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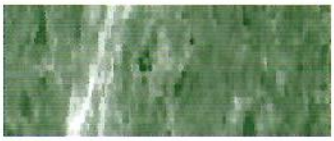
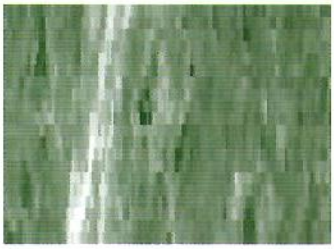




NIC Newsletter

National Influenza Centre, Bangladesh

IEDCR as National Influenza Centre (NIC)

Inside this issue:

Influenza, commonly known as flu, is an infectious viral disease. Symptoms of influenza can be mild to severe and often the disease is self-limiting. Influenza can be epidemic and pandemic extending all over the world within a short time period. History shows that influenza caused more deaths in Spanish flu pandemic time than world war I. To get best possible public health outcome a globally coordinated network is required for implementation of current knowledge and technology in regard to early detection of emerging viruses.

Global Influenza Surveillance and Response System (GISRS) is one of the longest functioning global networks, still going strong after 65 years. GISRS is with a mission to protect the world from the threat of influenza, by continuously functioning as a global mechanism of surveillance, preparedness and response for seasonal, pandemic and zoonotic influenza. To date, GISRS includes 143 National Influenza Centres (NICs) in 113 World Health Organization (WHO) member countries. All NICs are designated by member countries and recognized by WHO on the frontlines of surveillance and monitoring. Since 2007, Institute of Epidemiology,Disease Control and Research (IEDCR) is designated as NIC. IEDCR is collecting virus specimens through several surveillance platforms (National Influenza Surveillance, Bangladesh, NISB; Hospital Based Influenza Surveillance, HBIS etc.) and performing preliminary analysis.

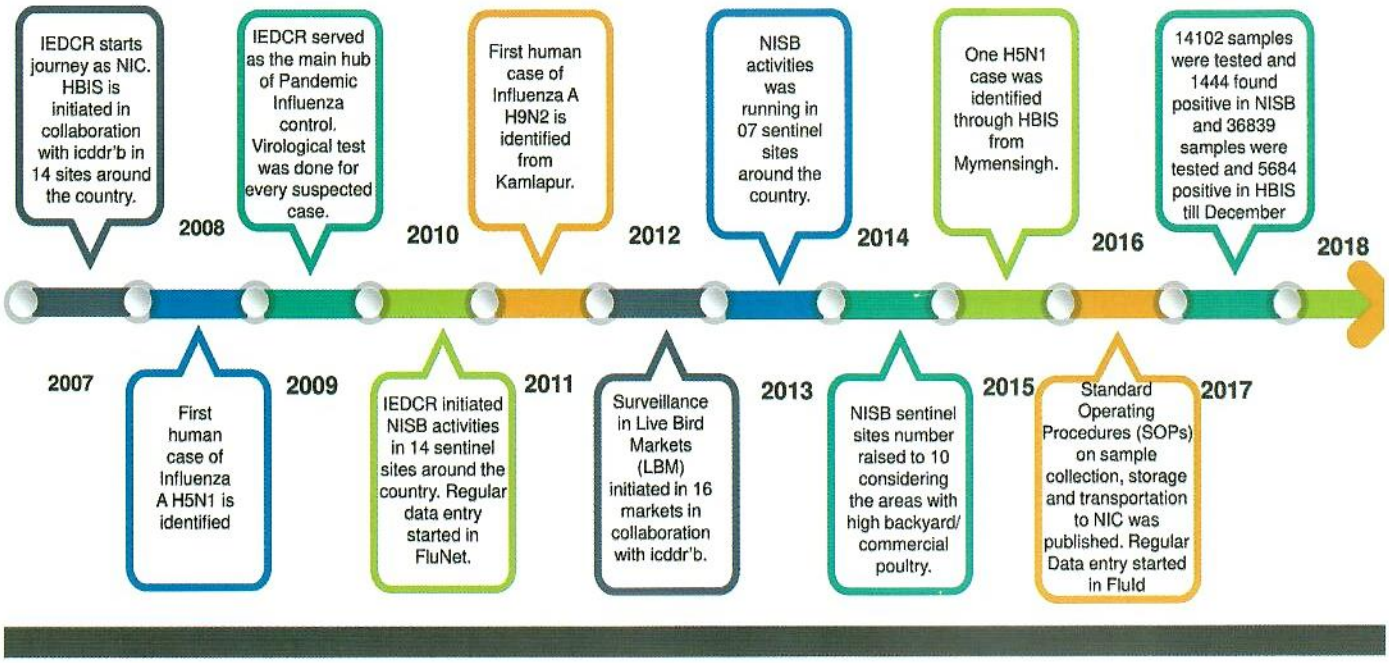
Through antigenic drift and shift, influenza-A virus is continuously changing and creating a global threat. Both epidemiological and virological surveillance are necessary to identify new variants of influenza virus, to monitor their health impact in populations and to provide data necessary for selection of influenza vaccine strains in each year. Knowledge regarding the circulating virus type/subtype can also assist healthcare providers in patient management. IEDCR ships representative clinical specimens to WHO Collaborating Centres for advanced genetic characterization. The results that contributes in vaccine strain selection and relevant risk assessment of Influenza infecton by WHO.

