Chinese Influenza Surveillance Network
Management and Quality Assessment System

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February 27, 2012
Brief introduction of CNIC

The CNIC is affiliated with the National Institute for Viral Disease Control and Prevention (NIVDC) in the Chinese Center for Disease Control and Prevention (CCDC). The predecessor of CNIC was established in 1954 as the influenza laboratory of Virus Department of Chinese Academy of Medical Sciences. In 1957, the laboratory was commissioned as a national laboratory and was renamed CNIC. When the CCDC was founded in 2002, the CNIC became the subsidiary organization of the NIVDC. In 1981, the CNIC joined the WHO Global Influenza Surveillance Network. It became a member of the State Key Laboratory for Infectious Diseases Prevention and Control in 2005 and a member of the Research Program of State Key Laboratory for Viral Genetic and Engineering in 2008. As the core technological department of the National Influenza Surveillance Network, the CNIC is responsible for the operation and management of the network, the development of the influenza surveillance technology and a variety of research on influenza.

The CNIC is currently staffed with 65 employees, of which 2 professors, 8 associate professors, 12 assistant professors, and 43 junior titles.
Organization Structure of CNIC

China CDC

NIVDC

CNIC

Lab Management Group

Virology Surveillance Group

Pandemic Preparation and Response Group

Epidemiology and Network Management Group

Research Group
WHOCC DESIGNATED IN 2010
CNIC MISSION

- Pandemic preparation & response
- Supervision
- Network management
- Vaccine recommendation
- Scientific research
- Quality control & evaluation
- Nucleic acid detection & evaluation
- Virology surveillance
- Weekly report
- Share with WHO
- Providing reagents & technical support
- Supervision

Surveillance

- Share information with WHO
NATIONAL INFLUENZA SURVEILLANCE NETWORK (NISN)
Expansion of overall Influenza Network (1)
Expansion of overall Influenza Network (2)

63 network laboratories
197 sentinel hospitals

411 network laboratories
556 sentinel hospitals
Management of NISN
Management of NISN

Information system

Weekly report

Technical & reagent support

Trainings & meetings
How to control and ensure the quality of the network?

- Timely communicating with network laboratory whenever found problems or errors
- Supervision
- Nucleic acid detection evaluation
- Influenza surveillance quality evaluation
Decide subtypes (B, H1N1, H3N2, H5N1 and pandemic H1N1)

Select virus

Subtyping

Gradient dilution

Aliquot viruses and numbering (10 samples)

Simulation test of transportation and multiple freeze-thaw cycling

Dilute into reasonable dilution

Sensitivity detection (using conventional PCR & real time RT-PCR)

Exclude contamination

Sending to network laboratories

Results collection and analysis

Feedback to MoH and CDCs
No. of lab participated in the quality assessment program

- Local CDC confirmed after April 2009
- Local CDC confirmed before April 2009
- Local CDC confirmed before 2009
- Provincial CDC

Accuracy rate

No. of lab with all corrected results
GUIDELINE OF INFLUENZA SURVEILLANCE QUALITY EVALUATION (2011)
Objectives

- To strengthen influenza surveillance in mainland China
- To enhance influenza surveillance quality in mainland China
- To promote management of provincial CDCs to prefectural CDCs
According to

- Influenza surveillance information system
- Public health emergency information system
- CNIC laboratory database
- Influenza surveillance annual reports submitted by provincial CDCs
Evaluation Target and Content

Surveillance network management:
- Management of provincial CDCs to prefectural CDCs
- Prefectural CDCs manage the network

Virology surveillance:
- Provincial CDCs virology surveillance
- Prefectural CDCs virology surveillance

ILI surveillance:

- ILI surveillance
- Data report

Provincial CDC

ONCE IN TWO YEARS
Influenza surveillance
quality (80%)

Influenza surveillance
network management (20%)

Influenza surveillance
quality evaluation

- Evaluation results of nucleic acid detection quality in network laboratories
- ILI outbreak reporting
- Specimen collection
- Reporting data through information system
- Laboratory detection in 24hs
- Virus isolation
- Reporting and sending virus to CNIC
- Attending trainings
- Supervision to sentinel hospitals
- Data analysis
- Feedback results to sentinel hospitals
- Reporting results to higher level CDC
- Quality of nucleic acid detection
- Timeliness of nucleic acid detection
- Correct rate of subtyping
- Timeliness of sending samples
- Sample volume (3ml)
- Consistency of lab results with CNIC
- Sending more than 5 isolates each month
- Reporting correct information
- Egg isolation
- Timeliness of ILI reporting
- Missing rate of ILI reporting
- Integrality of ILI reporting
- Collecting adequate samples
- Timeliness of sending samples
Influenza surveillance quality (80%)

Influenza surveillance network management (20%)

Evaluation results of nucleic acid detection quality in network laboratories
- Specimen collection
- Reporting data through information system
- Laboratory detection in 24hs
- Virus isolation
- Reporting and sending virus to CNIC

Attending trainings
- Supervision to sentinel hospitals
- Data analysis
- Feedback results to sentinel hospitals
- Reporting results to higher level CDC

Lab virology surveillance
- Missed rate of ILI reporting
- Integrality of ILI reporting
- Collecting adequate samples
- Timeliness of sending samples
- Egg isolation

Management of prefectural CDCs
- Send more than 5 isolates each month
- Reporting correct information
- Egg isolation

Sentinel hospital
- Missing rate of ILI reporting
- Integrality of ILI reporting
- Collecting adequate samples
- Timeliness of sending samples

Management of provincial CDC to prefectural CDCs
- Organize training
- Supervision
- Quality assessment to the provincial network
- Data analysis and reporting

Outbreak surveillance management
- Specimen collection
- Reporting data through information system
- Laboratory detection in 24hs
- Virus isolation
- Reporting and sending virus to CNIC

Virus isolation
- Correct rate of subtyping
- Timeliness of sending samples
- Sample volume (3ml)
- Consistency of lab results with CNIC
- Sending more than 5 isolates each month
- Reporting correct information
- Egg isolation

ILI outbreak reporting
- Specimen collection
- Reporting data through information system
- Laboratory detection in 24hs
- Virus isolation
- Reporting and sending virus to CNIC

Management of provincial CDC to prefectural CDCs
- Organize training
- Supervision
- Quality assessment to the provincial network
- Data analysis and reporting

Sentinel hospital
- Missing rate of ILI reporting
- Integrality of ILI reporting
- Collecting adequate samples
- Timeliness of sending samples

Final score = \[ \sum \text{score for each indicator} \]