# TUNISIA



Professor Afif Ben Salah giving a presentation on influenza at a meeting.

## OVERVIEW

The U.S. Centers for Disease Control and Prevention's (CDC) five-year capacity building cooperative agreement with Institut Pasteur de Tunis (IPT) began in September 2013. The project aims to gradually address all gaps in influenza surveillance in Tunisia, building on the previous strengths of the system. The main objective is to build an appropriate and effective surveillance and control system compliant with international standards of quality and sustainability. Specifically, it aims to conceive and implement an integrated plan for influenza surveillance and control; to develop an information management system (IMS) for the automatic achievement of needed tasks and functions; to develop a training plan for all actors in influenza surveillance and control; to prepare for effective interventions in a sustainable manner; to develop a quality plan to foster good practices; to enhance the preparedness for a potential pandemic; and to develop a communication plan to increase awareness and improve behaviors in order to reduce the risk of transmission.

## SURVEILLANCE

Prior to the cooperative agreement influenza surveillance in Tunisia consisted of sentinel surveillance for influenza-like illness (ILI) at 268 (10%) primary health care centers. Severe disease surveillance was limited to identification of viruses by the National Influenza Center (NIC) on request from different intensive care units and pneumology wards across the entire country.

## HIGHLIGHTS

- Developed surveillance protocol (data collection forms and procedures).
- Strengthened security for both influenza surveillance staff and patients.
- Trained all personnel involved in the influenza program on the new surveillance application.
- Produced a surveillance manual for influenza.

In 2014, severe acute respiratory infection (SARI) surveillance was formally started and seven SARI sites were established to provide coverage for the country. This system allows the identification of circulating viruses each season. However because thorough clinical and epidemiological data are not recorded for severe cases, these cases are not typically captured by the surveillance system. The burden of disease is estimated using the proportion of all healthcare visits attributable to ILI. This method does not account for severe or fatal infections. Parameters of transmission are not estimated.

Recently, using support from CDC the Ministry of Health implemented an electronic surveillance system to improve the quality and completeness of surveillance data related to acute respiratory infection (ILI and SARI cases related to influenza and other pathogens). This project provides the opportunity to improve surveillance of influenza and other respiratory viruses, including emerging and novel agents, by integrating SARI surveillance and strengthening the capacities of the NIC so that it will evolve into a regional WHO Collaborating Center (CC) (BSL3 laboratory with capacity to culture respiratory viruses).

To improve the influenza surveillance system and to ensure effective preparedness, Tunisia reviewed and produced a new plan for the influenza surveillance network. Tunisia also strengthened sentinel surveillance by establishing seven new SARI sites and 24 ILI collaboration centers, and by updating and standardizing data collection forms for SARI and ILI.

### SURVEILLANCE ACTIVITIES

- Established a sampling scheme to ensure the validity of inferences regarding the burden of influenza.

- Conducted training workshops to enhance the skills of health workers in sampling specimens.
- Strengthened the surveillance system with the addition of seven SARI sites in 2014, including one pediatric site.

## LABORATORY

Since 1980, the NIC in Tunisia has operated as part of the virology unit of the microbiology laboratory of Charles Nicolle Hospital in Tunis. Samples are collected from the sentinel surveillance network covering the 24 governorates and state or private hospitals and transported to the laboratory for analysis. Since 2008, first-line technology used is the real-time RT-PCR following protocols validated by WHO and CDC. Collaboration with different teams from different world renowned laboratories (WHO CC London, CDC Atlanta, NIC of Madrid) has enabled the laboratory to ensure reliability of results and a mastery of molecular biology techniques applied to surveillance. Influenza virus typing, subtyping, RT-PCR and sequencing are routinely performed. For the 2013–2015 influenza seasons, the quality of biological surveillance was maintained despite the safety challenges within the country.

### *LABORATORY ACTIVITIES*

- Processed and tested 1,706 specimens.
- Participated in WHO's External Quality Assessment Project (EQAP) with a score of 100%.
- Detected 347 influenza viruses: 102 were influenza A(H3N2); 119 were influenza A (H1N1) pdm09; and 126 were influenza B.
- Conducted trainings on nasopharyngeal sampling to improve the quality of samples and standardize procedures.

## TRAINING

A training plan was developed to provide required technical assistance to the team to efficiently and effectively manage the project according to international standards.

Between 2014 and 2015, the following trainings and meetings were organized in Tunisia:

- Conducted two steering committee meetings.
- Designated representatives from the SARI centers and ILI sites to participate in two meetings to develop an interaction plan linking SARI and ILI structures to the NIC and DSSB, as well as linking in other entities dealing with surveillance in Tunisia.
- Conducted two training workshops (one in the North and the other in Central Tunisia) for 94 health staff involved in sentinel surveillance.
- Designated representatives from seven SARI centers to participate in a workshop on biosafety and management of biological risks.

## INFLUENZA VACCINE ACTIVITIES

Received 270,000 doses of influenza vaccine for the 2014–2015 season from the Directorate of Basic Health Care (DSSB).