Smorodintsev Research Institute of Influenza

NATIONAL WEEKLY INFLUENZA BULLETIN OF THE RUSSIAN FEDERATION

week 17 of 2023 (24.04.23 - 30.04.23)

Summary

Influenza and ARI incidence data. Influenza and other ARI activity in Russia decrease in comparison with previous week. The nationwide ILI and ARI morbidity level (52.4 per 10 000 of population) was lower than national baseline (70.0) by 25.1%.

Etiology of ILI & ARI. Among 5496 patients investigation 94 (**1.7%**) respiratory samples were positive for influenza, including 2 cases of influenza A(H1N1)pdm09 in 1 city, 1 case of influenza A(H3N2) in 1 city, 1 case of influenza A unsubtyped in 1 city and 90 cases of influenza B in 21 cities.

7 influenza viruses were isolated on MDCK cell culture, including: 2 influenza A(H1N1)pdm09 viruses and 5 influenza B viruses in Saint-Petersburg. Since the beginning of the season 1208 influenza viruses were isolated on MDCK cell culture, including: 777 viruses A(H1N1)pdm09, 30 viruses A(H3N2) and 401 viruses B.

Antigenic characterization. Since the beginning of the season, 650 influenza A(H1N1)pdm09 viruses have been antigenically characterized by the NICs, including: Moscow (105) and Saint-Petersburg (545), 29 influenza A(H3N2) viruses in Moscow (2) and Saint-Petersburg (27) and 185 influenza B, including: Moscow (15) and Saint-Petersburg (170). All viruses A(H1N1)pdm09 were antigenically similar to reference strain A/Victoria/2570/2019 (H1N1)pdm09. 27 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. 183 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 390 influenza viruses to neuraminidase inhibitors (oseltamivir, zanamivir) was studied in two NICs (Moscow, St. Petersburg), including 330 A(H1N1)pdm09 viruses and 10 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 **11.0%** (PCR).

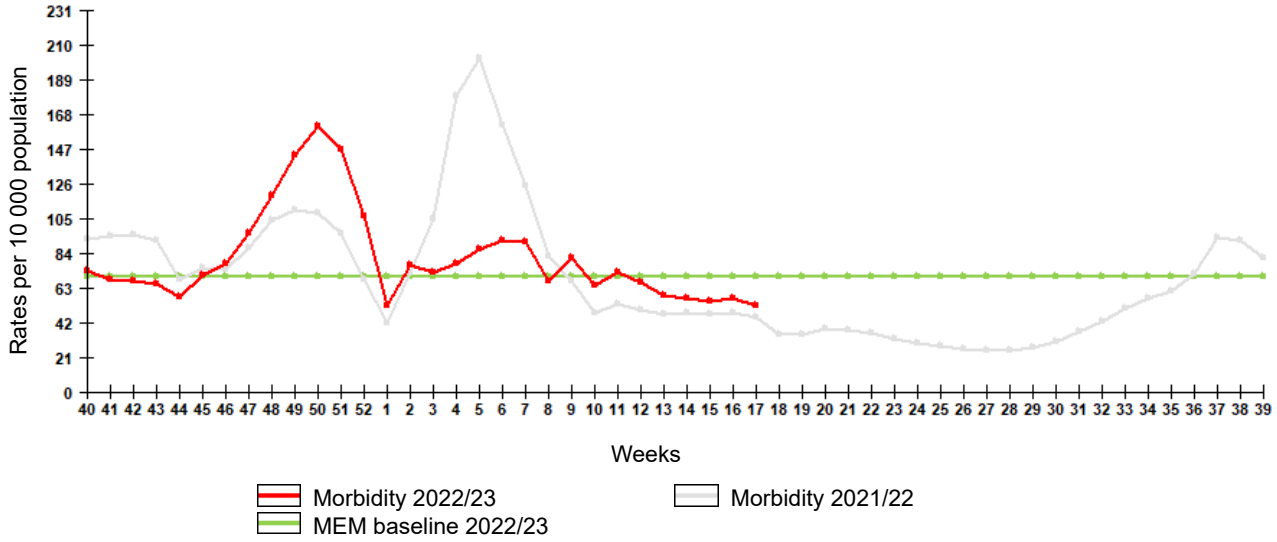
In sentinel surveillance system clinical samples from 54 SARI patients were investigated by rRT-PCR for influenza, among them 1 (**1.4%**) case of influenza B. Among 46 SARI samples 3 (**6.5%**) cases positive for ARVI detected including 1 case RhV and 2 cases of MPV infection. 1 (**1.9%**) of 54 SARI patients was positive for coronavirus SARS-CoV-2.

