Smorodintsev Research Institute of Influenza

NATIONAL WEEKLY INFLUENZA BULLETIN OF THE RUSSIAN FEDERATION

week 9 of 2023 (27.02.23 - 05.03.23)

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 (81.4 per 10 000 of population) was higer than national baseline (70.0) by 16.3%.

Etiology of ILI & ARI. Among 9927 patients investigation 717 (**7.2%**) respiratory samples were positive for influenza, including 21 cases of influenza A(H1N1)pdm09 in 13 cities, 1 case of influenza A(H3N2) in 1 city, 32 cases of influenza A unsubtyped in 7 cities and 663 cases of influenza B in 40 cities.

50 influenza viruses were isolated on MDCK cell culture, including: 12 influenza A(H1N1)pdm09 viruses in Veliky Novgorod (2), Kaliningrad (1), Krasnoyarsk (8), Saint-Petersburg (1); 1 influenza A(H3N2) virus in Saint-Petersburg; 37 influenza B viruses in Astrakhan (6), Vladivostok (6), Krasnoyarsk (2), Saint-Petersburg (17), Ulan-Ude (4), Khabarovsk (2). Since the beginning of the season 980 influenza viruses were isolated on MDCK cell culture, including: 690 viruses A(H1N1)pdm09, 21 viruses A(H3N2) and 269 viruses B.

Antigenic characterization. Since the beginning of the season, 469 influenza A(H1N1)pdm09 viruses have been antigenically characterized by the NICs, including: Moscow (94) and Saint-Petersburg (375), 24 influenza A(H3N2) viruses in Saint-Petersburg and 86 influenza B, including: Moscow (7) and Saint-Petersburg (79). All viruses A(H1N1)pdm09 were antigenically similar to reference strain A/Victoria/2570/2019 (H1N1)pdm09. 22 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. 84 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 **11.5%** (PCR).

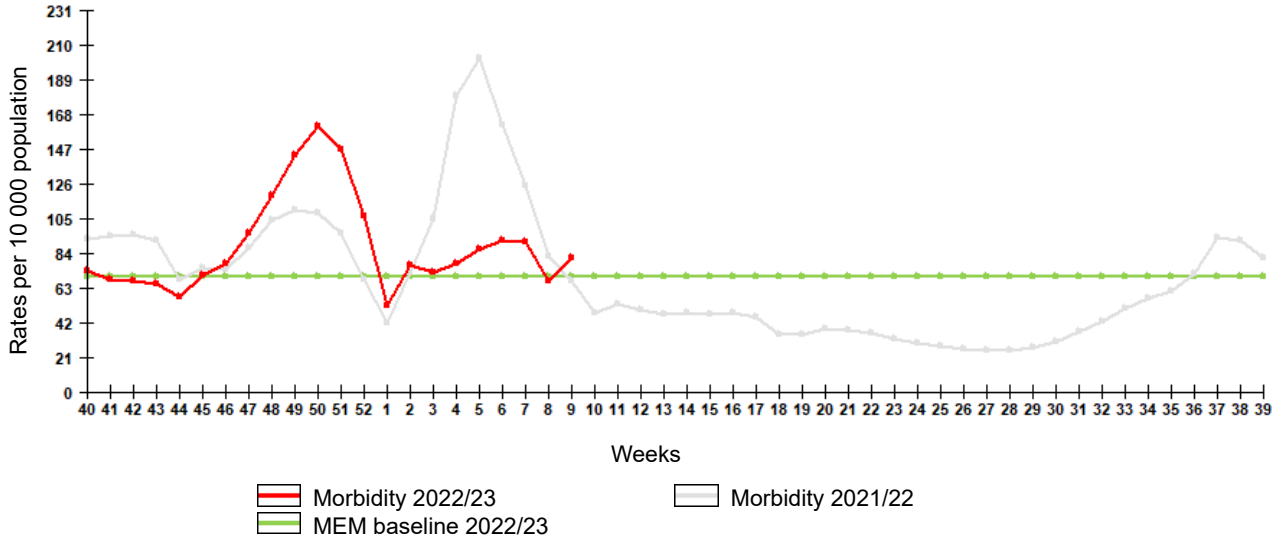
In sentinel surveillance system clinical samples from 63 SARI patients were investigated by rRT-PCR for influenza, among them 5 (**7.9%**) cases of influenza B. Among 43 SARI samples 9 (**20.9%**) cases positive for ARVI detected including 1 case of RSV, 2 cases of RhV and 6 cases of MPV infection. 2 (**3.8%**) of 53 SARI patients were positive for coronavirus SARS-CoV-2.