IEDCR provides virological data in FluNet and FluID on weekly basis. FluNet, the global web-based tool for influenza virological surveillance was first launched in 1997. This platform is useful for tracking of circulating Influenza viruse strains and frequency of infection across the glob. FluID is a WHO web-based application for entry, collection and dissemination of epidemiological data on influenza with objective of a comprehensive overview of the current influenza situation both globally and locally.

IEDCR publishes monthly summary report of influenza activities from both the platforms (NISB, HBIS) in IEDCR website. In addition to monthly reports, the surveillance findings are conveyed to the stakeholders of influenza through a dissemination seminar every year. This provides an opportunity to disseminate findings to important stakeholders including directors, physicians from all participating hospitals involved in influenza surveillance, dignitaries from Directorate General of Health Services, Department of Livestock Services(DLS), Bangladesh Livestock Research Institute (BLRI),US-CDC, WHO and other resourceful personnel in the health sector.

Institute of Epidemiology, Disease Control & Research (IEDCR)
National Influenza Centre (NIC)
Mohakhali, Dhaka- 1212, Bangladesh
Contact: Tel. No. +880-2-9898796, 9898691. FAX : +880-2-8821237; website: www.iedcr.gov.bd Hot Line: +8801937000011; +88001937110011

Fig. 01: IEDCR Timeline for National Influenza Centre



EDITORIAL

Influenza is, to date, the only known pathogen that can cause a pandemic. A future pandemic is a certain but facts such as, when it will happen, where it will originate, which virus will cause it, and how severe it will be are uncertain (as moderate as pandemic AH1N1 2009 or as catastrophic as the 1918 pandemic or somewhere in between). Moreover, seasonal influenza is causing thousands of deaths and huge economic loss.

National Influenza Centres (NICs) collect virus specimens in the countries and perform preliminary analysis. They ship representative clinical specimens and isolated viruses to WHO Collaborating Centres for advanced antigenic and genetic analysis. The results form the basis for WHO recommendations on the composition of influenza vaccine each year, as well as relevant risk assessment activities of WHO.

IEDCR as NIC, Bangladesh performs routine activities through National Influenza Surveillance, Bangladesh (NISB) and Hospital Based Influenza Surveillance (HBIS). A core committee supervises all the activities in NISB. Regular monthly coordination meeting takes place with NISB and HBIS team members. Activities like sample collection, reporting, data dissemination are coordinated by NIC, Bangladesh.

IEDCR has been publishing NISB newsletter since January 2016 at every 4th month in a year with the objective of sharing updates of the surveillance and other influenza related news. As other Influenza centres realized the need of a newsletter then IEDCR decided to transform NISB newsletter to NIC newsletter to share summary reports and NIC activities in a single bulletin.

Surveillance and Other Influenza Activity Platforms of National Influenza Centre, Bangladesh

National Influenza Surveillance in Bangladesh

The platform of National Influenza Surveillance, Bangladesh (NISB) was initiated by IEDCR in May, 2010. Primary objective of this surveillance is to identify strains of influenza viruses circulating in Bangladesh. Patients meeting the case definition of Influenza Like Illness (ILI), Severe Acute Respiratory Illness (SARI) are enrolled. Currently, NISB is being carried out in 10 sentinel sites including eight district hospitals and two tertiary hospitals (Dhaka Medical College Hospital Dhaka and Shaheed Tazuddin Medical College Hospital, Gazipur). From each hospital, samples are collected from five ILI cases at OPD and all SARI cases of indoor in every week and transported by dry shipper to IEDCR laboratory weekly for virological analysis. Flu positive samples are analyzed into their types and subtypes. Summary of the lab findings are uploaded at Flunet system of WHO on weekly basis.