Clinical samples from 50 ILI/ARI patients were investigated for influenza by rRT-PCR, among them 1 (**2.0%**) case of influenza A unsubtyped. Among 40 ILI/ARI samples 12 (**30.0%**) cases positive for ARVI detected including 2 cases of PIV, 5 case of RhV, 3 cases of CoV and 2 cases of MPV infection. 3 (**6.1%**) of 49 ILI/ARI patients were positive for coronavirus SARS-CoV-2.

COVID-19. Totally 22 862 069 cases and 398 399 deaths associated with COVID-19 were registered in Russia including 3 214 cases and 33 deaths in last 24 hours (on 12:00 of 03.05.2023). According to the data obtained by NIC in Saint-Petersburg totally 8546 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 822 (**9.6%**) cases.

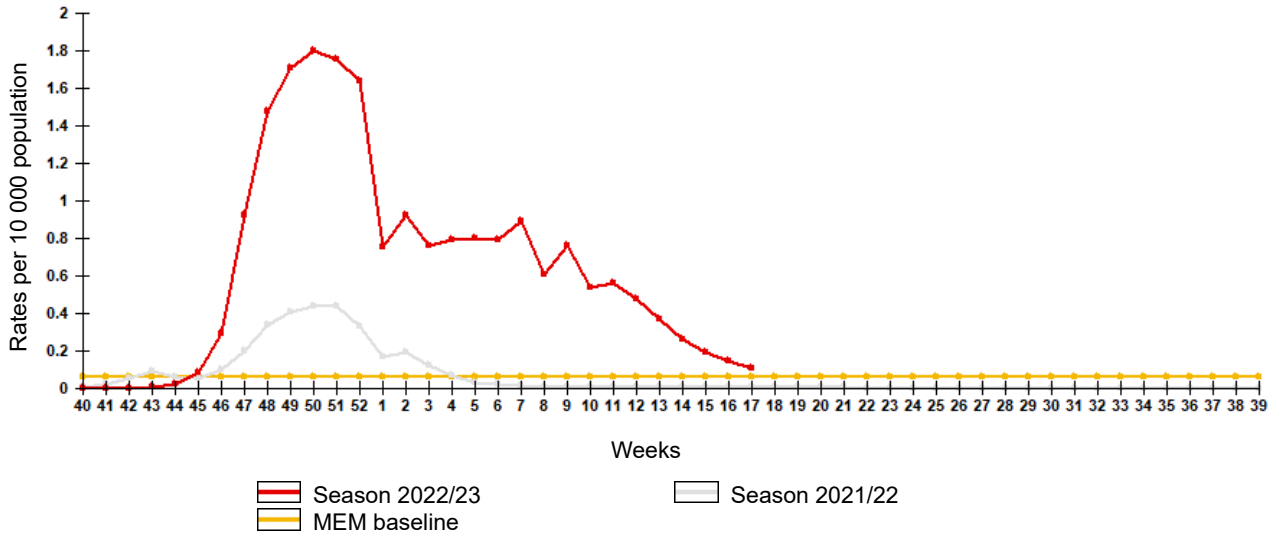
Influenza and ARI morbidity data

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



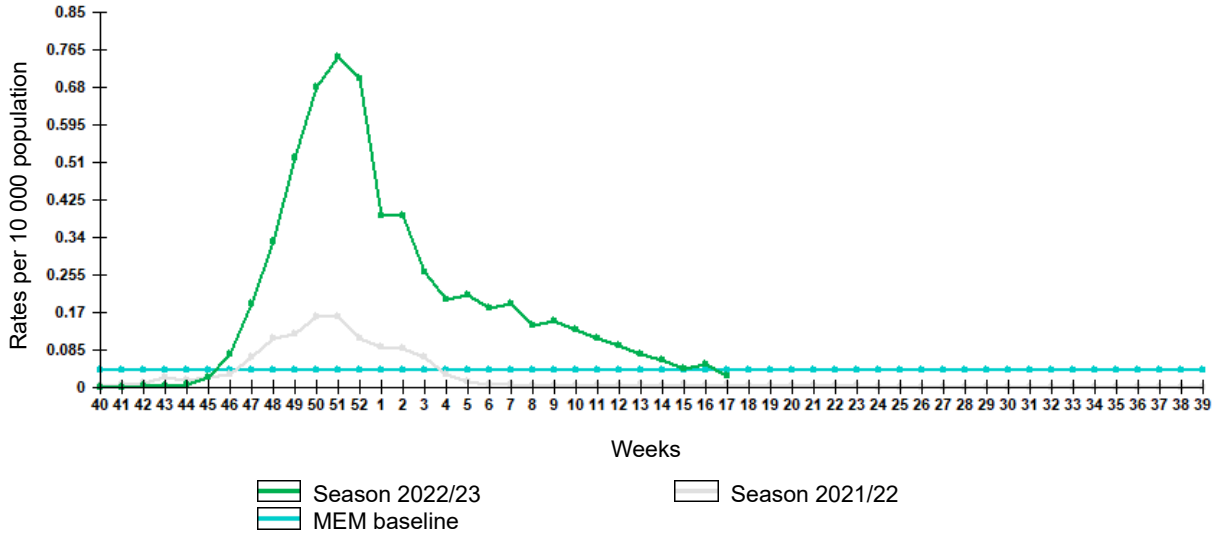
Epidemiological data showed decrease of influenza and other ARI activity in Russia in comparison with previous week. The nationwide ILI and ARI morbidity level (52.4 per 10 000 of population) was lower than national baseline (70.0) by 25.1%.

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



Incidence rate of clinically diagnosed influenza decreased comparing to previous week and amounted to 0.11 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 0.027 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 44 RBLs and two WHO NICs. According to these data as a result of 5496 patients investigation 94 (**1.7%**) respiratory samples were positive for influenza, including 2 cases of influenza A(H1N1)pdm09 in 1 city, 1 case of influenza A(H3N2) in 1 city, 1 case of influenza A unsubtyped in 1 city and 90 cases of influenza B in 21 cities.

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Fig. 4. Geographic distribution of RT-PCR detected influenza viruses in cities under surveillance in Russia, week 17 of 2023

