients in sentinel hospitals, season 2022/23

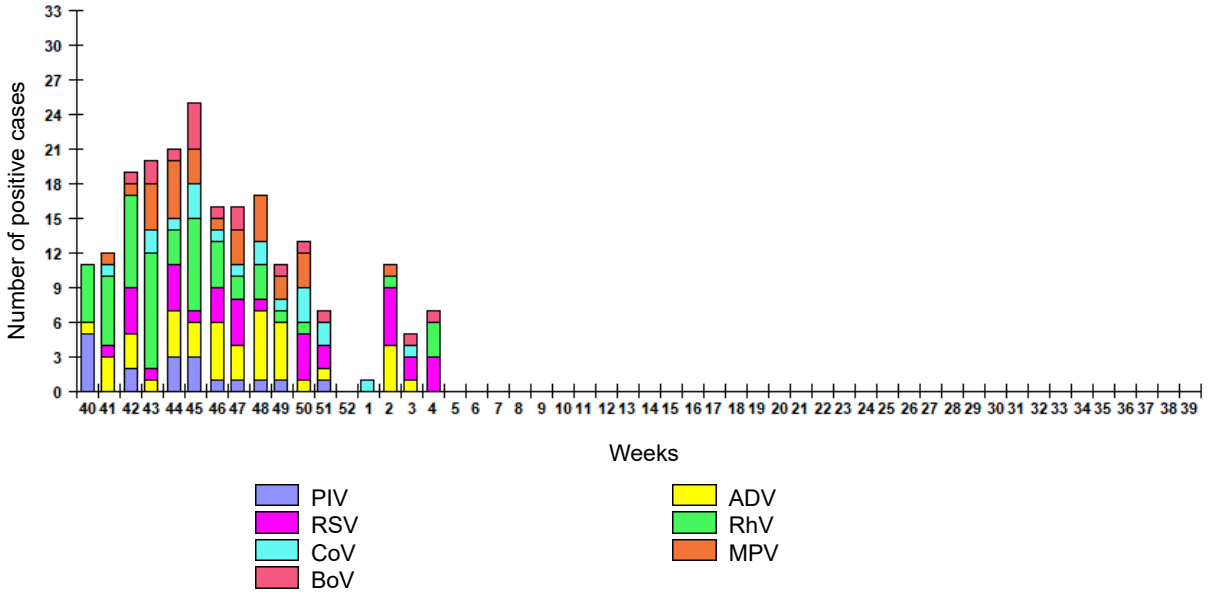

Fig. 12. Monitoring of ARVI detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23