Hospital Based Influenza Surveillance in Bangladesh

In 2007, icddr,b in collaboration with the IEDCR supported by the US Centers for Disease Control and Prevention (CDC), established a national 'Hospital Based Influenza Surveillance' (HBIS) in 12 tertiary care hospitals across Bangladesh to identify individuals and clusters of people with life-threatening infections from influenza virus and to characterize the diversity of strains of influenza circulating in Bangladesh. The surveillance was extended to two more tertiary care government hospitals in 2014, increasing the number of surveillance sites to 14, but surveillance activities were stopped in two private hospitals in 2016, bringing the number of sites back to 12. A number of surveillance sites were further reduced in October 2017, and since then, surveillance activities have been carried out in paediatric and medicine wards of eight tertiary care hospitals (six public and two private hospitals) throughout Bangladesh. Currently, surveillance physicians in each of the eight participating hospitals collect data on demographics, clinical and treatment history using handheld computers from enrolled patients meeting the WHO case definition for Severe Acute Respiratory Infections (SARI).

Zoonoses and Emerging Livestock Systems

A four year project Zoonoses and Emerging Livestock Systems (ZELS) was started in 2014. To evaluate avian influenza contamination in live bird market workers and their risk of developing avian influenza virus infection a PhD research project is running under ZELS project. IEDCR, Chittagong Veterinary and Animal Sciences University (CVASU) and Royal Veterinary College (RVC) are the partners of this project. The project is titled as "Avian influenza transmission at the animal-human interface in Bangladesh".

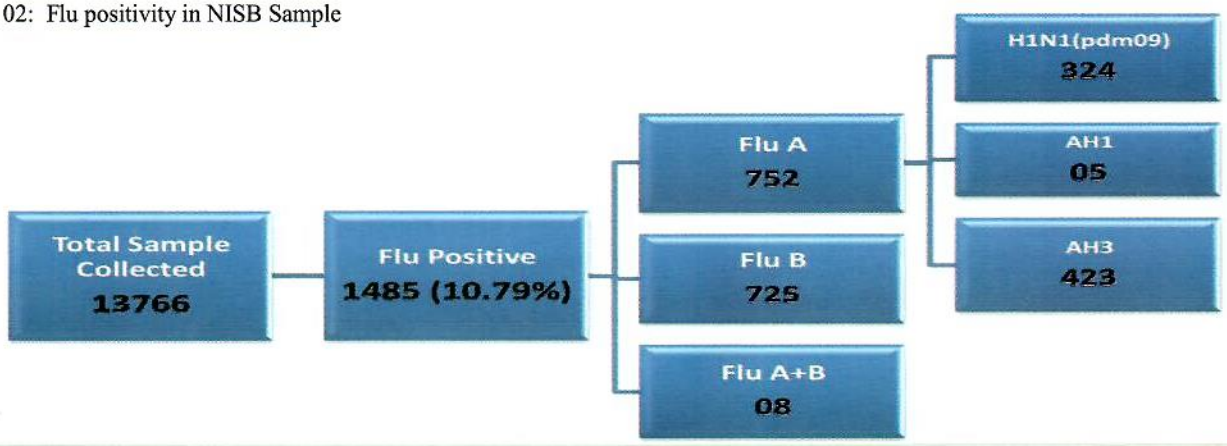
Live Bird Market Surveillance

Previously, Live Bird Market (LBM) surveillance (2011-2016) in 16 markets of Dhaka City Corporation was conducted in collaboration with icddr,b. In this surveillance, important focus was given on avian influenza by monitoring live bird markets for signs of infection in market workers.

Population-based Surveillance for Influenza Virus

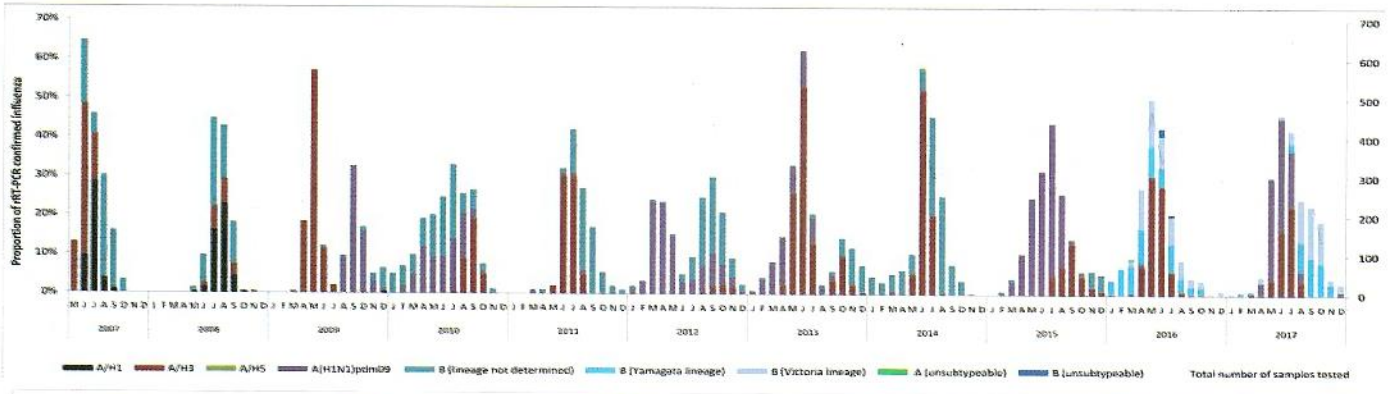
IEDCR in collaboration with icddr,b conducted a population-based surveillance for influenza virus in 'under 5 children' in Kamlapur, Dhaka to determine the proportion of children with serious respiratory illness due to influenza, and to characterize the influenza strains that are circulating. In children with acute infectious respiratory illness 14% had influenza virus in their respiratory secretions.

