

Year: 2018

Week: 10

Period: 05.03.2018-11.03.2018

Influenza and ARI morbidity data

Epidemiological data show decrease of influenza and other ARI activity in Russia in comparison with previous week. The ILI & ARI incidence rate (70.0 per 10 000 of population) was below by 3.6% the new nationwide baseline (72.6) calculated by RII NIC for 2017-2018 season.

ILI and ARI epidemic thresholds were exceeded in 5 of 61 cities collaborating with two WHO NICs in Russia.



Exceeding of morbidity epidemic thresholds for overall population

■ - No data

■ - less 20%

■ - 20 - 49%

■ - 50% and more

Cumulative number of diagnosed influenza cases

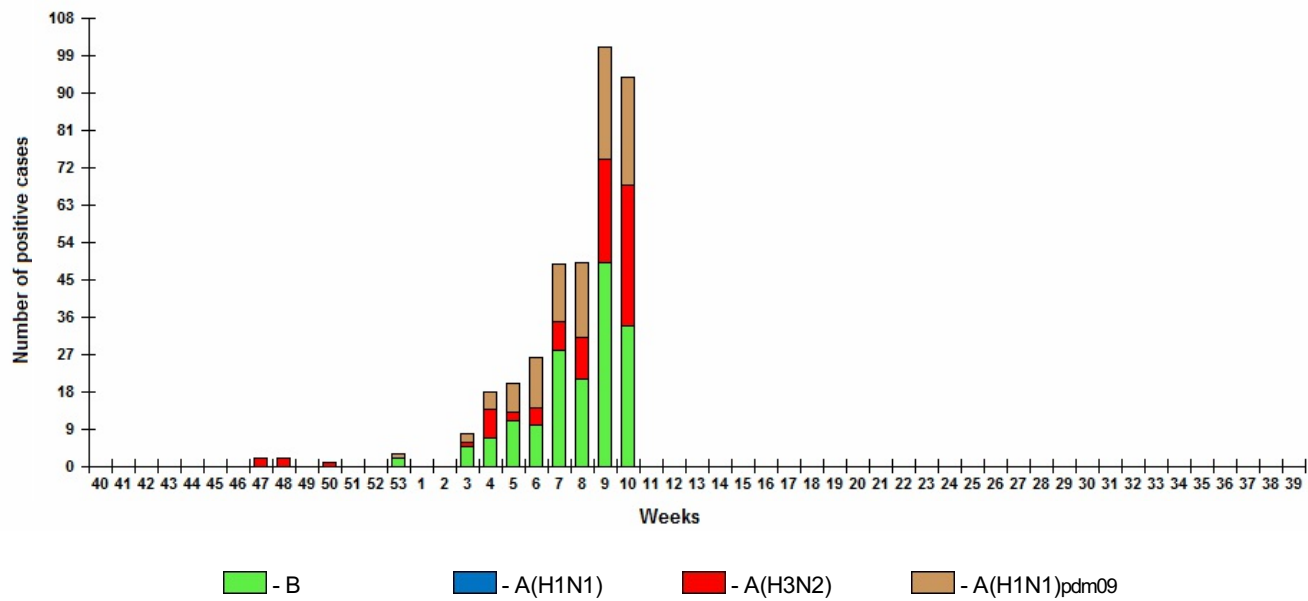
Cumulative results of influenza laboratory diagnosis by different tests were submitted by 54 RBLs and two WHO NICs. According to these data as a result of 3523 patients investigation the percent of samples positive for influenza was estimated as **26.5%**. Proportion of influenza A(H1N1)pdm09, A(H3N2), type A and type B viruses was estimated as 40.3%, 26.4%, 5.2% and 28.1%, respectively.



