RUSSIAN FEDERATION

Anastasiya Vasilieva, scientist participating in development of immune reagents for identification of potentially pandemic viruses.

HIGHLIGHTS

- Developed new software for the electronic submission, storage, and analysis of influenza surveillance data.
- Expanded PCR diagnosis to detect seven other respiratory viruses, in addition to influenza viruses.
- Transported virus isolates to WHO CCs (Atlanta and London) in a timely manner for 2012–2013 and 2014–2015 seasons.
- Increased capacity to recognize avian influenza viruses A(H9N2), A(H7N9), and A(H2N2) through monoclonal antibody testing and rRT-PCR testing.

OVERVIEW

The sustainability cooperative agreement between the Centers for Disease Control and Prevention (CDC) and the Russian Federation began in 2011. The Research Institute of Influenza (RII) in St. Petersburg and the D.I. Ivanovsky Research Institute of Virology (IIV) in Moscow are recognized by the World Health Organization (WHO) as National Influenza Centers (NIC).

SURVEILLANCE

During fiscal years 2013 and 2014, RII enhanced and improved both routine and sentinel influenza surveillance systems that collect, analyze and report epidemiologic and laboratory data from 59 Regional Based Laboratories (RBL), collaborating with the two NICs. Both NICs, in Moscow and St. Petersburg, increased the number of influenza viruses isolated during the 2013–2014 and 2014–2015 influenza seasons. Antigenic, genetic, and phylogenetic analysis of influenza viruses circulating in Russia was expanded, including determination of their susceptibility to antivirals. Sentinel surveillance for severe acute respiratory infection (SARI) and influenza-like illness/ acute respiratory illness (ILI/ARI) was improved, allowing for identification of the main risk groups, and the most commonly circulating influenza or other respiratory viruses. Data were presented on a weekly basis to the Ministry of Healthcare of Russia (MoH), Rospotrebnadzor, as well as the RBLs through weekly surveillance reports and website summaries. Data on influenza activity in Russia was also reported on a regular basis to GISRS, WHO EURO's new electronic system, The European Surveillance System (TESSy), and WHO Collaborating Centers (CC).

SURVEILLANCE ACTIVITIES

- Enhanced the epidemiologic capacity and infrastructure for disease surveillance, including the development of quantitative criteria to determine the epidemic start and geographic spread of influenza for separate cities, federal districts, and the country.
- Developed a written sustainability plan and included a draft in the Order of Ministry of Healthcare and Rospotrebnadzor.
- Obtained results from the first national disease burden estimates.

LABORATORY

The laboratory surveillance network in Russia currently includes 55 RBLs. Influenza virus isolation is conducted in 31 laboratories. Antigenic and genetic analysis of viruses circulating in Russia is conducted on a regular basis, including determination of susceptibility to antivirals. The etiology of SARI and ILI/ARI cases reported from sentinel sites varies depending on the geography of the site and seasonal patterns. Influenza viruses were detected more often among SARI patients and other respiratory viruses more often in ILI/ARI patients.

LABORATORY ACTIVITIES

- Deposited 348 viruses in the "Collections of Viruses" located at both NICs.
- Published the article, "Influenza surveillance in Russia based on epidemiological and laboratory data, 2005–2012" in the American Journal of Infectious Diseases.

PREPAREDNESS

The draft Pandemic Preparedness Plan for Russia (PR) was refined and updated, with the completed version set to be submitted to the MoH in September 2015. The capacity to identify novel influenza A viruses of H2, H5, H7, and H9 subtypes as potential pandemic agents was increased by preparing rRT-PCR reagent kits and developing immunological methods for identification of potential novel pandemic influenza A viruses (PPIV).

A local rapid-response and containment team (LRT) was assembled to monitor outbreaks and clusters of severe respiratory illness that could indicate the emergence of a new pandemic virus.

PREPAREDNESS ACTIVITIES

- Developed new laboratory tests including rRT-PCR and immunological methods to be used for investigation of clinical samples from SARI patients and autopsy materials.
- Generated hybridomas producing monoclonal antibodies for influenza H2, H5, H7, and H9 virus subtypes.
- Inactivated influenza H2, H5, H7, and H9 virus subtypes for inclusion in an EQC panel designated as PCR control in RBLs participating in sentinel surveillance.

TRAINING

The following activities were completed:

- Presented six reports (two included data on pandemic preparedness) at the workshop of "Rospotrebnadzor".
- Conducted consultations with both NICs and RBLs virologists.

The following activities and trainings were carried out in collaboration with WHO EURO:

- Developed guidance on data input in GISRS through TESSy in Russian for NICs in East European countries.
- Conducted a two-day TESSy online training for NIC specialists.
- Conducted a five-day training in influenza virology at RII with virologists from NICs in East European countries.
- Selected six NIC specialists to attend training courses in Netherlands, Greece, Turkey, and Denmark.

INFLUENZA VACCINE ACTIVITIES

The main groups at risk for influenza-associated SARI, including pregnant women and patients with chronic lung and cardiovascular disease, were identified through the sentinel surveillance system. Recommendations to introduce seasonal influenza vaccination to the identified target groups will be completed.

Ascertainment of vaccination status among influenza patients was also added to the sentinel surveillance system. The percent of patients vaccinated among hospitalized SARI patient with an influenza virus was lower than among SARI patients with a non-influenza etiology.

Low vaccination coverage was identified in hospitalized SARI patients with RT-PCR-confirmed influenza virus, with much higher vaccination rates among ILI/ARI patients with a confirmed influenza virus infection, indirectly suggesting that there may be a protective role of vaccination in preventing the development of severe influenza. Preliminary data on the economic burden of influenza were also obtained.

Nadezhda Konovalova, PhD, a leading scientist in influenza virus isolation and antigenic characterization, training students from Eastern European countries on influenza virology.