Surveillance of unusual events in the context of influenza
Identify new or changing risks and take appropriate actions through:

- Early detection of
  - Novel pathogens
  - Variations of old pathogens

- Understand trends and patterns of disease
  - To inform public health policy: who should be targeted, what interventions are useful, etc.
Things to Consider

- *Early* detection needed to adequately respond to emerging pathogens,

- Routine surveillance of ILI and SARI too blunt an instrument to pick up signal of an emerging pathogen, even if universal reporting
  - Syndromes are nonspecific
  - Lots of other things cause both
  - Will have widespread circulation before picked up

- Routing surveillance will provide the baseline data that will allow interpretation of significance of new event

H5?  H7?  SARS?  Other?
Strategy for detection and reaction

- IHR (2005) requires every country to develop the capacity to detect and evaluate events that may have international implications.
  - This requires an early detection and response system

- Establishing a routine monitoring program will establish the infrastructure to support early detection and will provide the historical context
  - In addition will provide critical data to inform health policy

- Participating in a global system will aid in understanding your data and to forecast future seasons
  - Requires standardization
What type of surveillance

- Event based surveillance: early warning
- Indicator based surveillance: routine influenza surveillance
  - Sentinel ILI and SARI surveillance to gather quality data
- Enhanced surveillance where necessary
Complementary systems

Routine Influenza Surveillance

Early Warning Surveillance

Enhanced surveillance
What's the Difference?

- **Early warning**
  - Detection of unusual events
  - Needs to happen very early on in the course of the event
  - Needs broad based involvement to be effective

- **Routine Influenza Surveillance**
  - Collection of epidemiological and virological data on a regular basis
  - Regularly reported, analyzed and reported back
  - Describes the epidemiology of flu including persons at risk, seasonality, and disease burden.
  - Usually sentinel based
Early warning – somebody needs to react

- Most effective tool is alert health care providers.
  - Recognition of something unusual: a signal event such as a cluster, unusual presentation, unusual course. (e.g. Lyme, HIV, Nipah, novel influenzas)
  - Signal events can be predefined to an extent but hard to predict a novel pattern – Kaposi's sarcoma

- Mechanism for reporting
  - Simple and clear system, hotlines, focal point

- Mechanism for investigation and evaluation
  - Field investigators
  - Lab capacity
Routine surveillance – quality data

● Data quality is crucial, more important than quantity
  – Must know the context: who, how, where, why
  – Not critical (or feasible!) to capture every case of anything but must understand what is being missed

● Consistency in reporting
  – Aberrations are important signals
3 Primary Components of an Early Warning System

- Keystone is broad based recognition of “trigger events” that must be reported immediately.

- Mechanism for reporting
  - Hotline
  - Local Health Dept.
  - Local Agriculture
  - Coordinating bodies

- Response mechanism
“Trigger” events in event surveillance

- Unusual cases or events that elevate the index of suspicion of a possible emergence of something unusual

- Typically looking for
  - Infection of influenza type in human infection normally not infecting humans (H5, H9, H7 etc.
  - Disease of unusual severity or atypical clinical appearance
  - Change in animal infection patterns
  - Unusual cluster of cases
Sources of Information

• Health Care Workers
• Teachers
• Community Leaders
• Pharmacists
• News media
• Rumors from informal data sources
  – information hotlines
• Animal Health Sector
  – Animal events: excessive deaths
Education and Awareness

- Training of health care providers
  - Should include non-mainstream providers and consider dispensers.

- Involve media, educate reporters

- Nationwide public education and awareness
  - Risk reduction and reportable events

- Regular training refreshers/public education

- Public health reminders and inquiries
Sharing of event-based information
Locally, regionally and internationally

- Notifications
- Consultations
- Reports
- Verification requests

Local Focal Point
National IHR Focal Point
WHO IHR Contact Point
Identify, Verify, Assess, Assist, Inform at all levels

States Parties
WHO and UN

Screening & Initial assessment

Informal / Unofficial information

Event risk assessment

Verification

Formal reports

Disseminate information

GOARN and other technical partners
Assist - Respond

Manage the risk
Hazard Detection and Risk Assessment
Suite of tools

- Public
  - News Media
    - News articles
    - Blogs
    - Radio
  - News Aggregator
    - MediSys / PULS
    - HealthMap
    - Biocaster

- Processed
  - Moderated sources
    - GPHIN
    - PROMED

- National
  - Surveillance Data
  - Surveillance Data Weekly Reports

- Official
  - Official Sites
  - Governments
  - UN Organizations

Automated analysis
Filtering - Categorization - Grouping - De Duplication - Alerting

- Contextual Information
- Discussion Board
- Report Generation
- Risk Profiles Vulnerabilities
- Visualization Tables
- Documentation of decisions
- Modelling Tools
- Collaborative workspace
- Events Archive

Continuous Risk Assessment

- Rate news articles
- Detect public health risks
- Add to watch list
- Add information
- Send out alert
- Monitor
- Generate and disseminate Report
- Open Event
## Current Events

This section lists ongoing events which are currently being assessed against the criteria for public health risks of international importance under the IHR (2005).