Clinical samples from 62 ILI/ARI patients were investigated for influenza by rRT-PCR, among them 2 (**3.2%**) cases of influenza B. Among 52 ILI/ARI samples 7 (**13.5%**) cases positive for ARVI detected including 2 cases of PIV, 1 case of RhV, 2 cases of CoV, 1 case of MPV and 1 case of BoV infection. 5 (**8.1%**) of 62 ILI/ARI patients were positive for coronavirus SARS-CoV-2.

COVID-19. Totally 22 398 867 cases and 396 507 deaths associated with COVID-19 were registered in Russia including 10 311 cases and 44 deaths in last 24 hours (on 12:00 of 10.03.2023). According to the data obtained by NIC in Saint-Petersburg totally 14 020 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 1965 (**14.0%**) cases

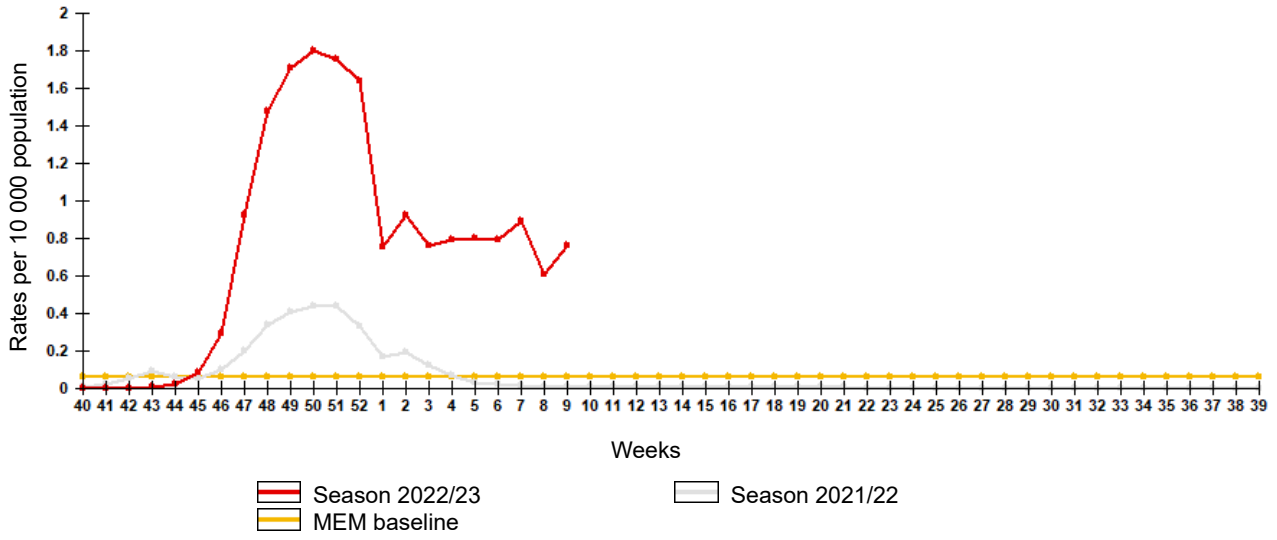
Influenza and ARI morbidity data

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



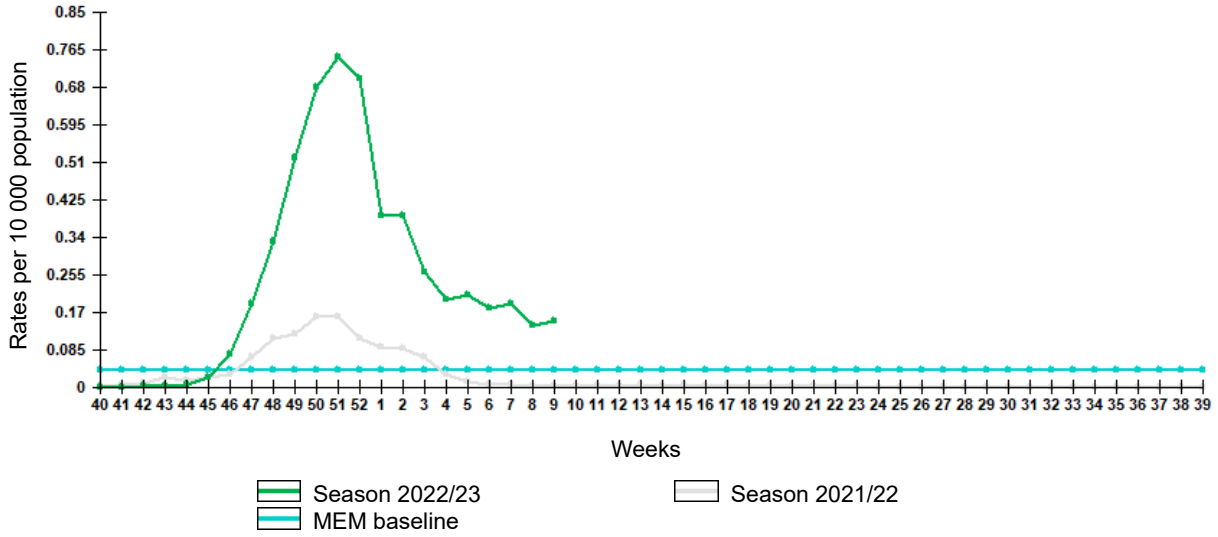
Epidemiological data showed increase of influenza and other ARI activity in Russia in comparison with previous week. The nationwide ILI and ARI morbidity level (81.4 per 10 000 of population) was higer than national baseline (70.0) by 16.3%.

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 0.76 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 increased comparing to previous week and amounted to 0.15 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 45 RBLs and two WHO NICs. According to these data as a result of 9927 patients investigation 717 (**7.2%**) respiratory samples were positive for influenza, including 21 cases of influenza A(H1N1)pdm09 in 13 cities, 1 case of influenza A(H3N2) in 1 city, 32 cases of influenza A unsubtyped in 7 cities and 663 cases of influenza B in 40 cities.

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Fig. 4. Geographic distribution of RT-PCR detected influenza viruses in cities under surveillance in Russia, week 9 of 2023

