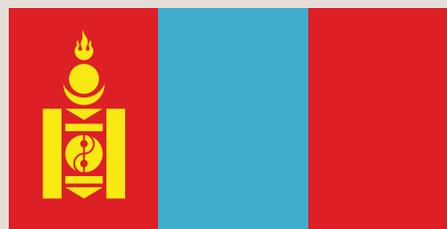
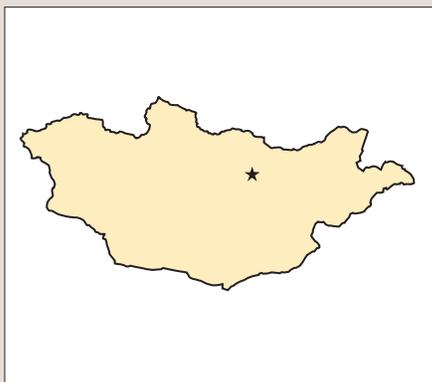


Mongolia



- **Capital:** Ulaanbaatar
- **Area:** 1,564,116 sq km
- **Population:** 3,179,997 (July 2012 est.)
- **Age Structure:** 0-14 years: 27.3% (male 437,241/female 419,693); 15-64 years: 68.7% (male 1,074,949/female 1,076,455); 65 years and over: 4% (male 54,415/female 70,565) (2011 est.)
- **Life Expectancy at Birth:** Total population: 68.63 years; male: 66.16 years; female: 71.23 years (2012 est.)
- **Infant Mortality Rate:** Total: 36 deaths/1,000 live births; male: 38.94 deaths/1,000 live births; female: 32.91 deaths/1,000 live births (2012 est.)
- **Literacy Rate:** Total population: 97.8%; male: 98%; female: 97.5% (2000 census)
- **GDP:** \$13.28 billion (2011 est.)
- **GDP per Capita:** \$4,500 (2011 est.)

Highlights

- A special program has been developed for the real-time, on-line reporting of influenza and influenza-like illness (ILI) events. Patient data is linked to specimens sent to the National Influenza Center (NIC) from influenza sentinel surveillance sites. The results of the laboratory testing are then made accessible to sentinel sites online. On-site trainings were organized and this reporting system is now routinely used.
- Weekly audio-conferencing from the NIC with all surveillance sites using Skype is also routinely used.
- Multiplex real-time PCR testing for respiratory syncytial virus (RSV), human parainfluenza viruses (HPIV), metapneumoviruses, rhinoviruses, adenoviruses, bocaviruses, enteroviruses and coronaviruses of selected samples negative for influenza viruses have become part of routine investigation.

U.S. CDC Direct Country Support

Mongolia is in the third year of a five-year sustainability cooperative agreement with the U.S. Centers for Disease Control and Prevention (CDC) titled, *Sustainable Influenza Surveillance Network* (2009–2014). The previous five-year capacity-building agreement, *Influenza Surveillance Network* was completed in 2009.

ILI has been a serious public health challenge in Mongolia since the 1970s, due to rapid growth in population size and urbanization. The NIC in Mongolia was established in 1974, and joined the WHO Global Influenza Surveillance and Response System (GISRS) in 1978. The system was damaged seriously due to economic difficulties in the 1990s in connection with political and economic transition. The CDC-Mongolia cooperative agreement activities that began in 2004 have restored the system and improved its quality to meet the requirements of WHO's NIC terms of reference and continued NIC designation of the laboratory in Ulaanbaatar.

Surveillance

The established outpatient and inpatient surveillance network covers the whole country and conducts ILI surveillance according to the rules approved by the Health Minister's order, issued in 2010. The surveillance sites have routinely entered ILI data into Mongolia's web-based, Flu-Information-System (FIS) since October 2010 and collect nasopharyngeal swabs from patients who meet case definitions for ILI and severe acute respiratory infection (SARI). FIS allows surveillance sites to access laboratory results from their own sites and to see surveillance summary reports in real time.

Surveillance Activities

- Countrywide, the outpatient surveillance sites reported 1,393 ILI morbidity per 10,000 population during the 2010–2011 seasons or 5.2% of all registered outpatient visits.
- Thirty-seven, hospital-based surveillance sites in Ulaanbaatar, and provincial centers reported diagnosed pneumonia and SARI cases among hospitalized patients; 19,603 pneumonia cases or 3.5% of all hospitalizations with 55 (0.3%) deaths registered.
- Weekly surveillance information is posted on Mongolia's NIC website, www.flu.mn, in both Mongolian and English and a monthly, audio conference among sentinel sites is conducted using Skype.
- Quarterly assessments are accomplished using regular performance criteria.

