

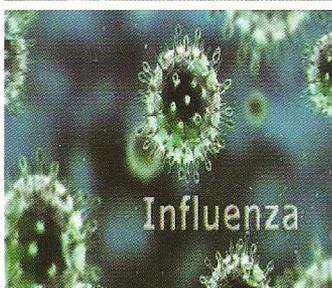


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# NISB Newsletter

National Influenza Surveillance, Bangladesh



## National Influenza Surveillance, Bangladesh

Influenza (flu) is a contagious respiratory illness caused by influenza viruses. The virus is transmitted easily from person to person via droplets and small particles produced when infected people cough or sneeze. Influenza tends to spread rapidly in seasonal epidemics. Most infected people recover within one to two weeks without requiring medical treatment. However, in the very young, the elderly, and those with other serious medical conditions, infection can lead to severe complications of the underlying condition, pneumonia and death. Both influenza A and B viruses are important respiratory pathogens, although influenza A viruses are the main cause of large epidemics with high mortality. Influenza occurs all over the world, with an annual global attack rate estimated at 5–10% in adults and 20–30% in children [1]. The average global burden of inter-pandemic influenza may be on the order of ~1 billion cases of flu, ~3–5 million cases of severe illness and 300 000–500 000 deaths annually [2]. New influenza A subtypes have caused major global outbreaks at unpredictable intervals. Of these pandemics, the “Spanish

flu” in 1918 was the most severe, causing an estimated 20–40 million or more deaths worldwide [3]. In 2009 the world experienced Influenza (A/H1N1) Pandemic. As of August 2010, the number of laboratory confirmed deaths caused by this pandemic was 18500 [4]. However, it is estimated that globally there were 201200 deaths associated with 2009 Pandemic Influenza during the first 12 months of virus circulation [4]. Since March 2007 poultry of Bangladesh have been affected by H5N1 virus. As of July 2012, 52 out of 64 districts of Bangladesh have reported a total of 525 outbreaks of H5N1 in poultry [5]. As of January, 2016 confirmed human cases of H5N1 in the country is 8 and 1 death occurred [6]. The high population density in Bangladesh, with the close proximity between persons and poultry, creates a situation where the risk of evolution of new influenza subtypes and threat to the health of human communities is substantial. In this context it became very important to establish surveillance for human cases with infection with novel influenza viruses.

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NISB orientation at DMCH



NISB sentinel site opening at Gazipur



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## National Influenza Surveillance, Bangladesh

Since its establishment in 1948, the Global Influenza Surveillance & Response System (GISRS) has worked to protect global public health by updating seasonal influenza vaccine compositions, and by functioning as a global alert mechanism for the emergence of influenza viruses with pandemic potential. National Influenza Centers (NICs) are the backbone of GISRS. Presently there are 143 NICs in 113 countries. In member countries, health Ministries designate an institute which serves as NIC and are recognized by WHO. After performing preliminary analysis NICs ship specimens and isolated viruses to WHO for advanced characterization. In 2007, The Institute of Epidemiology, Disease Control and Research (IEDCR) in Bangladesh was nominated as a NIC by the WHO.

The platform of National influenza Surveillance, Bangladesh 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. Initially this program was government funded. Later US

CDC came up with “Sustaining Influenza Project” and since then NISB is supported by US CDC as well as technical assistance from WHO. Presently, NISB is being carried out in 10 sentinel sites. Among them 9 are District Hospitals. The other one is Dhaka Medical College Hospital. Previously it was conducted in 14 hospitals. Later the number was reduced to 7 to intensify the surveillance system. Then again in 2014 & 2015, more surveillance sites were introduced. From each hospital 10 samples of ILI cases from OPD are collected in every two weeks. All SARI cases are collected from indoor. Samples are transported by dryshipper to IEDCR lab biweekly for virological analysis.

Sentinel Sites	Initiated on
1. Adhunik Sadar Hospital, Thakurgaon	November 2010
2. District Sadar Hospital, Naogaon	November 2010
3. 100 Bedded District Hospital, Narshingdi	November 2010
4. Adunik District Sadar Hospital, Hobiganj	November 2010
5. District Sadar Hospital, Satkhira	November 2010
6. 250 bedded District Hospital, Cox'sbazar	November 2010
7. 250 Bedded General Hospital, Potuakhali	November 2014
8. Adhunik District Hospital, Joypurhat	November 2014
9. Dhaka Medical College Hospital	January 2015
10. District Hospital, Gazipur	August 2015



Banner of ongoing surveillance at sentinel site



Virological analysis at IEDCR Lab

## Editorial

Influenza is an acute viral infection characterized by fever, headache, muscle aches, fatigue, runny nose, sore throat and cough, although it may be asymptomatic. Complications such as pneumonia, sepsis (blood infection) and secondary bacterial infection can occur. Influenza is transmitted from person to person through respiratory droplets from coughing or sneezing, or direct contact with respiratory secretions.

