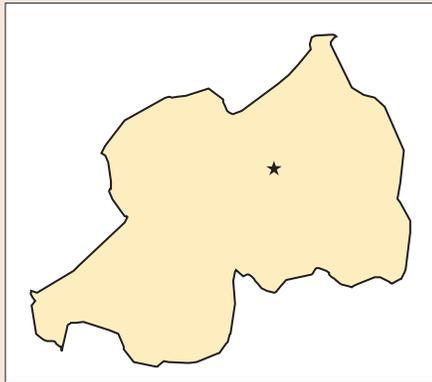


Rwanda



- **Capital:** Kigali
- **Area:** 26,338 sq km
- **Population:** 11,689,696 (July 2012 est.)
- **Age Structure:** 0-14 years: 42.9% (male 2,454,924/female 2,418,504); 15-64 years: 54.7% (male 3,097,956/female 3,123,910); 65 years and over: 2.4% (male 110,218/female 164,913) (2011 est.)
- **Life Expectancy at Birth:** Total population: 58.44 years; male: 56.96 years; female: 59.96 years (2012 est.)
- **Infant Mortality Rate:** Total: 62.51 deaths/1,000 live births; male: 66.09 deaths/1,000 live births; female: 58.83 deaths/1,000 live births (2012 est.)
- **Literacy Rate:** Total population: 70.4%; male: 76.3%; female: 64.7% (2003 est.)
- **GDP:** \$13.46 billion (2011 est.)
- **GDP per Capita:** \$1,300 (2011 est.)

Highlights

- Two influenza manuscripts were developed and accepted for publication in peer-reviewed journals.
- For the first time, epidemiological and virologic data were reported in FluID and FluNet.
- Influenza-like illness (ILI) and pneumonia in children younger than five were included in the Integrated Disease Surveillance and Response (IDSR) guidelines for the first time.
- The U.S. Centers for Disease Control and Prevention (CDC) donated a QIAcube extractor to the National Reference Laboratory (NRL).

U.S. CDC Direct Country Support

Fiscal Year 2011 is the last year of the four-year grant between CDC and the Rwanda Ministry of Health's (MOH) Center for Treatment and Research on AIDS, Malaria, Tuberculosis and Other Epidemics (TRAC Plus). The cooperative agreement *Preparedness and Response to Avian and Pandemic Influenza in Rwanda* was formed with the objective of building capacity to strengthen preparedness and communication for avian and pandemic influenza, initiate human influenza surveillance, and develop a rapid response team at national and subnational levels.

Country support included the following: procurement and maintenance of laboratory equipment, joint quarterly supervision of sentinel sites, provision of laboratory reagents, joint training of surveillance officers and health care workers on virologic and epidemiological surveillance and technical assistance for data analysis, and manuscript writing and publication. The cooperative agreement has strengthened influenza surveillance in Rwanda and has supported building capacity, which enhanced the level of preparedness and response of the country.

Surveillance

Influenza sentinel surveillance (ISS) for influenza-like illness (ILI) and severe acute respiratory infection (SARI) began in Rwanda in July 2008. It is established in six sentinel hospitals: two referral hospitals (University Teaching Hospital of Kigali and University Teaching Hospital of Butare) and four district hospitals (Gihundwe, Kibagabaga, Kibungo and Ruhengeri) representing the country's five provinces. ISS is conducted in the outpatient department, and in the pediatric, internal medicine, emergency and intensive care wards.

At these sites, persons older than eight weeks are assessed for SARI as part of routine influenza surveillance activities. Identified SARI cases are assessed for high-risk exposures and underlying medical conditions. Surveillance officers (trained nurses or laboratory technicians) at each of these sites are aware of the need to refer all possible high-risk cases to TRAC Plus for further evaluation. These activities are detailed in a complete protocol for influenza sentinel surveillance and in the standard operating procedures for each sentinel site.



The bustling capital of Kigali, Rwanda.

Surveillance Activities

- The MOH's Epidemic Infectious Diseases Division (EID), in collaboration with the NRL and CDC, conducted four quarterly supervisory visits to the six sentinel sites.
- A total of 1,464 questionnaires were entered into the central database.
- The senior influenza surveillance officer analyzed data and produced monthly epidemiology and virology reports.
- A monthly summary of laboratory and epidemiological data was sent to sentinel sites and to Rwanda Biomedical Center, MOH and CDC.
- Weekly aggregated data was reported via FluID.
- The Integrated Disease Surveillance and Response guidelines were reviewed and updated to include ILI and SARI case definitions.
- A manuscript describing influenza sentinel surveillance in Rwanda during 2008–2010 was written and accepted for publication in *Journal of Infectious Diseases*.
- A manuscript describing the 2009 H1N1 pandemic and response in Rwanda was written and accepted for publication in *PLoS ONE*.
- EID and NRL conducted a joint seasonal influenza outbreak investigation in Mpanga and Miyove Prisons.
- Three epidemiologists and one laboratory scientist attended the Second Annual African Network for Influenza Surveillance and Epidemiology (ANISE) Meeting in Accra, Ghana and gave two oral and three poster presentations.

