

MONGOLIA

OVERVIEW

Due to rapid growth in population size and urbanization, Mongolia has been experiencing a serious public health challenge with influenza-like illness (ILI) since the 1970's. The National Influenza Center (NIC) was established in 1974 and joined the WHO Global Influenza Surveillance and Response System (GISRS) in 1978. The U.S. Centers for Disease Control and Prevention's (CDC) Influenza Division began working with Mongolia in 2004 through a capacity building cooperative agreement to improve influenza surveillance, laboratory capacity, and preparedness activities. This partnership restored the system and improved its quality. After 10 years of capacity building and sustainability support, the country has moved to maintenance support through a maintenance cooperative agreement. This cooperative agreement provides support to the existing influenza surveillance sentinel sites to continue the influenza reporting system; the collection of timely and high-quality epidemiologic data; the provision of supportive supervision and continued trainings; and to complete assessment and evaluation activities in the sentinel sites.

SURVEILLANCE

The new surveillance system was established with financial support from CDC through the project "Development of Laboratory-based Surveillance System Network". The two-stage project successfully completed its mission in 2013–2014 and CDC continues supporting surveillance activities in the country through a maintenance program.

At present, nationwide there are 152 outpatient and 37 hospital-based influenza sentinel surveillance sites (ISSS) involved in surveillance activities. The ISSS's data on influenza-like illness (ILI) are routinely entered into an online information system (<http://www.flu.mn>).

The NIC has developed and installed an online program (FLULAB 1.0) to provide information on database samples, laboratory testing protocols, inventory system for reagents, and supplies. Both epidemiologic and virologic databases (FLU LAB 1.0), hosted on the National Center of Communicable Diseases (NCCD) servers, are important for monitoring ILI and severe acute respiratory infection (SARI) trends and virus circulation at the national level. Information is provided to health authorities and the general public through the [www.flu.mn website](http://www.flu.mn).

HIGHLIGHTS

- Conducted refresher training for four regional laboratory staff in handling specimens, laboratory techniques, diagnostic tests for influenza, and other emerging viruses.
- Obtained approval for the Plan of Influenza Surveillance Sustainability (PISS) covering the period 2014–2018 by a Minister of Health order.
- Continued routine real time reporting of ILI and SARI surveillance data online through the website www.flu.mn.

An MOH order decreed that the sentinel sites be divided into two categories instead of three. Surveillance activities including data collection, data analysis, interpretation, and feedback reports which are completed on a weekly basis. NIC specialists have developed an assessment questionnaire for ISSS's depending on their service responsibilities, and assessments were performed in November 2014 and April 2015.

SURVEILLANCE ACTIVITIES

- Conducted a monthly joint audio-conference with specialists from the Maternal and Child Health Research Center for ISSS's regarding ILI/SARI surveillance and clinical management.
- Assessed seven aimags (administrative subdivision) with support from WHO's PIP Project.
- Initiated a study on the "Epidemiology of influenza infection among pregnant women and children under 6 months" in Baganuur District, Ulaanbaatar City with technical and financial support from Tohoku University, Japan.
- Conducted supervisory visits to sentinel sites in Ulaanbaatar and 11 aimags.
- Organized the 7th National Influenza Workshop (NIW7) with 200 participants including Dr. N. Udval, Minister of Health, and other stakeholders (October 2014).



LABORATORY

The influenza virologic surveillance system in Mongolia is based on weekly collection of samples from ISSS's and testing by real-time RT-PCR for detection of influenza and other respiratory viruses at the Virology Laboratory (VL) NIC, NCCD and four regional laboratories throughout the country. The VL is routinely performing influenza virus isolation, gene sequencing, and drug resistance detection and reporting results.

The follow-up training for four regional laboratory staff in handling specimens, real-time RT-PCR techniques and other diagnostic tests for influenza and other emerging virus detection and subtyping is conducted by virologists in the VL. The VL, NIC sent an external quality assessment panel for influenza virus detection by RT-PCR to regional laboratories once a year and provided individual feedback. The NIC provides the required reagents, kits and supplies for regional virology laboratories through the CDC project fund.

