Global Public Health Intelligence Network (GPHIN)

Reseau Mondial d’Information en Santé Publique (RMISP)

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GPHIN - Background

- An early-warning system for potential public health threats worldwide
- Monitors global media sources in nine languages (Arabic, Chinese Simplified and Traditional, English, Farsi, French, Portuguese, Russian and Spanish)
- Gathers relevant information in near real-time and on a 24/7 basis; sends GPHIN alerts to users when appropriate
- Web based ('thin client')
  - password protected
GPHIN Complements the Public Health Surveillance Systems

- **Regional / International level**
  - Analysis and Feedback
  - Support
  - Policy, target funding

- **Central level**
  - Analyze, Investigate, Confirm, Plan, Fund, Respond, Feedback

- **Intermediate level**
  - Analyze, Investigate, Report, Respond, Feedback

- **Peripheral level**
  - Detect, Treat, Report

GPHIN – Early Warning System
GPHIN’s Modus Operandi

Timeline: Hours – Days

Detection by GPHIN

Dissemination by GPHIN

Verification by users

Information on Public Health Risks

Intelligence on Public Health Risks
<table>
<thead>
<tr>
<th>Category</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human diseases</td>
<td>SARS, H1N1</td>
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<tr>
<td>Animal diseases</td>
<td>Ebola in pigs</td>
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<tr>
<td>Plant diseases</td>
<td>Asian soybean rust</td>
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<tr>
<td>Other biologics</td>
<td>Pathogens</td>
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<tr>
<td>Chemical incidents</td>
<td>Chlorine spill</td>
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<tr>
<td>Radioactive incidents</td>
<td>Nuclear material trafficking</td>
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<tr>
<td>Unsafe products</td>
<td>Salmonella, Listeria</td>
</tr>
<tr>
<td>Natural disasters</td>
<td>Tsunami 2004, Sichuan earthquake</td>
</tr>
</tbody>
</table>
GPHIN's Versatility: Information for Action

- **Detect** potential public health threats
- **Estimate** magnitude of the public health threat
- **Determine** geographic distribution of public health threat

- **Identify** control and preventative measures considered and implemented
- **Monitor** concerns of the general public
- **Observe** situational politics
GPHIN Workflow

Data Collection

Advanced Analytics

Multilingual Real Time Intelligence Rendering

Duplicate Elimination
Translation
Metadata Insertion (Taxonomy)
Categorization
Relevancy Score

En
Fr
Fa
Es
Ru
Ar
Zhs
Zht
Pt

Manual Analysis Triage:
1. Publish
2. Publish with alert
3. Irrelevant

Publish
Irrelevant
Analyst’s Responsibilities

- Review reports for public health relevance and disseminate alerts
- Monitor events of concern
- Maintain:
  - Search syntaxes
  - taxonomy and data dictionaries
  - Ministry of Health Website links
- Prepare reports
- Respond to inquiries / requests from GPHIN Users
- Identify any technical difficulties to be addressed
- Duty Officer
September 13, 2005:
First media report of avian influenza in birds in Iran.

October 6, 2005:
Media report states that Minister of Agriculture notified Vice-President that chicken farms are contaminated with the lethal bird flu strain.

February 14, 2006:
Iran officials confirm the presence of A/H5N1 in swans.
GPHIN’s early reporting of A/H1N1, Mexico

How the W.H.O. Reacted to the First Signs of the Outbreak

The World Health Organization is notified by the Global Public Health Intelligence Network in Canada of a cluster of cases of acute respiratory syndrome in Veracruz, Mexico. The Centers for Disease Control and Prevention confirm cases of the influenza A/H1N1 virus in two children in California. No connection is made to the Mexican respiratory cases.

Mexican epidemiologists visit 21 hospitals throughout the country. U.S. health officials inform the Pan American Health Organization of confirmed swine flu in two children in California.

The C.D.C. determines that the California and Mexican cases are related. Mexico links 15 cases of H1N1 flu to the original outbreak in La Gloria, the village in Veracruz.

The C.D.C. lab confirms the Mexican cases were H1N1. The Canadian lab reports to Mexico that the samples it tested were H1N1. Mexico’s president calls an emergency cabinet meeting that lasts through the evening.

APRIL

10 Through the Pan American Health Organization, the W.H.O. contacts the Mexican Ministry of Health about the cluster.

15 W.H.O. officials contact Mexican authorities about a death in which coronavirus is suspected, because one strain of coronavirus can cause SARS. The case is negative for coronavirus and appears to be unrelated to the earlier outbreak. Mexico issues a national alert requiring 52D hospitals to report patients with severe respiratory illness and to collect specimens.

17 In an international conference call, Mexico reports that samples have been sent for testing to Canada’s National Microbiology Laboratory in Winnipeg. The C.D.C. discusses the two cases of the flu virus in California.

18 Mexico makes a formal report to the W.H.O. about an unusual increase in cases of influenza in March and April, including the cluster of cases in Veracruz. Officials from Canada, Mexico and the U.S. have another teleconference.

19 Schools are closed in Mexico City and its suburbs.

20 Schools are closed throughout Mexico.

21 The Mexican Ministry of Health reports to the W.H.O. that the outbreak of acute respiratory syndrome ended on April 9, with no deaths and no influenza diagnoses. But Mexican officials continue to study the outbreak as “a potential public health threat of international importance.”

22 The W.H.O. officials visited the Mexican Ministry of Health and the Mexican Ministry of Health about the cluster.

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Sources: Dr. Michael Ryan, World Health Organization; Dr. Scott Dowell, Centers for Disease Control and Prevention; and Dr. Miguel Angel Lazcano, Mexico’s top government epidemiologist, Pan American Health Organization General Directorate of Epidemiology, Ministry of Health, Mexico, Public Health Agency of Canada.

May 2, 2009

The New York Times
GPHIN's contribution in reporting disease events at WHO

Verification status of events by initial reporting source, 1 January - 31 December 2006 (n=279)

GPHIN Users - International

- World Health Organization (WHO)
- UN Food and Agriculture Organization (FAO)
- World Organization for Animal Health (OIE)
- European Commission (EC)
- European Centre for Disease Prevention and Control (ECDC)
- US Centers for Disease Control and Prevention (CDC)
- Government Institutions of various countries: Algeria, Australia, Brazil, China, France, India, Italy, Germany, Mexico, Netherlands, Switzerland, United Kingdom, United States
Next Steps

• Strengthen linkages within PHAC program areas
• Expand news sources
• Improve system robustness
• Technology shift to accommodate images, sounds and video
• GIS
• More visualizations (‘dashboards’)
Merci / Thank You

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