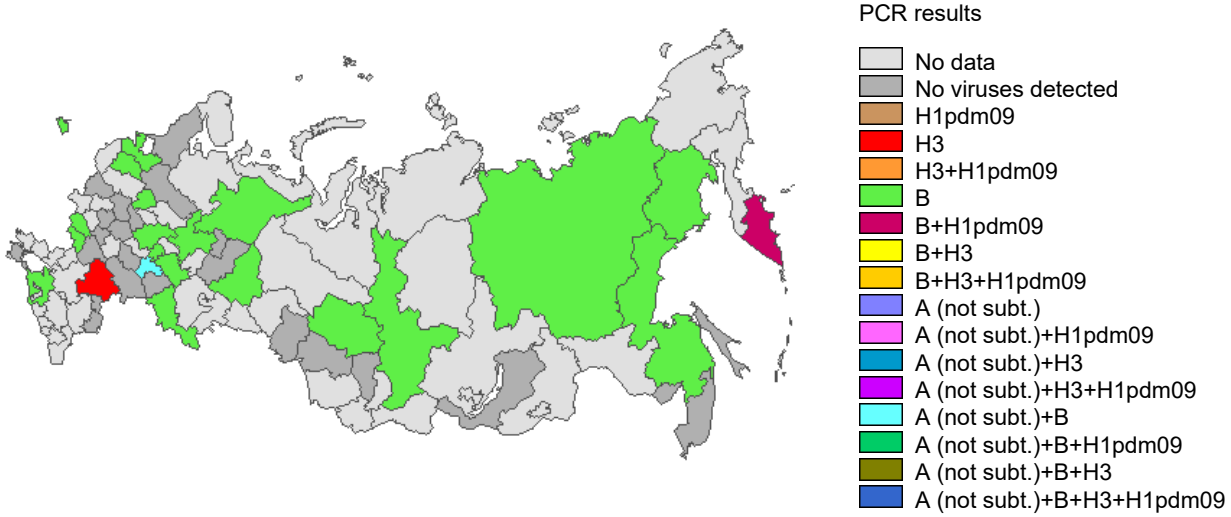


Fig. 5. Monitoring of influenza viruses detection by RT-PCR in