The web-based FLULAB (1.0) Program, developed with project support, stores sample information and laboratory testing protocols, provides an inventory system for reagents and supplies and supports data analysis and feedback reporting; it has been in routine use since the 2012–2013 influenza season. The influenza epidemiologic and virologic database, hosted on NIC/NCCD servers, is a key point for monitoring ILI and SARI trends and virus circulation at the national level, and information is provided to health authorities and the general public through the www.flu.mn website.

LABORATORY ACTIVITIES

- Tested 8,656 samples from 126 sentinel sites; 4,885 samples were collected from hospitalized patients, and 3,771 samples were collected from outpatients.
- Implemented activities in two new regional virology laboratories in Dornod and Khovd provinces in February 2014, and optimized the real-time RT-PCR platform for influenza and other respiratory pathogens.
- Sequenced the HA gene of nine influenza viruses and NA gene of 11 during the 2013–2014 season and sequenced the HA, NA, MP genes of 15 influenza viruses in 2014–2015; deposited results in GenBank.

- Participated in WHO's External Quality Assessment Project (EQAP) Panel 12 in July 2013 and Panel 13 in June 2014. Scored 100%.
- Participated in the Influenza Quality Assessment Panel for Influenza Molecular Diagnostic Evaluation from CDC Atlanta in December 2014. Scored 100%.
- Conducted follow-up visits to regional laboratories to provide technical training and assistance.
- Provided the necessary reagents, kits, and laboratory supplies for use in regional virology laboratories.

PREPAREDNESS

The NIC has developed the Plan of Influenza Surveillance Sustainability, and in October 2014, it was approved by a Minister of Health order. This order replaced all previous Minister of Health orders related to influenza epidemiologic and virologic surveillance activities.

Based on the order, in January 2015 Mongolia adopted case definitions for ILI and SARI, as well as age groups, and sample collection forms reflecting the Global Influenza Surveillance Standard recommended by WHO. During the NIW7, all 21 aimags and Ulaanbaatar City sentinel surveillance sites' main officers and department heads were trained on the additional updates included in this issued order.

NIC staff have recommended implementation at the local level. The national and regional virology laboratories have real-time RT-PCR capacity to detect influenza and other emerging viruses.

PREPAREDNESS ACTIVITIES

- Assessed influenza surveillance activities in the field using the questionnaires developed by NIC staff.
- Designated a team of specialists to visit CDC Beijing to study Ebola virus and infection control for other potential emerging pandemic viruses.

TRAINING

- Organized training on sample collection from SARI cases for nurses working in influenza surveillance hospitals in southern border provinces (October 2013).
- Organized training on “Laboratory Biosafety and Infection Control of Emerging Infectious Diseases” in 2014; 80 specialists from Health, Veterinary and Inspection Agency, Border Control Points in Ulaanbaatar were in attendance.
- Assigned virologists to perform follow-up visits to regional laboratories and provide technical advice to laboratory staff on testing protocols and training on ABI 7500 real-time RT-PCR system maintenance and calibration.
- Organized refresher training for nurses and physicians working at sentinel sites on sample collection, storage, and transport.
- Conducted on-the-job training on allelic discriminating methods for detecting drug-resistant influenza viruses and protocol optimization for real-time RT-PCR used to discriminate influenza B virus lineages for laboratory staff (training provided by Dr. Mina Nakauchi Hori, Senior Researcher, NIID, Tokyo, Japan).

INFLUENZA VACCINE ACTIVITIES

- Purchased 30,000 (2013–2014) and 50,000 (2014–2015) doses of influenza vaccines (Mongolian Government).
- Distributed vaccine to all 21 provinces and Ulaanbaatar City’s Health Departments and other medical facilities nationwide advising vaccination of health care workers as well as other risk groups including specialists and staff in emergency, military, and transportation agencies.
- Allocated 3,000 to 5,000 doses at the NIC for use on a voluntary basis.
- Utilized 100% of the purchased doses of vaccine during the 2013–2014 season and 97.4% during the 2014–2015 season. Among the vaccinated during both seasons, 35.3% to 74.5% were people aged 20 to 49 years and about 0.5% were people 65 years and older.