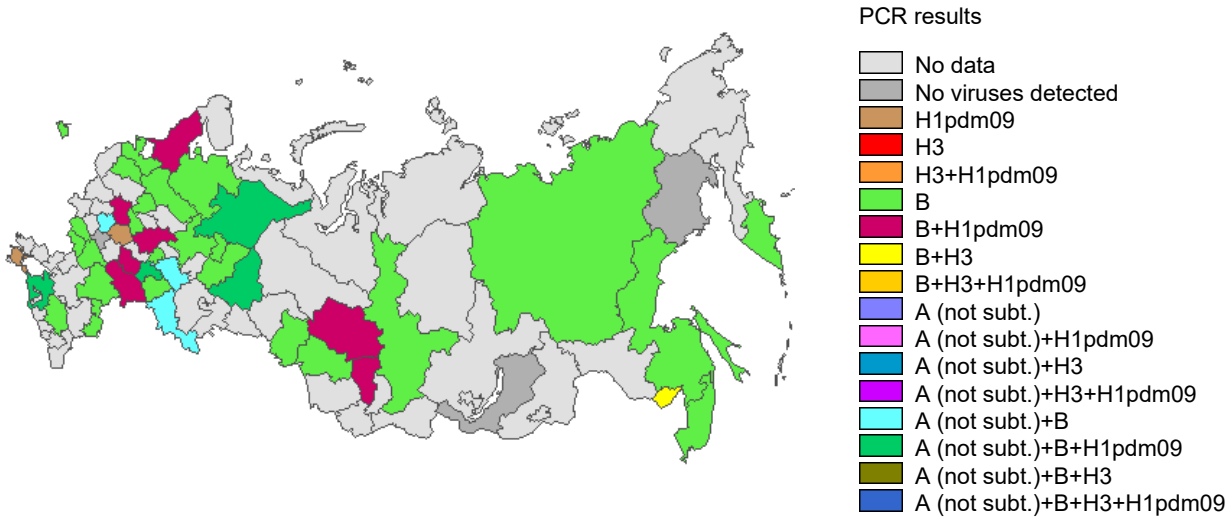


Fig. 5. Monitoring of influenza viruses detection by RT-PCR in