Laboratory

The National Reference Laboratory in Kigali has been the National Influenza Testing Centre since 2008. The laboratory is a Biosafety Level II (BSL-2) with some enhanced BSL-3 procedures and has capacities to perform molecular biology testing (PCR) services. It has supported the Influenza Sentinel Surveillance Network with RT-PCR assays for detection of seasonal human influenza A (H1), (H3), and B viruses, avian influenza A (H5N1) viruses and influenza A(H1N1)pdm09 viruses using CDC-provided primers/probes and protocols. Samples are collected and transported from the six sentinel sites throughout Rwanda from influenza-like illness (ILI) and severe acute respiratory infection (SARI) cases. As of September 31, 2011, over 4,976 respiratory specimens were tested; 15% (732/4976) were positive. Of the 732 specimens testing positive to influenza, 115(15.7%) were influenza A (H3); 20(2.7%) were seasonal influenza A (H1); 530(72.4%) were influenza A (H1N1)pdm09, and 67(9.2%) were influenza B viruses.

Laboratory Activities

- Tested a total of 1,464 influenza specimens from sentinel hospitals.
- Reported weekly test results to sentinel sites.
- Reported on a weekly basis to FluNet as part of the World Health Organization (WHO) Global Influenza Surveillance and Response System (GISRS).
- Conducted four supervisory visits to sites and provided logistical support to sentinel sites in the influenza surveillance network.
- Purchased an ice machine.
- Received a donated QIACube extractor from CDC.
- Conducted a joint seasonal influenza outbreak investigation in prisons.

Preparedness

Rwanda's national pandemic disaster response tabletop exercise commenced on July 11, 2011, with preliminary briefings and training for all participants on International Health Regulations 2005 (IHR), United Nations Sphere Guidelines, and other disaster/medical issues which would impact preparation for and response to a severe global pandemic.

The exercise was designed to examine the issues associated with a response to a global influenza pandemic by the Rwandan government, non-governmental organizations, medical institutions and international/regional partner organizations. Participants included organizational leaders who were likely to have a significant role in pandemic response operations. The exercise was a three-day scenario-driven event that incorporated a myriad of complex and challenging injects designed to elicit participants' response and expose gaps in existing plans, policies and procedures. The scenario focused on a global influenza pandemic beginning in Southeast Asia and progressing into a global humanitarian emergency with significant impact to Rwandan society.

Preparedness Activities

- Held the national pandemic exercise in Gisenyi, July 11–15, 2011. It was supported by the U.S. Africa Command, the Center for Disaster and Humanitarian Medicine, and the U.S. Agency for International Development (USAID).
- Captured the following key issues by participants during the post-exercise review and gap analysis:
 - Lack of a comprehensive national all-hazards disaster plan and pandemic preparedness and response plan.

- Lack of disaster management training and exercises at all levels of government.
- Lack of incident command system.
- Lack of adequate stockpiled equipment and supplies for disaster response.
- Need for reasonably robust national disaster operations center that is capable of monitoring disaster situations, coordinating response efforts, and providing command and control.

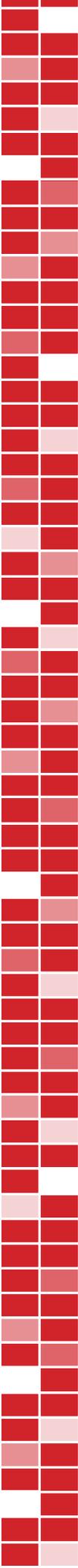
Training

During 2010–2011, the following trainings were organized in and outside of Rwanda to ensure the functioning of the influenza sentinel surveillance network; collection of good quality data; and data analyses and integration of influenza into routine surveillance:

- Refresher training on epidemiological and virologic surveillance of influenza for 25 health care providers (four doctors, 19 nurses, one laboratory technician, and one monitoring and evaluation expert) from Kibungo Sentinel Hospital.
- Refresher training on epidemiological and virologic surveillance of influenza for 30 health care providers (two doctors, 25 nurses, one laboratory technician, one monitoring and evaluation expert, and one human resources person) from Ruhengeri Sentinel Hospital.
- Refresher training on epidemiological and virologic surveillance of influenza for 13 health care providers (two doctors, five nurses, and one laboratory technician from Kibagabaga sentinel site, and four nurses and one laboratory technician from University Teaching Hospital of Kigali).
- The Principal Investigator and the Business Official attended training on grant administration for grantees.
- The CDC Avian Influenza Specialist attended a training module on project officer roles, grants, contracts and cooperative agreements in Kampala, Uganda.
- The CDC Avian Influenza Specialist attended training on leadership education and development at CDC-Rwanda.
- Three epidemiologists and two laboratory technicians at the central level were trained to report aggregated data into the WHO's FluID.



An influenza surveillance nurse obtaining a nasopharyngeal swab from a pediatric ILI case at a local hospital, Rwanda.



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