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Viral etiology of acute respiratory tract infections during the 2012/2013, 2013/2014 and 2014/2015 winter seasons in Bulgaria

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Background: Influenza viruses, respiratory-syncytial virus (RSV), metapneumovirus (hMPV), parainfluenza viruses (hPIV) type 1, 2 and 3 are leading causes of acute respiratory tract infections (ARTI) in infants and young children. The aim of this study was to determine the contribution of these viruses in medically attended ARTI among children aged <4 years during the 2012/13, 2013/14 and 2014/2015 winter seasons in Bulgaria.

Methods: A total of 555 nasopharyngeal swabs of children aged <4 years diagnosed with ARTI were collected and tested for influenza A/B viruses by Real Time RT-PCR. Influenza virus negative samples were examined by individual Real Time RT-PCR using specific primers/probes for RSV, hMPV, hPIV1/2/3.

Results: Of the 555 specimens tested 152 (27%) were influenza virus positive. Influenza A (H1N1) pdm09, A(H3N2) and type B viruses were found in 64 (12%), 33 (6%) and 50 (9%) of samples, respectively. Among the 403 influenza virus negative specimens, paramyxoviruses RSV, hMPV, hPIV1/2/3 were detected in 86 (21%), 28 (7%), 23 (5, 7%), 7 (1, 7%) and 20 (5%) samples, respectively. RSV was the most frequently identified paramyxovirus. Overall, 33 (6%) patients were co-infected with two viruses. The contribution of 8 examined respiratory viruses in cases of bronchiolitis, pneumonia and neurological complications was analyzed.

Conclusions: During the last three winter seasons, influenza viruses and RSV were the most frequent viral pathogens causing medically attended ARTI among children <4 years of age. Rapid diagnostics by Real Time RT-PCR is decisive in terms of adequate treatment and taking prompt anti-epidemic measures.

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