Russia, season 2022/23

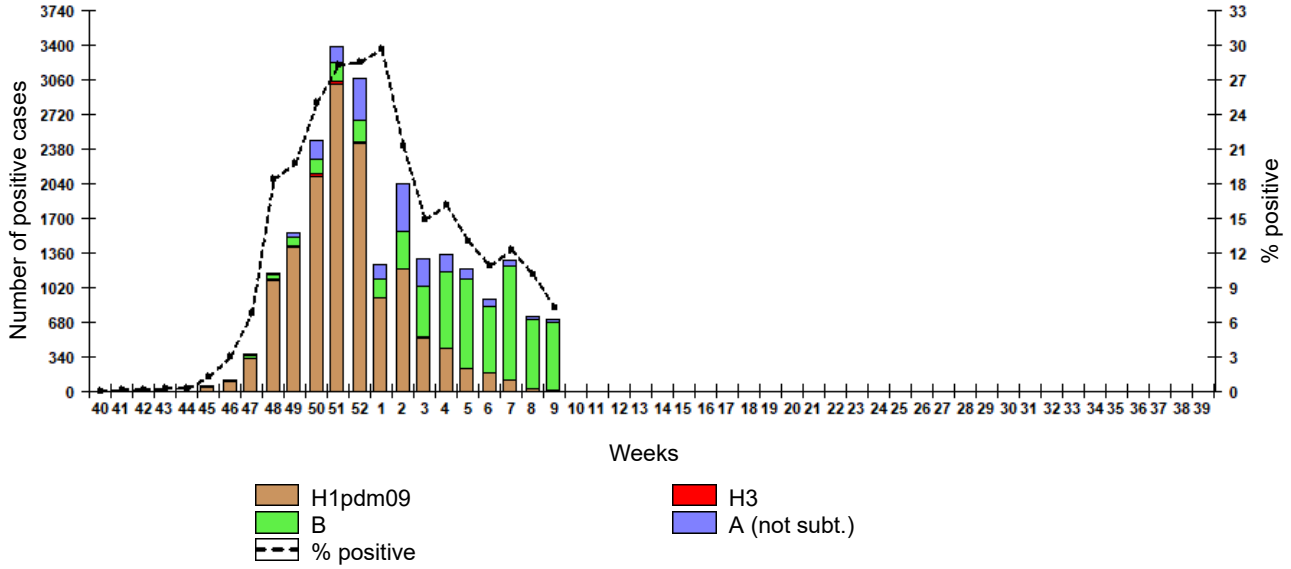
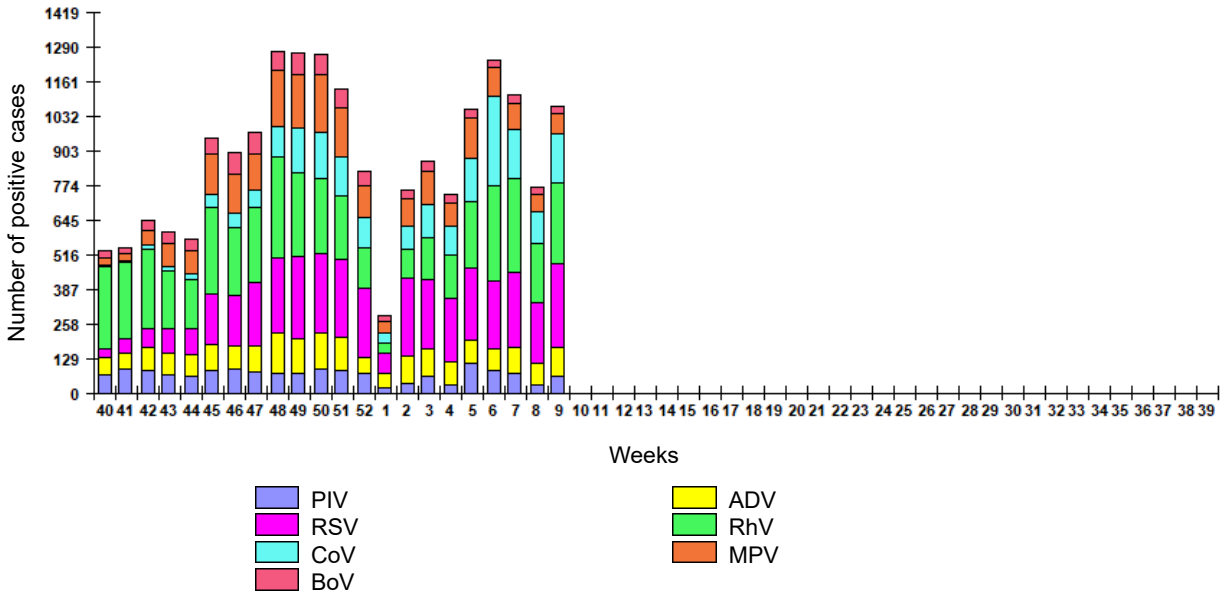