Russia, season 2022/23

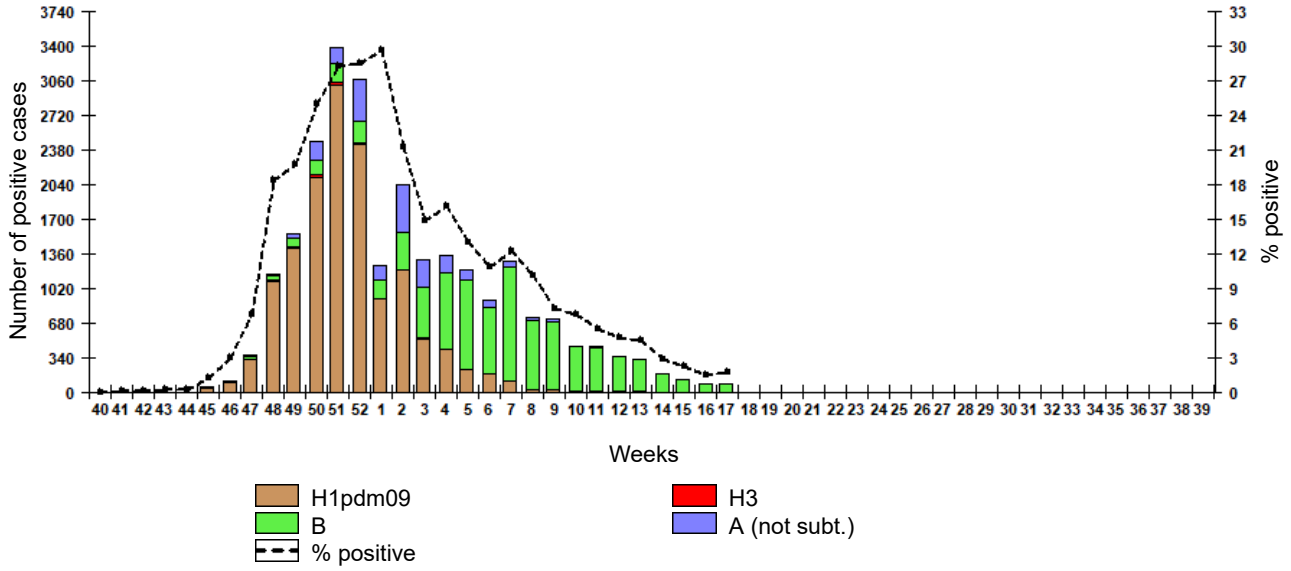
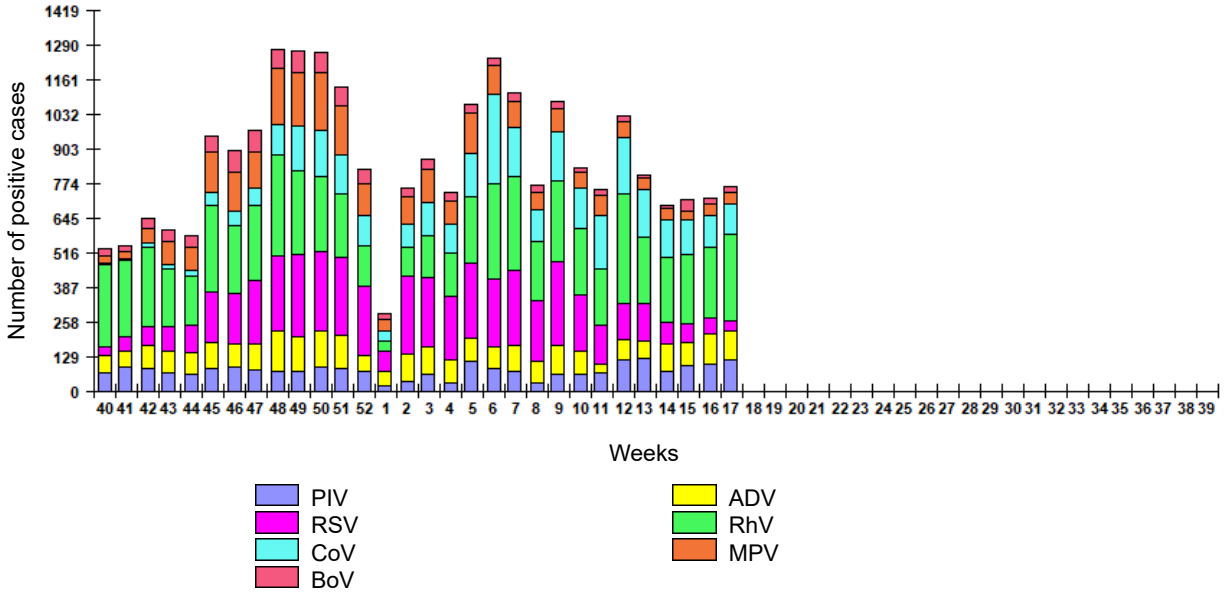


