

Bangladesh



Capital: Dhaka
Infant Mortality Rate: 47.3/1,000 live births
Population: 163,654,860 (July 2013 est.)



Overview

The Institute of Epidemiology, Disease Control, and Research (IEDCR) in partnership with the International Centre for Diarrheal Disease Research, Bangladesh (icddr,b) conduct surveillance for emergent and zoonotic strains of influenza and for severe respiratory disease and influenza-like illness in the general population and in hospitals across Bangladesh. In addition, they participate in outbreak investigations of respiratory illness and conduct research studies on seasonal and avian influenza and other respiratory viruses (e.g., estimating disease burden and mortality through enhanced surveillance, assessing pharmacy dispensing practices for respiratory illness, developing and evaluating novel surveillance and diagnostic methods for respiratory diseases, and evaluating the effectiveness of intervention programs, including the use of influenza vaccine in high risk populations). Since 2007, CDC has provided resources, training, and technical support to laboratories at IEDCR and icddr,b to strengthen diagnostics capacity for influenza and other respiratory pathogens.

Highlights

- Estimated nationally representative influenza mortality rates using the enhanced surveillance platform in 2013.
- Leveraged and enhanced the national influenza surveillance platform to detect potential circulation of novel influenza A (H7N9) among poultry and suspected human cases of H7N9 or MERS-Coronavirus infection.
- Estimated the burden of disease in a cost-effective manner using the enhanced surveillance platform.

Surveillance

CDC funding enabled IEDCR and icddr,b to establish Bangladesh's first influenza sentinel sites. Together they have been conducting hospital-based influenza surveillance in 12 tertiary hospitals across the country since 2007. In FY13, the surveillance platform was enhanced by defining the catchment area of the participating hospitals and performing health utilization surveys in these areas. This allows Bangladesh to better estimate its influenza disease and economic burden. The current national influenza surveillance system identifies cases of SARI, ILI, and severe pneumonia in 19 sentinel sites. In addition, an event-based component of the surveillance system identifies clusters of severe disease, and all patients are screened for exposure to sick or dead poultry and tested for influenza A (H5N1) and for the novel H7N9 virus, as needed.

Surveillance Activities

- Collected and routinely tested specimens for influenza from 19 sentinel surveillance sites across the country.
- Continued routinely monitoring and investigating suspected influenza outbreaks.
- Provided detailed surveillance reports to CDC and WHO on a weekly basis during the influenza season
- Reported influenza surveillance results with monthly updates on the IEDCR website.

Laboratory

Since 2007 CDC has provided diagnostic support, resources, training and technical support to laboratories at IEDCR and icddr,b, resulting in strengthened capacity and improved diagnosis of influenza and other respiratory diseases. Influenza specimens (100–200 per year) are routinely sent to CDC for further molecular and antigenic characterization and vaccine strain selection.

In 2007, IEDCR was nominated as a NIC by the WHO and has routinely contributed specimens to the WHO GISRS. An upgrade of IEDCR's BSL-2 laboratory was completed in 2010. State-of-the-art equipment was purchased and the new BSL-2 laboratory is performing real-time and conventional PCR to identify seasonal influenza viruses, and H7N9, H9N2 and H5N1 influenza viruses. In FY 2013, a sequencer was procured and training of NIC staff is taking place. Plans are currently underway to increase the virus isolation and serologic testing capacity of the NIC.

icddr,b houses a modern molecular virology BSL-2 lab, tissue culture capacity, and an animal virology lab, as well as a certified BSL-3 laboratory where virus isolation and culture for highly pathogenic influenza strains can be performed.

Laboratory Activities

- Tested over 10,000 specimens from surveillance activities from October 2012–September 2013. Peak influenza circulation occurs during the rainy season, May–July.
- Integrated new sequencing capacity within several surveillance and research projects.
- Enhanced diagnostic capacity of partner laboratories for the detection of the novel H7N9 strain. icddr,b laboratory participated in the field testing of novel rapid serological assays for influenza-specific antibodies.

Preparedness

IEDCR, with key partners, has periodically updated their pandemic response and avian influenza plan with lessons learned from the pandemic. IEDCR has led several recent trainings for public health officials and health professionals on pandemic preparedness. An emergency operations center (EOC) was built and equipped to help centralize a government response during major outbreaks and pandemics. IEDCR, icddr,b, and the Department of Livestock Services (DLS) participated in joint avian influenza outbreak investigations following a One Health approach.

Preparedness Activities

- Conducted a second self-assessment for influenza pandemic preparedness and response using the standard CDC assessment tool in 2012; strengths and weaknesses were successfully identified.
- Responded to outbreaks and unusual health events or diseases reported directly or indirectly to the Director. National Rapid Response Teams (NRRT)

conduct outbreak investigations with the help of district rapid response and local Upazila rapid response teams. CDC supports the NRRT on suspected influenza outbreaks through engagement of CDC's field staff based in Bangladesh, via technical consultations with subject matter experts in Atlanta, and through provision of diagnostic reagents.

Training

IEDCR has held several trainings to strengthen Bangladesh's capacity to detect, survey, prevent and control influenza and novel pandemic threats.

- Conducted a two-day training on standard operating procedures (SOPs) for laboratory bio-safety and infection control of emerging infectious diseases (EIDs) [September 2013].
- Conducted a capacity building hands-on training course on SOPs for diagnosis of EIDs [September 2013].
- Conducted a dissemination workshop on a) re-assessment of present core alert and response capacities of IHR 2005 at ports of entry, and b) mapping of health risks and resources useful for implementation of IHR [September 2013].
- Conducted a workshop on establishing a laboratory network among public health laboratories [September 2013].
- Conducted training on preparedness, capacity building surveillance, laboratory support and response for zoonotic diseases [July 2013].
- Conducted training on web-based disease surveillance [July 2013].
- Conducted training on disease surveillance for Upazilla-level health officers and medical officers [March 2013].
- Conducted workshops on National Influenza Surveillance, Bangladesh in 2013 for: hospital managers on surveillance site management; surveillance officers on case selection and data and specimen collection; and medical technologists on specimen collection, preservation and transport.

Publications

Nasreen S, Uddin Khan S, Azziz-Baumgartner E et al. Seroprevalence of antibodies against highly pathogenic avian influenza A (H5N1) virus among poultry workers in Bangladesh, 2009. PLoS One. 2013 Sep 5;8(9):e73200. doi: 10.1371/journal.pone.0073200. eCollection 2013.