Fig. 6. Monitoring of ARVI detection by RT-PCR in Russia, season 2022/23



ARVI detections. The overall proportion of respiratory samples tested positive for other ARVI (PIV, ADV, RSV, RhV, CoV, MPV, BoV) estimated as **11.5%** of investigated samples by PCR.

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

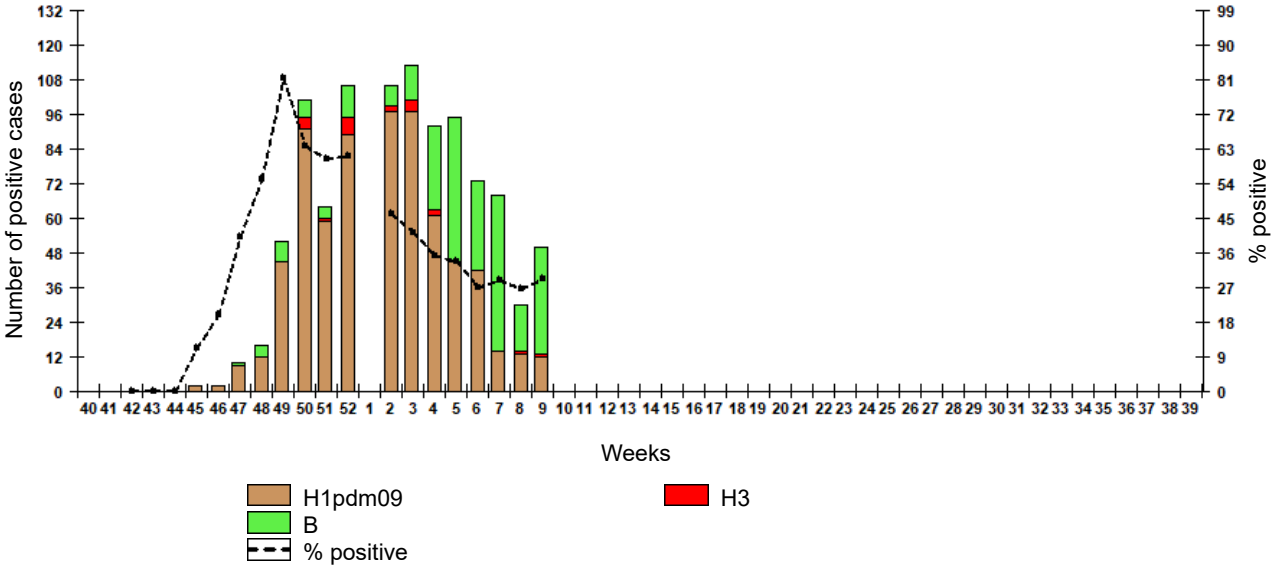
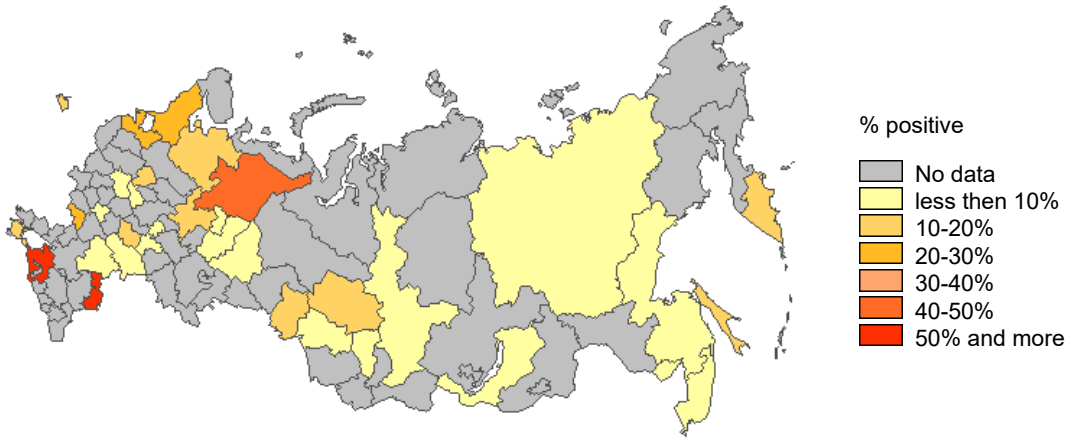


Table 1. Results of influenza and other ARVI detection by RT-PCR in Russia, week 9 of 2023

	Number of specimens / number of positive cases	**% positive**
Influenza		
Number of specimens tested for influenza	*9927*	-
Influenza A (not subt.)	*32*	*0,3%*
Influenza A(H1)pdm09	*21*	*0,2%*
Influenza A(H3)	*1*	*0,01%*
Influenza B	*663*	*6,7%*
All influenza	*717*	*7,2%*
Other ARVI		
Number of specimens tested for ARVI	*9226*	-
PIV	*62*	*0,7%*
ADV	*105*	*1,1%*
RSV	*312*	*3,4%*
RhV	*300*	*3,3%*
CoV	*183*	*2,0%*
MPV	*75*	*0,8%*
BoV	*28*	*0,3%*
All ARVI	*1065*	*11,5%*
SARS-CoV-2 (COVID-19)		
Number of specimens tested for SARS-CoV-2	*14020*	-
SARS-CoV-2	*1965*	*14,0%*

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



COVID-19. Totally 22 398 867 cases and 396 507 deaths associated with COVID-19 were registered in Russia including 10 311 cases and 44 deaths in last 24 hours (on 12:00 of 10.03.2023). According to the data obtained by NIC in Saint-Petersburg totally 14 020 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 1965 (**14.0%**) cases.