Laboratory

Influenza virological surveillance in Mongolia is based on a weekly collection of specimens from surveillance sites and detection and identification of influenza viruses by real-time RT-PCR. Influenza positive specimens are inoculated in MDCK cells and representative isolates are sequenced and submitted to GenBank. The susceptibility of viruses to neuraminidase (NA) inhibitors (oseltamivir and zanamivir), are examined by chemiluminescent assay using the NA-Star kit and sequence analysis of the NA gene if the inhibitory concentrations of 50% value increased. Randomly selected samples from influenza negative specimens are tested by real-time multiplex PCR for detection of other respiratory viruses. The virology laboratory at the NIC joined the WHO External Quality Assessment Program at the beginning of 2007 and the last eight panels have been tested with 100% accuracy. Also, the virology laboratory participated in the CDC pilot influenza performance evaluation panel in September 2011. Performance in the first panel from CDC was 100%.

Laboratory Activities

- Four hundred and seventy-one (11.2%) influenza viruses were detected by real time RT-PCR from 4,197 samples. Among them, 361 (76.3%) were A(H3N2) influenza viruses, 103 (21.8%) were H1N1 pandemic viruses and 7 (1.5%) were B viruses.
- One hundred and six (22.5%) influenza viruses were isolated by inoculation of MDCK cell culture from 471 influenza positive samples by RT-PCR. Among them, 71 (67.0%) isolates were A(H3N2) and 35 (33.0%) isolates 2009 A(H1N1)pdm viruses.
- Sixty-six influenza virus strains were tested for oseltamivir resistance by a chemiluminescence-based NA inhibition quantitative assay and all viruses tested were sensitive to oseltamivir and zanamivir.
- The HA, PB2, PB1, NP, NA, MP, NS and PA genes of three representative influenza strains were sequenced and submitted to and released by GenBank.
- Twenty novel influenza isolates were sent to the WHO Collaborating Centers (CC) in Tokyo and Atlanta for more detailed analyses.

- The multiplex RT-PCR detection of non-influenza respiratory pathogens has become routine surveillance. These tests were conducted on 342 clinical samples selected at random from those specimens testing negative for influenza during the 2010–2011 season.

Preparedness

Health facilities nationwide prepare for influenza pandemics and seasonal epidemics according to the revised guideline Influenza Pandemic Preparedness and Response issued by Mongolia's MOH in April 2010.

Preparedness Activities

- The “National Influenza Leaders Workshop” was held in October 2010; 265 participants representing all concerned parties convened and issued new recommendations for the government and other stakeholders.
- There has been an increase in the number of people vaccinated against seasonal influenza, and an increase in the number of vaccines purchased by the Government of Mongolia or received as donations from other countries and organizations. Approximately 800,000 people were vaccinated with the 2009 H1N1 pandemic vaccine according to the national plan during the 2009–2010 influenza season. During the 2010–2011 influenza season, 1,800 health care workers were vaccinated with seasonal trivalent vaccine.

Training

- Two training workshops in Mongolia's web-based FIS were organized at the National Center of Communicable Diseases (NCCD). The first group was trained in September 2010 and included 70 epidemiologists and statisticians from surveillance sites in Ulaanbaatar. The second group was held for 35 participants representing 16 provinces, and took place in October 2010. During the training, all participants were provided with flash-disks containing FIS program materials and microphones for audio conferencing with Skype.
- The first surveillance site training workshop took place in early September 2011 at the NCCD. The main goal of this workshop was to improve the participation of sites in surveillance activities. The workshop was attended by 250 participants including governors from 21 provinces, epidemiologists and statisticians from Ulaanbaatar and all provinces in Mongolia, and the heads of family group practices.
- A Mongolian epidemiologist attended the WHO “Consultation on Global Tools and Surveillance Manual on Influenza” in Geneva, Switzerland, in March 2011.
- A Mongolian epidemiologist and a virologist attended the “Workshop on Scientific Writing” in Seoul, Republic of Korea in April 2011.

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