Fig. 6. Monitoring of ARVI detection by RT-PCR in Russia, season 2022/23



ARVI detections. The overall proportion of respiratory samples tested positive for other ARVI (PIV, ADV, RSV, RhV, CoV, MPV, BoV) estimated as **14.3%** of investigated samples by PCR.

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

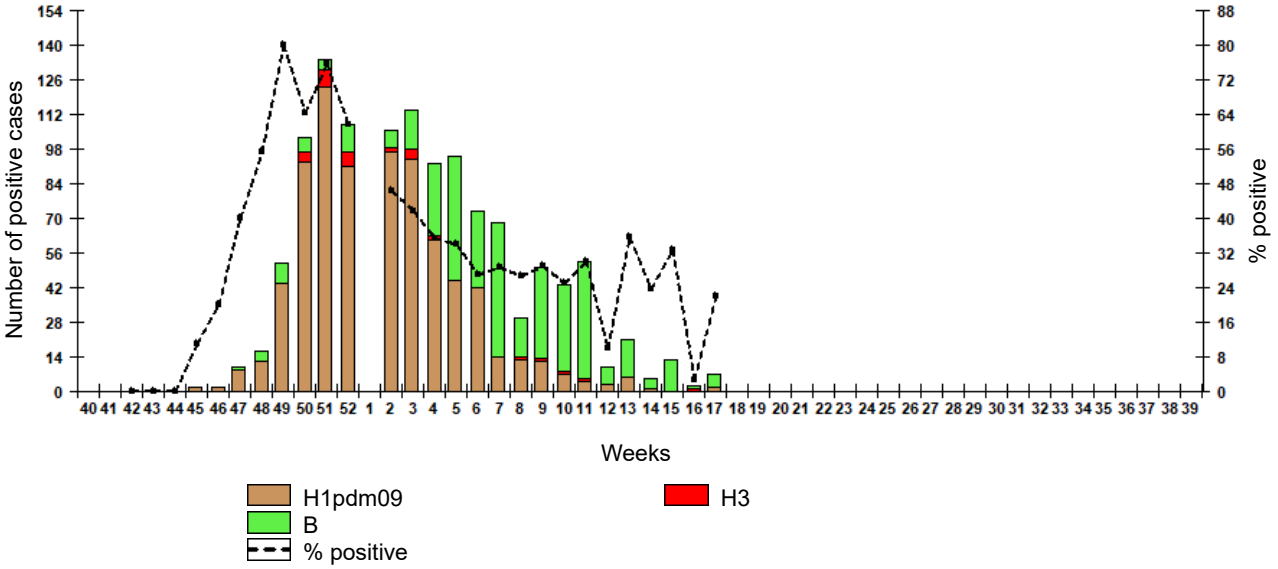
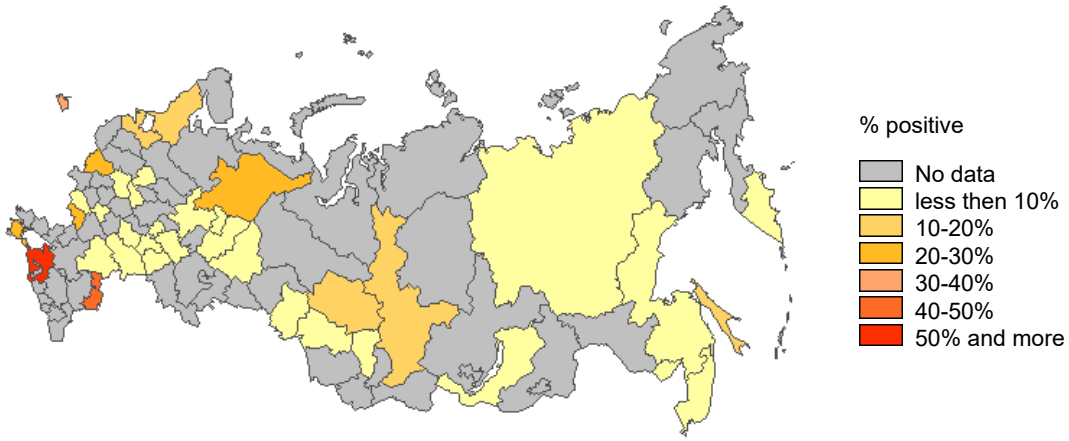


Table 1. Results of influenza and other ARVI detection by RT-PCR in Russia, week 17 of 2023

	Number of specimens / number of positive cases	**% positive**
Influenza		
Number of specimens tested for influenza	*5496*	-
Influenza A (not subt.)	*1*	*0,02%*
Influenza A(H1)pdm09	*2*	*0,04%*
Influenza A(H3)	*1*	*0,02%*
Influenza B	*90*	*1,6%*
All influenza	*94*	*1,7%*
Other ARVI		
Number of specimens tested for ARVI	*5298*	-
PIV	*116*	*2,2%*
ADV	*106*	*2,0%*
RSV	*40*	*0,8%*
RhV	*322*	*6,1%*
CoV	*112*	*2,1%*
MPV	*42*	*0,8%*
BoV	*21*	*0,4%*
All ARVI	*759*	*14,3%*
SARS-CoV-2 (COVID-19)		
Number of specimens tested for SARS-CoV-2	*8546*	-
SARS-CoV-2	*822*	*9,6%*

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



COVID-19. Totally 22 862 069 cases and 398 399 deaths associated with COVID-19 were registered in Russia including 3 214 cases and 33 deaths in last 24 hours (on 12:00 of 03.05.2023). According to the data obtained by NIC in Saint-Petersburg totally 8546 clinical samples were PCR investigated in last week. Among them coronavirus SARS-CoV-2 detected in 822 (**9.6%**) cases.