Click an event’s *Updated* link to see the current risk assessment and most recent updates for the event.

<table>
<thead>
<tr>
<th>Updated</th>
<th>Country</th>
<th>Hazard</th>
<th>Syndrome</th>
<th>Disease</th>
<th>Initial Information On</th>
<th>IHR Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010/10/12</td>
<td>Kazakhstan</td>
<td>Infectious</td>
<td>Acute Flaccid Paralysis (AFP)</td>
<td>Poliomyelitis, acute paralytic,</td>
<td>2010/10/06</td>
<td>Public Health Risk (PHR)</td>
</tr>
<tr>
<td>2010/10/07</td>
<td>Brazil</td>
<td>Infectious</td>
<td>Acute Flaccid Paralysis (AFP)</td>
<td>Poliomyelitis, acute paralytic,</td>
<td>2010/08/02</td>
<td>Public Health Risk (PHR)</td>
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<td>Infectious</td>
<td>Acute Flaccid Paralysis (AFP)</td>
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<td>2010/09/23</td>
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<td>Acute Flaccid Paralysis (AFP)</td>
<td>Poliomyelitis, acute paralytic,</td>
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<td>Public Health Risk (PHR)</td>
</tr>
<tr>
<td>2010/09/13</td>
<td>Turkmenistan</td>
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<td>Acute Flaccid Paralysis (AFP)</td>
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<td>Public Health Risk (PHR)</td>
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<td>Russian Federation</td>
<td>Infectious</td>
<td>Acute Flaccid Paralysis (AFP)</td>
<td>Poliomyelitis, acute paralytic,</td>
<td>2010/05/12</td>
<td>Public Health Risk (PHR)</td>
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<td>Poliomyelitis, acute paralytic,</td>
<td>2010/05/12</td>
<td>Public Health Risk (PHR)</td>
</tr>
<tr>
<td>2010/09/07</td>
<td>Democratic Republic of the Congo</td>
<td>Infectious</td>
<td>Acute Flaccid Paralysis (AFP)</td>
<td>Poliomyelitis, acute paralytic,</td>
<td>2010/05/25</td>
<td>Public Health Risk (PHR)</td>
</tr>
</tbody>
</table>

Total number of items: 16

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**Announcements**

- **2010/10/12**
  - Acute Flaccid Paralysis (AFP) surveillance and confirmed wild poliovirus type 1 cases in the Central Asian Republics and the Russian Federation

- **2010/10/08**
  - Miracle Mineral Solution - Information for IHR NFPs

- **2010/09/15**
  - Portugal West Nile Virus (WNV) case discarded

- **2010/09/13**
  - Acute Flaccid Paralysis (AFP) surveillance and confirmed wild poliovirus type 1 cases in the Central Asian Republics and the Russian Federation

- **2010/09/13**
  - Updated: West Nile Virus (WNV) in Europe, July - September 2010

- **2010/09/10**
  - Director-General Statement following the ninth meeting of the Emergency Committee
An Example: MERS-CoV

- First case was investigated by a curious physician who saw something unusual
  - Led to the discovery of the virus

- Outbreak in Jordan detected, reported, and investigated even before MERS-CoV was described
  - Clinicians noted an unusual clustering of pneumonia among health care workers

- Similar discovery of outbreak at health care facility in Al Ahsa, KSA
  - Initially MERS not suspected but unusual pattern was reported.
Role of SARI surveillance

- Existing system in Jordan provided:
  - Historical trend data to understand if the virus had been circulating for some time
  - Specimens stored from SARI surveillance allowed retrospective testing to look for cases.
  - System formed the basis for monitoring for reappearance of the virus.
Role of SARI surveillance

- Established infrastructure:
  - Labs were already in place and could adopt testing for nCoV
  - Trained responders, including FETP
  - Epidemiologists used to thinking about respiratory data
  - Reporting mechanisms
  - Reference laboratory connection established
Conclusions

- Routine respiratory disease surveillance and event based early warning systems are both critical parts of an effective surveillance system
  - One is for health policy decisions and management
  - The other is for detection of outbreaks

- Routine surveillance provides the context in which to understand events
  - Historical data critical to understanding an outbreak

- Routine system will establish infrastructure and experience in dealing with respiratory disease data that will be critical for outbreak response

- The data will be even more valuable when shared and compared to others…
Thank you

شكرا

با تشکر از شما

Merci!

Go raibh maith agat

謝謝

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