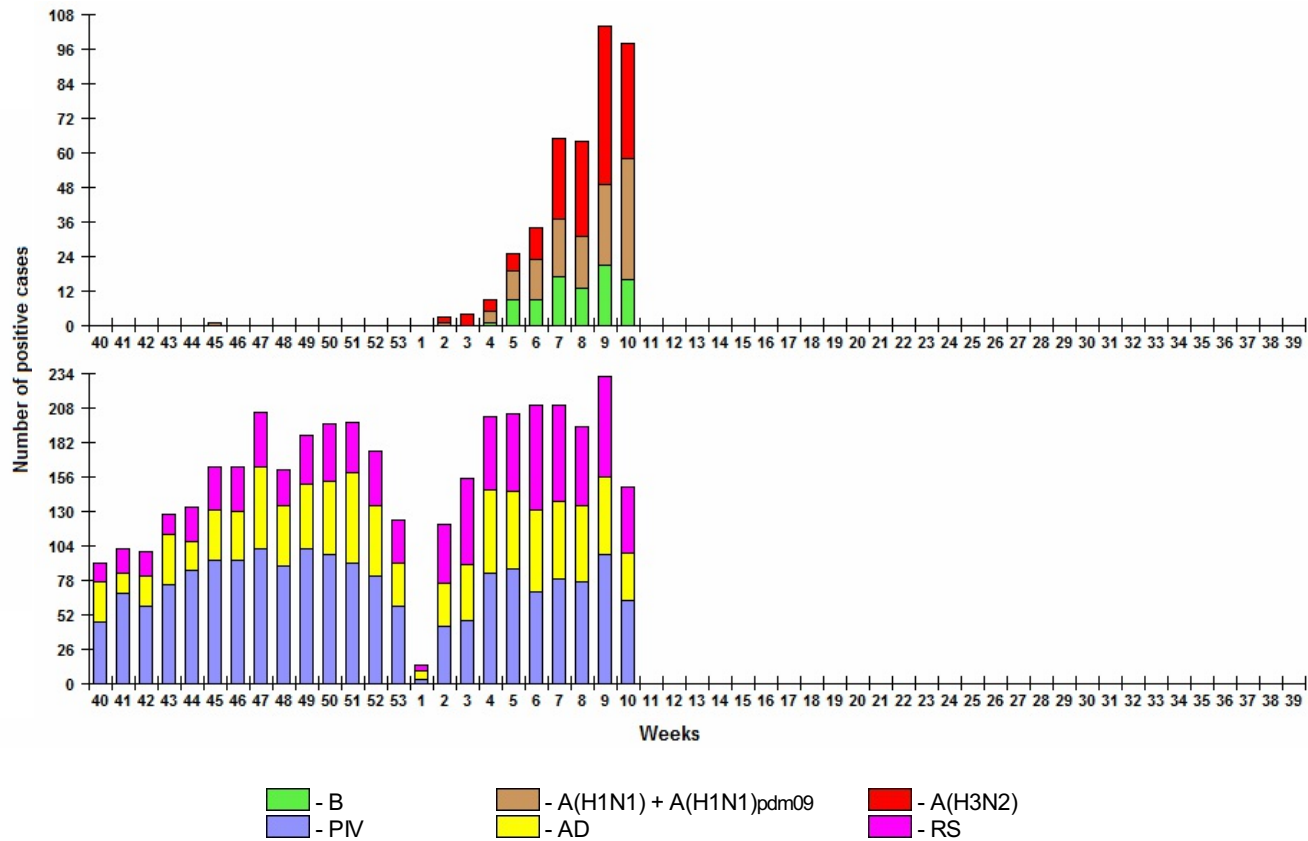
Results of influenza diagnosis

- No data	- H1pdm09+H3	- B+H1
- No detection	- H1pdm09+H3+H1	- H3
- H1pdm09	- H1pdm09+H3+B	- H3+H1
- H1pdm09+H1	- H1pdm09+H3+H1+B	- H3+B
- H1pdm09+B	- H1	- H3+H1+B
- H1pdm09+B+H1	- B	

Influenza Virus Isolation



Influenza Virus Antigen Detection by Immunofluorescence Assay (IFA)