Table 2. Results of influenza viruses isolation in Russia, week 9 of 2023

	Number of specimens / number of viruses	**% isolated viruses**
Number of specimens	*172*	-
Influenza A(H1)pdm09	*12*	*7,0%*
Influenza A(H3)	*1*	*0,6%*
Influenza B	*37*	*21,5%*
All influenza	*50*	*29,1%*

Sentinel influenza surveillance

Clinical samples from 63 SARI patients were investigated by rRT-PCR for influenza, among them 5 (**7.9%**) cases of influenza B. Among 43 SARI samples 9 (**20.9%**) cases positive for ARVI detected including 1 case of RSV, 2 cases of RhV and 6 cases of MPV infection. 2 (**3.8%**) of 53 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

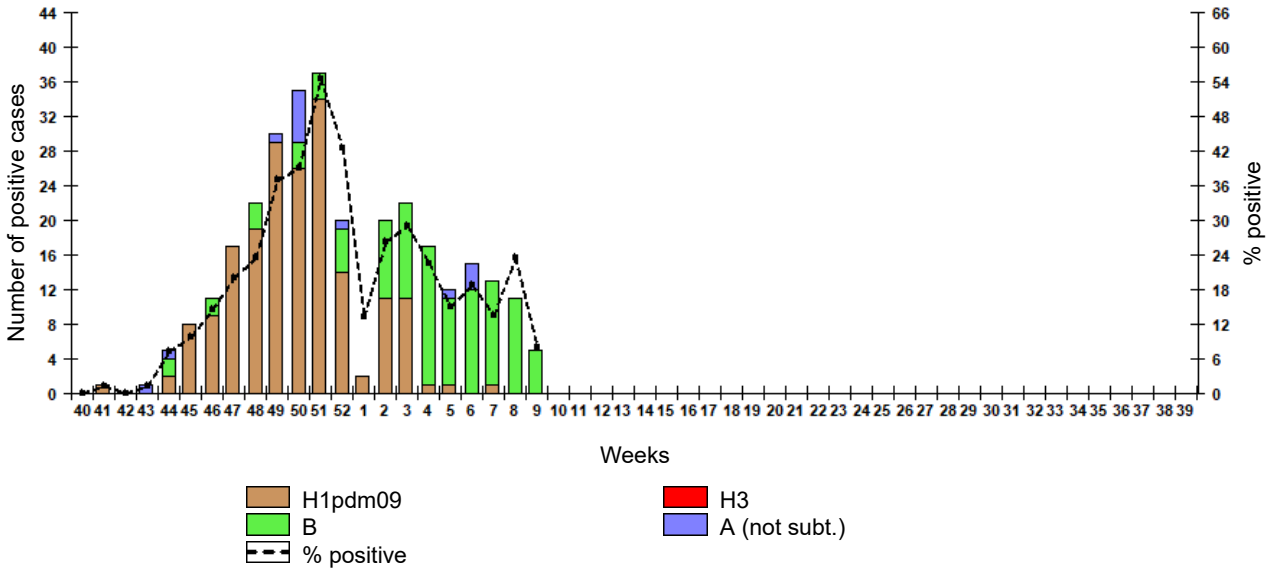

Fig. 10. Monitoring of influenza viruses detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23

