

Nepal



Capital: Kathmandu

Infant Mortality Rate: 41.76/1,000 live births

Population: 30,430,267 (July 2013 est.)



Overview

Nepal is a mountainous country with most of its 27 million people living in rural areas. Nepal's geographic location, large amount of backyard poultry farming and poultry industry conditions put the country at high-risk for avian influenza outbreaks. Strong surveillance and epidemiology and laboratory capacity are particularly important to help detect and monitor seasonal influenza and any unusual events. Nepal's Patan Academy of Health Sciences (PAHS), a public health science university at Patan hospital, was awarded Nepal's first influenza cooperative agreement in September 2009. The cooperative agreement has strengthened influenza surveillance in Nepal and has supported building capacity in the National Public Health Laboratory (NPHL)/National Influenza Center (NIC), the Patan laboratory and the sentinel hospital sites. Routine ILI and SARI surveillance at Patan Hospital provides consistently reliable and detailed epidemiologic and virologic influenza data. In September 2014, PAHS will begin a five-year sustainability grant in which they propose to review their current system, make adjustments and begin to establish a surveillance system that is sustainable over the long term.

Highlights

- Initiated routine SARI surveillance at Patan Hospital in January 2013.
- Initiated testing for influenza in a new molecular diagnostic laboratory at Patan Hospital in January 2013.
- Coordinated outbreak responses in coordination with Epidemiology and Disease Control Division (EDCD), the Ministry of Public Health (MOPH), and PAHS.

Surveillance

A network of partners consisting of the NPHL/NIC, Walter Reed Research Unit Nepal (WARUN) and PAHS oversee influenza sentinel sites that cover key geographic areas around the country, including areas with a significant poultry industry. PAHS oversees three hospital sites and one peripheral health facility. WARUN oversees two sites and NPHL with the assistance of the MOPH EDCC five sites. There is a strong collaborative relationship between the three surveillance partners who regularly share data, organize trainings together and support each other with technical assistance and resources when needed. A national Influenza Surveillance Network that includes animal health meets quarterly and on an as-needed basis.

Surveillance Activities

- Collected and analyzed ILI epidemiologic data from Patan Hospital since January 2010, and collected specimens from ILI patients at PAHS and peripheral sentinel sites since January 2011.
- Collected extensive denominator data, including the total number of out-patients and in-patients and the number of patients meeting the ILI and SARI case definitions at Patan Hospital.
- Maintained database and analyzed data from 2011, weekly, at PAHS.
- Managed sample collection and cold chain transport to the laboratory from peripheral sites.

Laboratory

PAHS now has a molecular laboratory, with real time RT-PCR, a virologist, and capacity to test ILI and SARI samples. They plan to operate as a unit of the NIC, sharing the influenza testing workload. NPHL was designated a NIC in April 2010. The molecular and virology laboratories are in a new BSL-2 facility where four staff are responsible for specimen extraction, real time RT-PCR detection, cell culture and virus isolation. In addition they have capacity to sequence and characterize by serological and real-time assay.

Laboratory Activities

- Initiated specimen testing at the new influenza molecular laboratory at Patan Hospital in January 2013. From January to August 2013, the lab received 82 samples. Of those tested, 19.5% were positive for influenza.
- Tested more than 2,000 samples for influenza in 2012. From January–July 2013, the NIC and PAHS tested 252 specimens from PAHS managed sentinel sites; 57 (23%) were positive for influenza.
- Submitted PAHS data and reports to the NIC and to the IHR focal point.
- Submitted 50 influenza isolates (35 A (H1N1) pdm09, 5 A (H3), and 10 B isolates) to NIID and the WHO CC, Japan in 2012 and 2013. The isolates were representative of different geographical locations, seasons and clusters of seasonal outbreaks.

Preparedness

In 2012 and 2013, Nepal has had several outbreaks of avian influenza in poultry. There has been a coordinated response with EDCD, the division responsible for outbreak responses that includes animal and veterinary health, medical, surveillance, risk communication, supervision and monitoring teams. During the outbreak response, PAHS staff have been actively involved with collecting and transporting to the NIC for testing human samples from poultry workers, exposed individuals and ILI symptomatic cases. To date, no human avian influenza A (H5N1) infections have been detected. The Government of Nepal is collaborating with several national and international partners on their response.



Representatives from CDC and Nepal during a laboratory assessment.

Preparedness Activities

- Developed routine simulation exercises to reinforce staff skills.
- Developed rapid response teams at district and sub-district levels, as well as remote areas.
- Acclimatized media personnel and other stakeholders to addressing disasters and/or outbreak situations.
- Trained nurses and doctors at sentinel sites to handle avian and seasonal influenza.
- Stockpiled Tamiflu so that when it is needed, it can be provided to health facilities and hospitals.
- Conducted the second self-assessment for influenza pandemic preparedness and response using the standard CDC assessment tool. Assessed areas of improvement and areas where more work is needed.

Training

- Provided technical support in the regional UN Food and Agricultural Organization Field Epidemiology Training for veterinarians.
- Attended the WHO/CDC Influenza Data Management Training in Thailand, February 11–15, 2013.
- Received reagents for respiratory syncytial virus (RSV) testing and PCR training for influenza and RSV.
- Received PCR and virus characterization training from Pune, India for one month.
- Conducted training for 400 hospital staff on infection prevention (ongoing until Dec 2013).
- Conducted training for nurses on surveillance definitions, selecting patients, maintaining the cold chain, and collection, storage and shipment of specimens at Nepalgunj Medical College in August 2013.

Publications

Molecular Epidemiology and Serological Characterization of Influenza Virus Infection in Nepal [abstract]. In: Options for the Control of Influenza Conference; September 5–10, 2013; Cape Town, South Africa.