Table 2. Results of influenza viruses isolation in Russia, week 17 of 2023

	Number of specimens / number of viruses	**% isolated viruses**
Number of specimens	*32*	-
Influenza A(H1)pdm09	*2*	*6,3%*
Influenza A(H3)	*0*	*0,0%*
Influenza B	*5*	*15,6%*
All influenza	*7*	*21,9%*

Sentinel influenza surveillance

Clinical samples from 54 SARI patients were investigated by rRT-PCR for influenza, among them 1 (**1.4%**) case of influenza B. Among 46 SARI samples 3 (**6.5%**) cases positive for ARVI detected including 1 case RhV and 2 cases of MPV infection. 1 (**1.9%**) of 54 SARI patients was 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

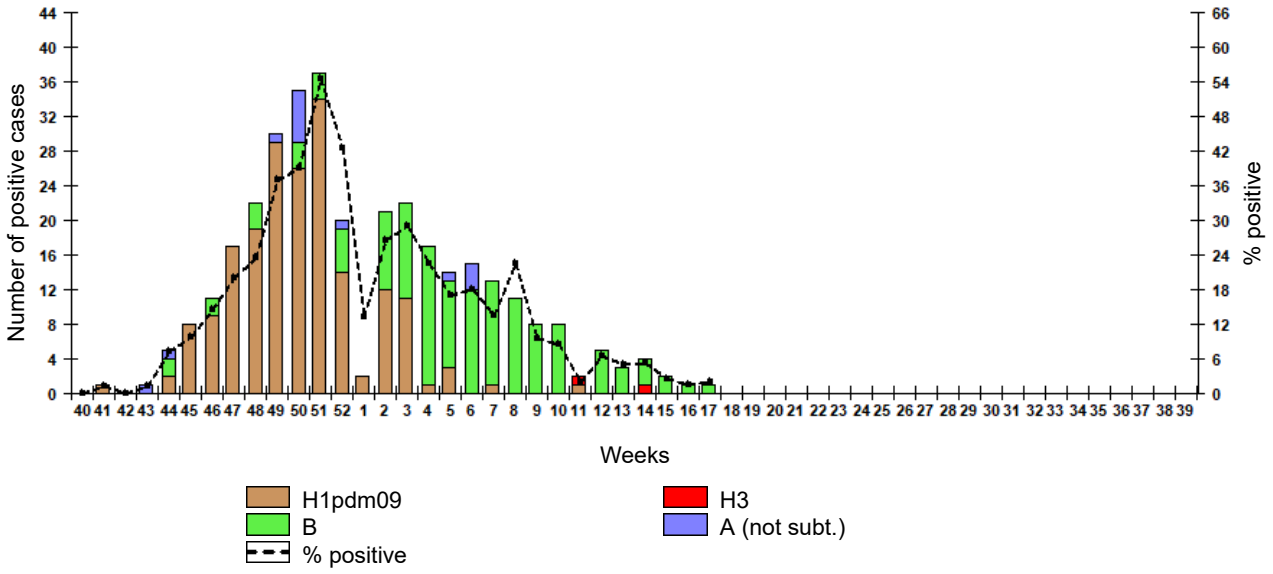

Fig. 10. Monitoring of influenza viruses detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23