Influenza pandemics have historically occurred every 10–50 years. During an influenza pandemic, the virus spreads rapidly around the world causing high rates of illness and death – resulting in severe social and economic disruption. It is difficult to accurately predict when an outbreak of pandemic influenza will occur. If an outbreak occurs somewhere in the Asia, it is likely to be difficult to prevent the expansion of infection into Bangladesh. Therefore, while pandemic influenza is expected to infect a large number of people over a long period of time, it is necessary to regard the development of countermeasures against Pandemic Influenza as a critical national crisis management challenge and take measures. Hence, a well developed surveillance system is essential to monitor the trend of the disease and early detection of any novel virus.

The core activities of NISB include improving laboratory and epidemiologic capacity and infrastructure for influenza virologic and disease surveillance, developing and maintaining sentinel hospital-based surveillance for influenza-like illness and severe acute respiratory infections, developing and maintaining surveillance for cases and clusters of respiratory illnesses and training of health care providers.

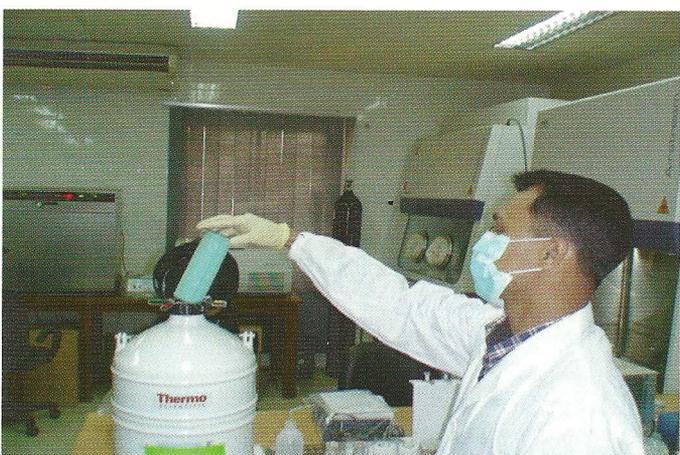


## NISB Activities:

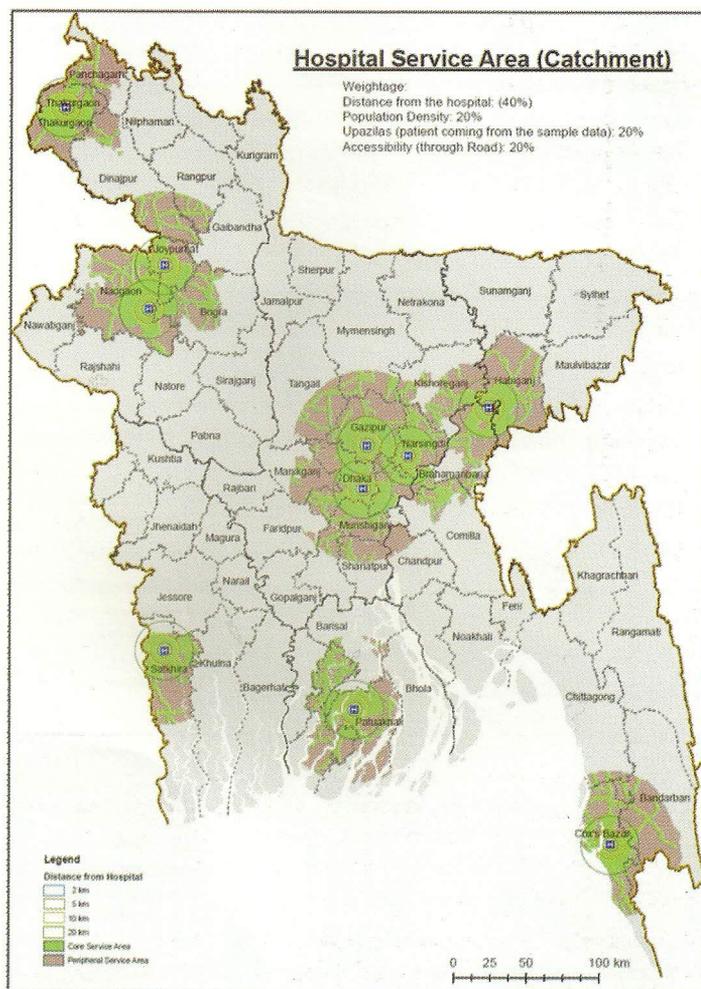
- Presently, surveillance is being conducted in 10 sentinel sites across the country in 7 divisions
- Surveillance sites are adequately and properly staffed with Surveillance physicians, Nurses and Medical technologists
- Trainings (Orientation and refresher) have been provided periodically to the recruited surveillance staff
- Sites are adequately equipped with logistics for sample collection, storage and transportation
- From the year 2014, each site has got a Dry Shipper to facilitate storage and transportation of samples
- Standard Operating Procedures are developed and disseminated to the personnel of sentinel sites as well as of IEDCR
- Case record forms are developed and used to gather necessary Epi and Clinical data from each recruited case.
- Procurements of equipments and consumables for laboratory is going on
- After laboratory analysis of specimens, reports are regularly updated into IEDCR website as well as WHO FluNet and FluID
- Catchment Area Survey has been done in all 10 sentinel sites
- Virology laboratory of IEDCR takes part in external quality assurance program on regular basis
- National Action Plan for NIC is developed and disseminated
- Laboratory biorisk assessment and need assessment have been conducted and disseminated