Fig. 02: Flu positivity in NISB Sample



The chart is displaying predominance of A H1N1(pdm09), AH3, B/Victoria and B/Yamagata in Bangladesh. Currently, these four subtypes are circulating which are the causes of seasonal influenza in this country.

Fig. 03 Hospital Based Influenza Surveillance (HBIS) seasonality graph up to December 2017



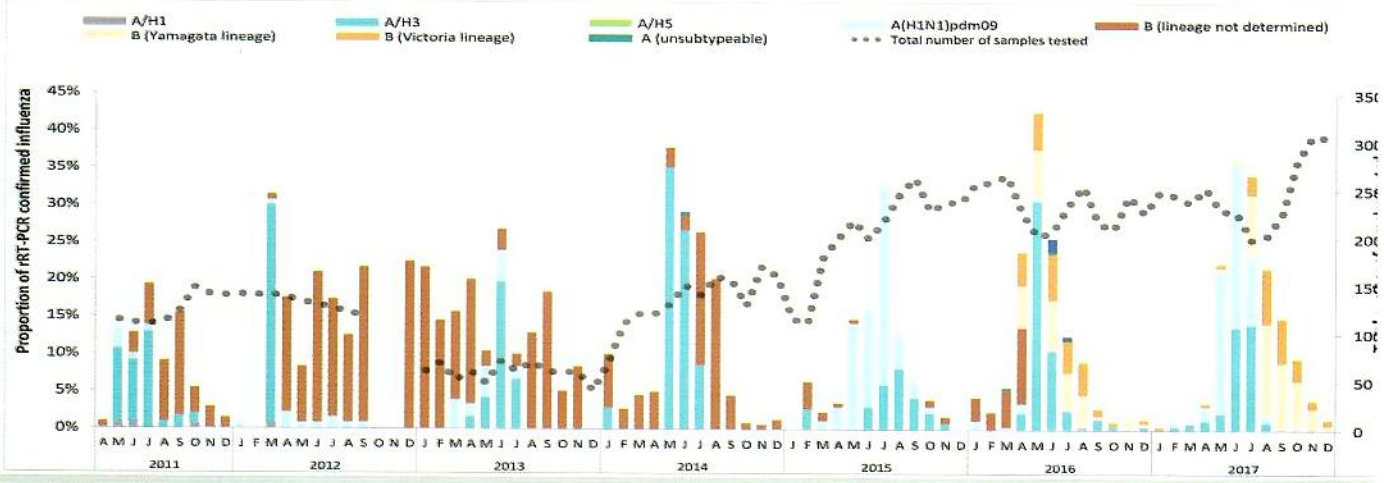


Fig. 04: Graphs showing seasonality of influenza activity in Bangladesh from NISB data. It is apparent that, currently influenza positivity is going down in comparison to the previous months of 2017. In this year influenza positivity peaked in June.

IEDCR NEWS

- Karen Siener, Public Health Advisor of Influenza Division in US-CDC, visited Dhaka, Bangladesh in November, 2017 for the evaluation of 'National Influenza Surveillance, Bangladesh' (NISB) and 'Hospital Based Influenza Surveillance' (HBIS) activities. She visited NISB surveillance site at Dhaka Medical College Hospital (DMCH). Dr. Michael S. Friedman, Country Director, US-CDC Bangladesh accompanied in the visit.
- A meeting with surveillance team of IEDCR took place at Dhaka Medical College Hospital Conference Room on 17 January 2018. Brig Gen AKM Nasir Uddin, Director, DMCH, Dr. Md. Ashraful Alam, Principal Scientific Officer, IEDCR, other responsible officers from IEDCR and surveillance team members in DMCH were present in that meeting.

Meeting with Surveillance Team of IEDCR at DMCH

US CDC evaluation of National Influenza Surveillance, Bangladesh (NISB) in Dhaka

Technical Support

CDC
Centers for Disease Control and Prevention

World Health Organization