Influenza Virus RNA Detection by RT-PCR

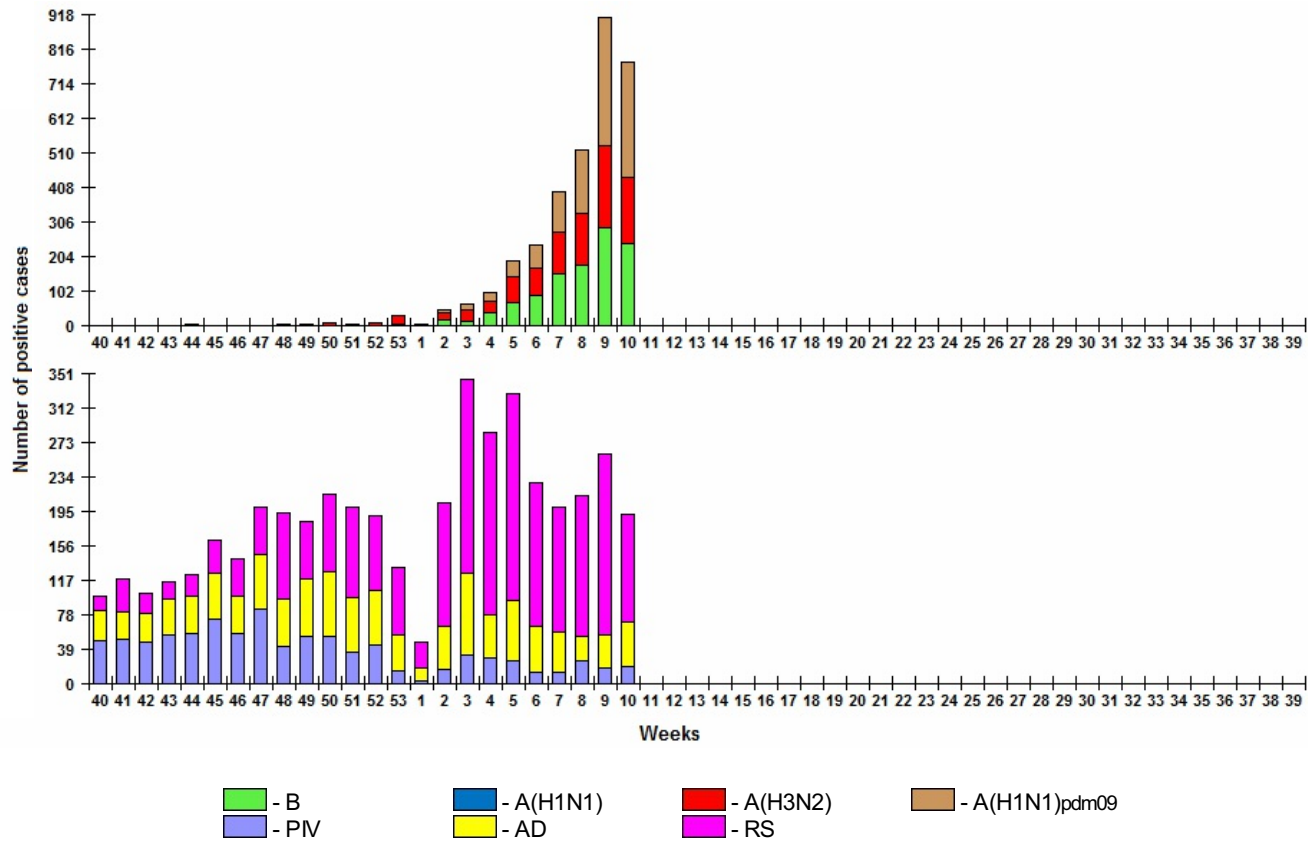


Table N1.

Influenza Virus Isolation

Base lab.	Number of investigated patients	Number of viruses isolated					
		H1	H3	B	H1pdm09	Untyped virus	Total
BL of RII	228	0	17	20	15	0	52
(%)		0,0	7,5	8,8	6,6	0,0	22,8
BL of IV	143	0	17	14	11	0	42
(%)		0,0	11,9	9,8	7,7	0,0	29,4
TOTAL	371	0	34	34	26	0	94
(%)		0,0	9,2	9,2	7,0	0,0	25,3

Table N2.

Influenza Virus Antigen Detection by Immunofluorescence assay (IFA)

Base lab.	Number of investigated patients	Influenza			Parainfluenza			AD	RS	Total
		H1+H1pdm09	H3	B	I	II	III			
BL of RII	767	40	38	13	18	8	25	28	36	206
(%)		5,2	5,0	1,7	2,3	1,0	3,3	3,7	4,7	26,9
BL of IV	106	2	2	3	3	2	7	8	14	41
(%)		1,9	1,9	2,8	2,8	1,9	6,6	7,5	13,2	38,7
TOTAL	873	42	40	16	21	10	32	36	50	247
(%)		4,8	4,6	1,8	2,4	1,1	3,7	4,1	5,7	28,3

Table N3.

Influenza Virus RNA detection by RT-PCR

Base lab.	Number of investigated patients	Influenza						PIV	AD	RS
		A (not subtyped)	H1	H3	H5	B	H1pdm09			
BL of RII	2466	48 / 2432	0 / 722	158 / 2233	0 / 650	211 / 2462	293 / 2324	18 / 1413	49 / 1439	109 / 1440
(%)		2,0	0,0	7,1	0,0	8,6	12,6	1,3	3,4	7,6
BL of IV	419	1 / 419	0 / 59	36 / 363	0 / 59	32 / 419	45 / 332	1 / 224	2 / 224	13 / 224
(%)		0,2	0,0	9,9	0,0	7,6	13,6	0,4	0,9	5,8
TOTAL	2885	49 / 2851	0 / 781	194 / 2596	0 / 709	243 / 2881	338 / 2656	19 / 1637	51 / 1663	122 / 1664
(%)		1,7	0,0	7,5	0,0	8,4	12,7	1,2	3,1	7,3

Table N4.

