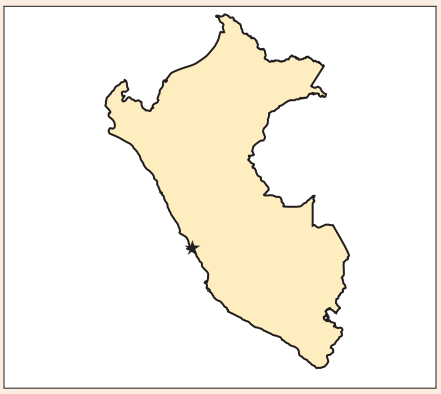
Peru



- **Capital:** Lima
- **Area:** 1,285,216 sq km
- **Population:** 29,549,517 (July 2012 est.)
- **Age Structure:** 0-14 years: 28.5% (male 4,245,023/female 4,101,220); 15-64 years: 65.1% (male 9,316,128/female 9,722,258); 65 years and over: 6.4% (male 885,703/female 978,611) (2011 est.)
- **Life Expectancy at Birth:** Total population: 72.73 years; male: 70.78 years; female: 74.76 years (2012 est.)
- **Infant Mortality Rate:** Total: 21.5 deaths/1,000 live births; male: 23.78 deaths/1,000 live births; female: 19.12 deaths/1,000 live births (2012 est.)
- **Literacy Rate:** Total population: 92.9%; male: 96.4%; female: 89.4% (2007 Census)
- **GDP:** $301.5 billion (2011 est.)
- **GDP per Capita:** $10,000 (2011 est.)

Highlights

General Directorate of Epidemiology (DGE) staff participated in the publication of several articles on influenza:

- "Circulating strains of human respiratory syncytial virus in Central and South America". Sovero M, Garcia J, Kochel T, Laguna-Torres VA, Gomez J, et al. (2011) PLoS ONE 6(8): e22111. doi:10.1371/journal.pone.0022111.
- "Mortalidad relacionada a influenza A H1 N1 en el Perú durante la pandemia en 2009–2010." Suárez-Ognio L, Arrasco J, Gómez J, Munayco C, Vílchez A, Cabezas C, Laguna-Torres V. Revista Peruana de Epidemiología. Vol. 15, Nº 1, 2011.
- "Spatial and Temporal Characteristics of the 2009 A/H1N1 Influenza Pandemic in Peru". Chowell G, Viboud C, Munayco CV, Gómez J, Simonsen L., et al. (2011) PLoS ONE 6(6): e21287. doi:10.1371/journal.pone.0021287.
- "The 1918-1920 influenza pandemic in Peru". Chowell G, Viboud C, Simonsen L, Miller MA, Hurtado J, Soto G, Vargas R, Guzman MA, Ulloa M, Munayco CV. Vaccine. 2011 Jul 22;29 Suppl 2:B21-6.

Implementation of enhanced surveillance of severe acute respiratory infections (SARI) in seven hospitals.

U.S. CDC Direct Country Support

The cooperative agreement *Sustaining Influenza Surveillance Networks and Response to Seasonal and Pandemic Influenza* began in August 2010. FY 2011 was the first year of funding through the agreement. The Peruvian Ministry of Health (MOH) and DGE are working with the U.S. Centers for Disease Control and Prevention (CDC) under this agreement to strengthen surveillance and detection for seasonal, avian, and human influenza in the country. Peru's influenza surveillance system uses sentinel sites to identify influenza-like illness (ILI) and SARI case-patients throughout the country. Laboratory testing for influenza takes place in the 15 regional laboratories, as well as the National Influenza Center (NIC), located in the National Institute of Health (INS) in Lima.

Surveillance

In 2006, the MOH sub-committee for influenza surveillance invited the Virology Department of the U.S. Naval Medical Research Unit No. 6 (NAMRU-6) in Lima to assist in increasing surveillance coverage by establishing new sentinel sites in order to strengthen the surveillance program. Since then, NAMRU-6 has augmented the existing program by supporting the collection and processing of samples at new sentinel sites as well as providing these data to DGE and INS.

Sentinel surveillance is conducted in 50 health centers throughout the country. This includes both ILI and SARI surveillance. SARI surveillance took place at 21 sentinel hospitals but has been reduced to seven sentinel hospitals to enhance SARI surveillance. ILI surveillance continues to take place at all 50 health centers throughout the country.

Surveillance Activities

- Advocacy meetings to develop ways to raise awareness regarding influenza to government organizations and the public.
- Meetings to analyze the influenza surveillance system and methods for improvement.

Laboratory

Peru has 15 regional laboratories, all of which receive respiratory samples from influenza sentinel sites. Samples are tested by immunofluorescent assays (IFA), and those that are positive are then sent to the country's NIC in Lima for testing by RT-PCR. At the NIC, specimens are tested the same day they are received and results are reported within 72 hours. Influenza positive samples are also cultured in MDCK cells. Positive isolates are shared with CDC at least three times per year for further characterization.

Preparedness

Peru has rapid response teams (RRT) in the regional governments. They recently updated and disseminated specialized guides on influenza outbreak management to each regional unit.

Preparedness Activities

- Updated new equipment for their emergency operation center (EOC).
- Conducted an annual workshop for RRT concerning the "Monitoring Evaluation Preparation and Response to Influenza".

Training

- Provided training to clinical staff, epidemiologists, and laboratory staff on monitoring of SARI.
- Provided training to information technology staff to manage and operate the web-based system that connects to all the sentinel units.
- Developed five macro-regional workshops on update on surveillance of influenza and SARI for priority staff at 70 hospitals.

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