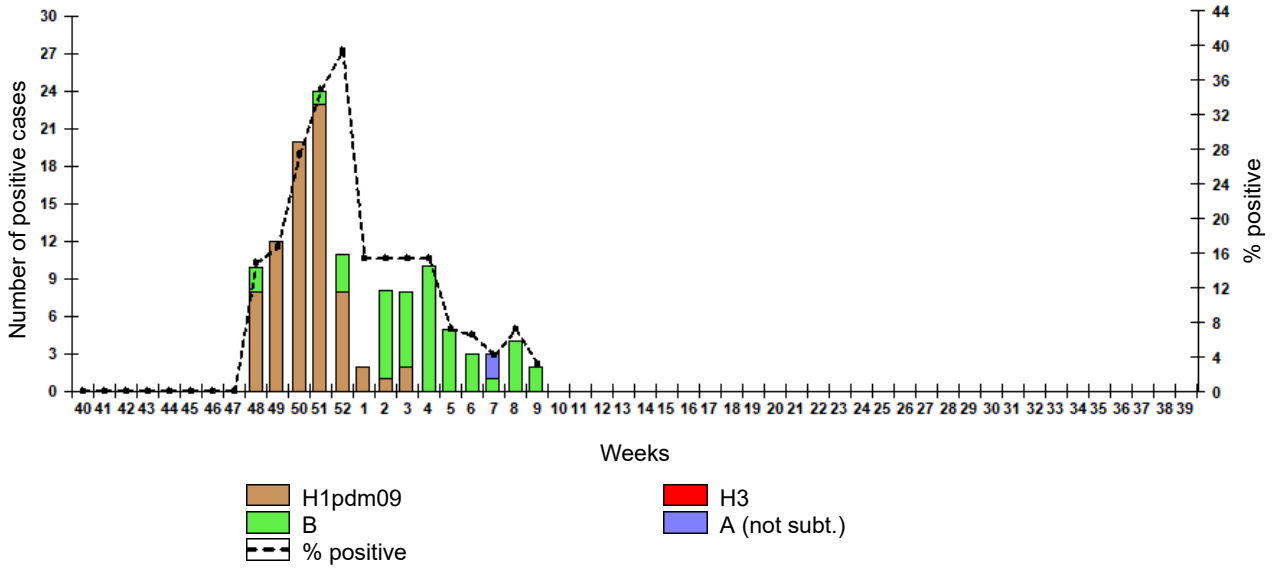

Fig. 11. Monitoring of ARVI detection by RT-PCR among SARI patients in sentinel hospitals, season 2022/23

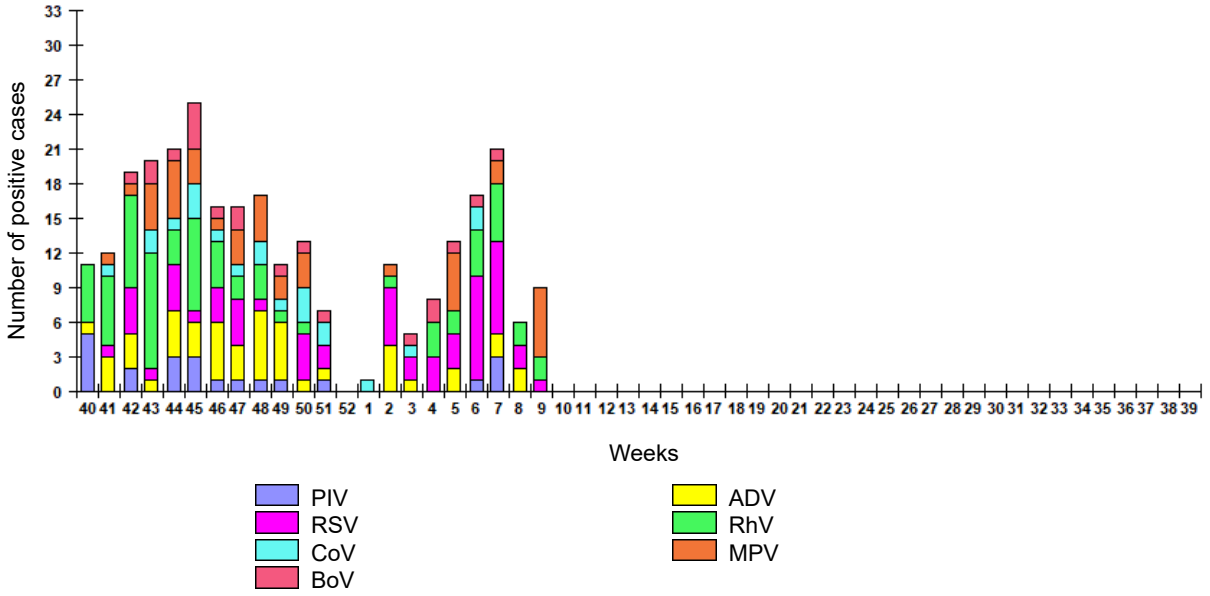

Fig. 12. Monitoring of ARVI detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23