Dissemination seminar with Surveillance Physician



IEDCR Lab staff demonstrating use of Dry shipper



Location of NISB sentinel sites with catchment areas

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**IEDCR NEWS**

The institute of Epidemiology, Disease Control and Research (IEDCR) was established in 1976. It is the national institute for conducting disease surveillance and outbreak investigation. IEDCR has been engaged in controlling disease and involved in research on events of public health importance. It is also the NIC in Bangladesh. The 8th Global Disease Detection (GDD) Regional centre for US CDC is being hosted by IEDCR.

**Major Activities of IEDCR**

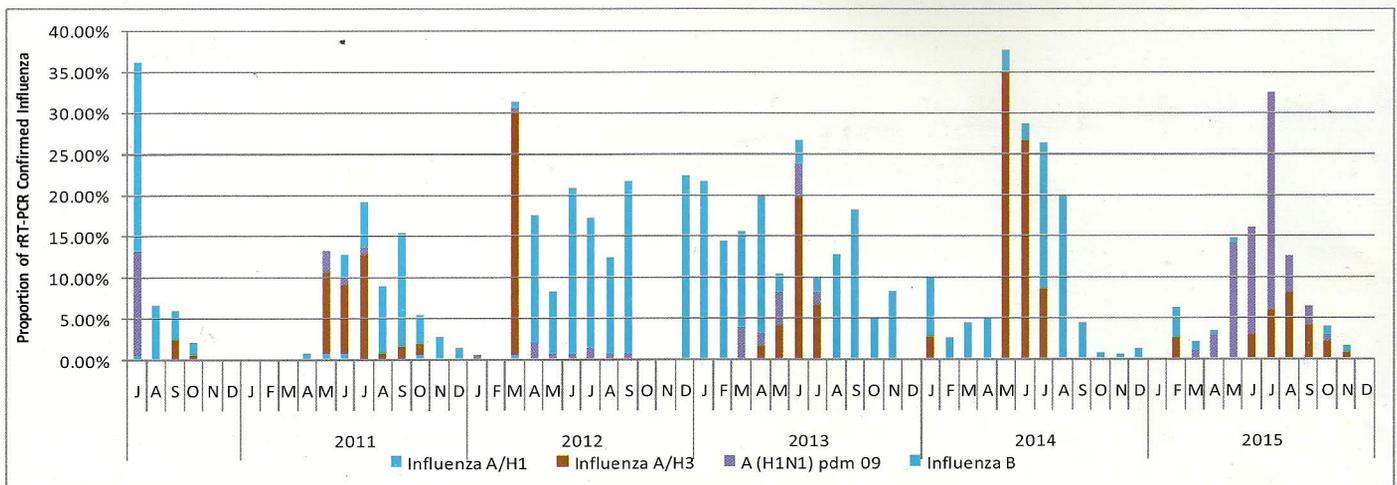
**1. Disease Surveillance:**

- Web Based Integrated Disease Surveillance (WBIDS)
- Event Based Surveillance
- National Influenza surveillance, Bangladesh (NISB)
- Hospital based Influenza Surveillance (HBIS)
- Food Borne Illness Surveillance (FBIS)
- High risk group avian influenza surveillance among live birdhandlers in wet markets of Dhaka City Corporation area
- Nipah surveillance
- Acute meningo-encephalitis surveillance (AMES) focusing Japanese encephalitis and Nipah infection
- Cell phone based disease surveillance system, Bangladesh
- Behaviour & Serosurveillance amongst key population at risk of HIV in selected areas of Bangladesh

- Dengue surveillance
  - Hospital Based rota virus and Intussusceptions Surveillance
- 2. Outbreak Investigations:**
- IEDCR responds to any unusual health events or diseases on an emergency basis.
- 3. Training and Workshops**
- 4. Publication and Guidelines**
- 5. Research**
- 6. Course Conducted in IEDCR:**
- MSc in Applied Epidemiology( FETP,B)
  - MPH in One Health & Biosecurity
  - Short course on Clinical Epidemiology

**Scopes of NISB**

- Improving capacity and activities of the sentinel sites
- Enhancing laboratory capacities
- Pandemic Influenza severity assessment and Estimation of disease Burden
- Implementing the National Action Plan for NIC
- Onsite training of the Surveillance team with new objectives
- Enhance collaboration among national and international partners and stakeholders for coordinated influenza surveillance activities
- Identifying new research opportunities
- Periodic Publication and dissemination of Surveillance and research findings
- Monitoring and Evaluation of Surveillance activities



**Influenza Seasonality Graph**

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