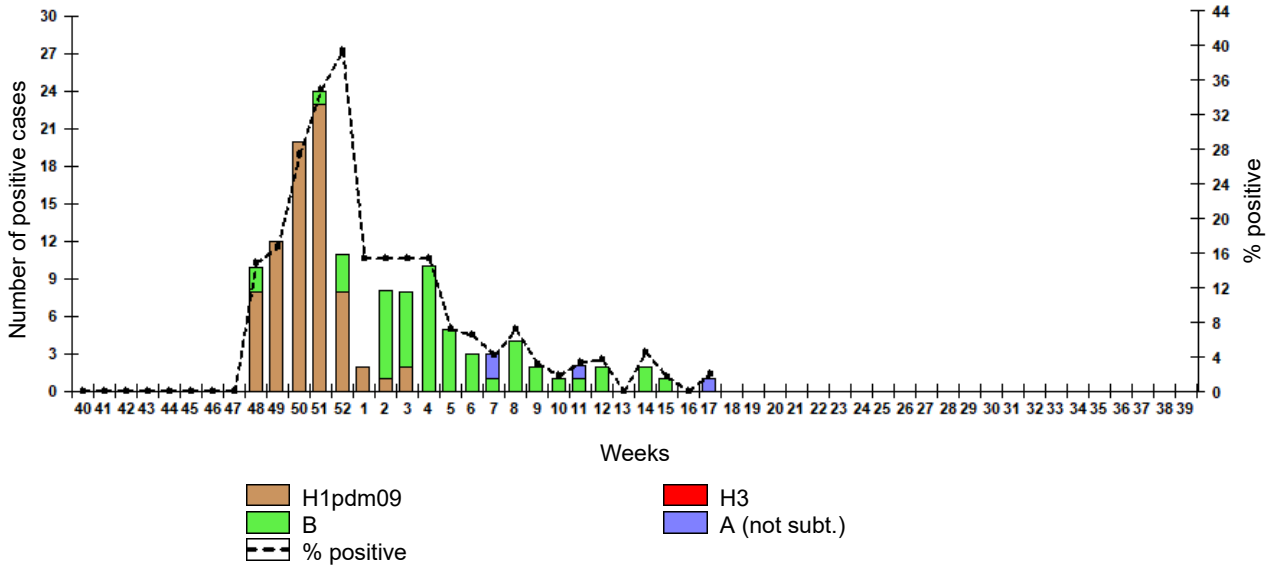

Fig. 11. Monitoring of ARVI detection by RT-PCR among SARI patients in sentinel hospitals, season 2022/23

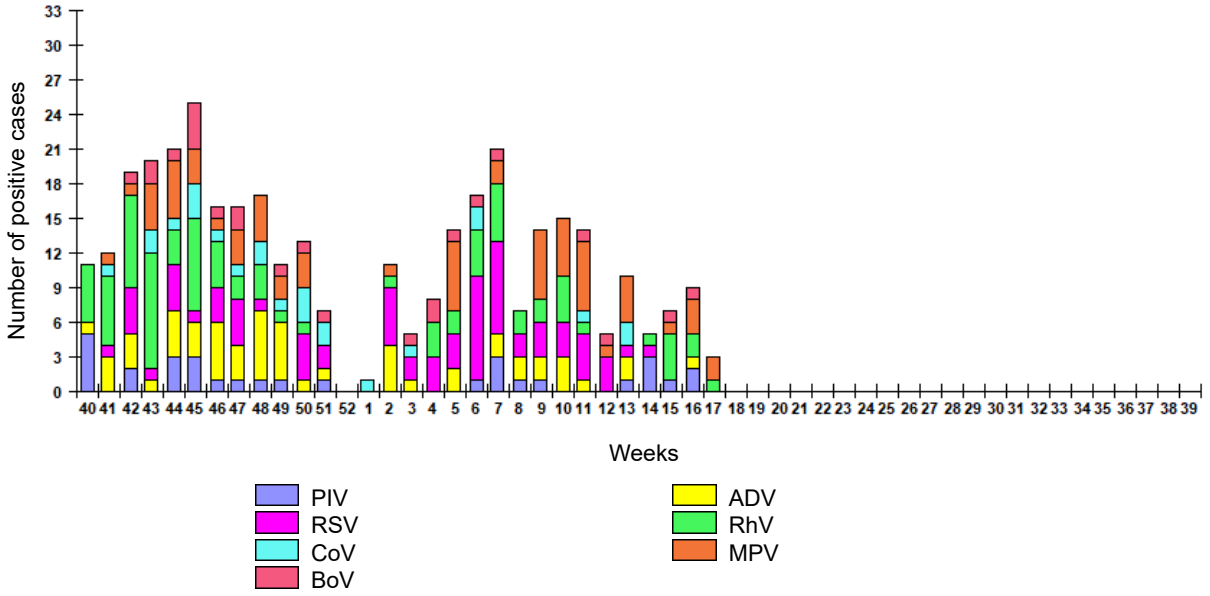

Fig. 12. Monitoring of ARVI detection by RT-PCR among ILI/ARI patients in sentinel polyclinics, season 2022/23