Cumulative Number of Diagnosed Influenza Cases

Base lab.	Number of investigated patients	Number of diagnosed influenza cases						
		H1	H1+H1pdm09 (IFA)	H3	A (not subtyped)	B	H1pdm09	Total
BL of RII	3025	0	40	211	48	228	331	818
(%)		0,0	1,3	7,0	1,6	7,5	10,9	27,0
BL of IV	498	0	2	36	1	34	45	116
(%)		0,0	0,4	7,2	0,2	6,8	9,0	23,3
TOTAL	3523	0	42	247	49	262	376	934
(%)		0,0	1,2	7,0	1,4	7,4	10,7	26,5

Conclusion

Influenza and ARI morbidity data. Decrease of influenza and other ARI activity was registered during week 10.2018 in Russia. The ILI & ARI incidence rate (70.0 per 10 000 of population) was below by 3.6% the nationwide baseline.

Etiology of ILI & ARI morbidity. The overall percent of respiratory samples positive for influenza was estimated as **26.5%**. Proportion of influenza A(H1N1)pdm09, A(H3N2), type A and type B viruses was estimated as 40.3%, 26.4%, 5.2% and 28.1%, respectively.

Antigenic characterization. 180 influenza viruses were characterized antigenically in Moscow and Saint-Petersburg NICs, including 47 influenza A(H1N1)pdm09 viruses, 41 influenza A(H3N2) strains and 92 influenza type B strains. All influenza A(H1N1)pdm09 strains were related to influenza A/Michigan/45/2015, influenza A(H3N2) strains to A/Hong Kong/4801/2014 viruses. 86 influenza type B strains belonged to Yamagata lineage and were like B/Phuket/3073/2013 reference virus, 6 influenza type B strains belonged to Victoria lineage and were antigenically related to B/Brisbane/60/2008 strain.

Genetic characterization. Full-genome NGS of 58 influenza positive samples and viruses from 6 cities was conducted. 16 influenza A(H1N1)pdm09 viruses belonged to phylogenetic group 6B.1 with amino acid substitutions in HA S84N, S162N and I216T. According to phylogenetic analysis of HA 18 of 22 tested influenza A(H3N2) viruses belonged to clade 3C.2a carrying aa substitutions L3I, N144S, F159Y, K160T, N225D and Q311H in HA1. Four influenza A(H3N2) viruses belonged to genetic subgroup 3C.2a1 and carried aa substitutions K92R, N121K, T135K and H311Q. 2 influenza B viruses of Victoria-lineage belonged to genetic subgroup 1A (B/Brisbane/60/2008-like). All 18 influenza B viruses of Yamagata-lineage belonged to clade 3 (B/Phuket/3073/2013-like) and had substitution L172Q and M251V in HA1.

Susceptibility to antivirals. Most viruses were susceptible to NA inhibitors excluding three influenza A(H1N1)pdm09 strains isolated in Moscow which had H275Y amino acid substitution in NA responsible for highly reduced susceptibility to oseltamivir and zanamivir. 14 influenza strains tested in MUNANA-assay for antiviral resistance to NA inhibitors in RII NIC, including 3 A(H1N1)pdm09 strains isolated in St.Petersburg, 4 A(H3N2), two B Victoria strains and 5 B Yamagata viruses were susceptible to oseltamivir and zanamivir. All influenza A strains tested were resistant to rimantadine.

Percent of positive ARI cases of non-influenza etiology (PIV, adeno- and RSV) was estimated as **17.0%** of investigated patients by IFA and **11.6%** by PCR. Last weeks RSV dominated among ARI agents.

In sentinel surveillance system clinical samples from 93 SARI and ILI/ARI patients were investigated by rRT-PCR. 16 (**40.0%**) influenza cases were detected among SARI patients, including 6 influenza A(H1N1)pdm09 cases, 4 influenza A(H3N2) cases and 6 influenza B cases. Among ILI/ARI patients 13 (**24.5%**) influenza cases were detected, including 6 influenza A(H1N1)pdm09, 6 influenza A(H3N2) and 1 influenza B case.

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