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Virological surveillance of the continuously evolving influenza viruses

Influenza virus causes annual epidemics with substantial respiratory illness and mortality worldwide, particularly in high-risk groups, such as the elderly and immunocompromised. Vaccination is the most effective way to protect people against influenza and to contain its spread. However, seasonal influenza viruses continuously accumulate mutations in the antigenic sites of the hemagglutinin molecule (antigenic drift), thus requiring annual renewal of the strain composition of vaccines. The influenza network established by the World Health Organization (WHO), which is known as the Global Influenza Surveillance and Response System (GISRS), has the main objective to carry out virological surveillance of human influenza and ensure the capacity to monitor the evolution of influenza viruses, their antigenic characteristics and susceptibility to antivirals. Moreover, the emergence of novel strains of influenza A viruses with pandemic potential further underlines the need to monitor and promptly detect human cases of influenza at the human-animal interface. In Italy, influenza virological surveillance is routinely carried out by the National Influenza Centre at Istituto Superiore di Sanità, in collaboration with a network of peripheral laboratories. Recently, the evolution of human seasonal A(H3N2) viruses with changes in receptor binding poses some serious concerns for identification and antigenic characterization of the most recent viral strains. The incidence of A(H1N1)pdm09 viral infection among young/middle-aged adults and the sustained co-circulation of B viruses further contribute to the daunting complexity of seasonal influenza epidemics. Results of influenza surveillance activities over the last two seasons are presented.

Biography

Maria Rita Castrucci has completed her PhD at La Sapienza University of Rome and Postdoctoral studies at St. Jude Children's Research Hospital, Memphis, TN, USA. She is the Director of Influenza and Other Respiratory Viruses Unit, WHO National Influenza Centre, Istituto Superiore di Sanità. She has been a Principal Investigator of national and international projects. She has over 60 publications in peer-reviewed journals and has been serving as a Reviewer for different journals.

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