Dengue SMS Surveillance Project in the Philippines
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BACKGROUND

• In 2007, JHU/APL was funded by AFHSC to evaluate the utility of syndromic surveillance in resource-poor countries.
• Visited facilities in Peru and Laos that were using variations on the Early Warning/Outbreak & Report System (EWORS) developed by Naval Medical Research Unit (NAMRU) in the Philippines.
• Invited to the Republic of the Philippines (RP) by the Philippines office (PAVRU) of the Armed Forces Research Institute for Medical Research (AFRIMS) and the RP National Epidemiology Center (NEC).
• JHU/APL and PAVRU, with funding from AFHSC, began a collaborative effort to identify, develop, and pilot surveillance activities and tools that would be useful in the RP.
• Field work has been done in conjunction with the Cebu City, RP Health Office (CHO).

Dengue fever is a serious health threat in the RP. 1,260 cases of dengue fever were reported in Cebu City in 2008, with 52 deaths (CFR=4.1%).

• An increase in case fatality rate from 2007 to 2008, suggested an increase in or late identification of cases. A recent assessment showed that there was a minimum two week delay between illness and reporting of the case to the Cebu City Barangay Council.
• As in most of the world, dengue surveillance in the RP is hospital based, and intended to produce annual disease rates.
• More timely data is needed to inform rapid and logical community intervention programs to stop transmission.

• Daily incidence data delivered electronically is the standard for this type of surveillance.
  - Few Barangay Health Centers (BHC) have a working computer or an internet connection.
  - Telephone calls are relatively expensive in the RP, so Interactive Voice Response (IVR) was impractical.
  - But SMS texting is cheap and everyone has a cell phone.

OBJECTIVE

• To pilot an active surveillance reporting system for dengue fever in Cebu City, RP using a simple, standardized SMS texting protocol.

METHODS

SUMMARY

• Identify clients with suspect dengue fever.
• Record information on each of those clients on the Dengue SMS Log sheet.
• Text suspect cases to CHO each day.
• Download and examine data.

PILOT SITE, CEBU CITY, RP

Pilot Barangay Health Centers
• Guadalupe/Banawa
• Lorega
• Labangon – Juno
• Kamputhaw

DENGUE CASE DEFINITION

• Age 26 months
• Fever or history of fever in the past 7 days and any two of the following:
  - Headache
  - Pain behind the eyes
  - Rash
  - Muscle or joint pain
  - Loss of appetite
  - Nausea or vomiting
  - Hemorrhagic manifestation

METHODOLOGY

• Text suspect cases to CHO each day.
• Identify clients with suspect dengue fever.
• Download and examine data.

TEXING DATA

SMS Texting Format

<table>
<thead>
<tr>
<th>Barangay Code</th>
<th>Site Code</th>
<th>Family Serial Number</th>
<th>Last Name, First Name, MI</th>
<th>Age</th>
<th>Sex</th>
<th>Date of Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>________________</td>
<td>RGY Code______</td>
<td>___________________</td>
<td>______________________</td>
<td></td>
<td></td>
<td>(dd/mm/yy)</td>
</tr>
</tbody>
</table>

Each case is sent in an individual SMS text message, using the format shown above.

• The logbook format is maintained.
• Codes were assigned to each Barangay and standardized symptom abbreviations were suggested.
• Standardized abbreviations suggested, and generally adopted for symptoms:
  - fe = Fever
  - he = Headache
  - nb = Nausea
  - sb = Stool
  - st = Stomach

• Messages are sent from BHC → CHO at the end of the day or saved and sent overnight.

DATA COLLECTION

• Information for all patients meeting the case definition is recorded on the DSMS log sheet.

• Custom SQL application automatically downloads the data from the CHO phone SIM card.

• ESSENCE Desktop Edition (EDE) uses the clean database to visualize the temporal trend for Dengue, identify unusual increases in incidence, and analyze and map those increases.

RESULTS

IF A LITTLE IS GOOD...

• Agreed to pilot protocol at 5 BHC in March 2009.
• At the request of the assistant City Epidemiologist, the program was expanded to include all "fever" cases seen in all BHCs in Cebu City.
  - Submitted with a preexisting fever surveillance program.
  - November 2009, 75/85 BHCs have replaced their fever logbook with the DSMS log sheet and are recording all clients with fever, including those with dengue.
• As August 15, 2009
  - 30% of BHCs report all "fever" cases to the CHO daily
  - 25% of BHCs bring a hard copy of the logbook to the CHO daily
  - 25% Send hard copy to the CHO weekly
  - 10% Send hard copy to the CHO monthly
• JHU/APL & PAVRU provided technical and logistical support for the project.
  - Proposal submitted and revised for the protocol from the CHO.
  - PAVRU helped the CHO implement the system.
  - Joint evaluation is ongoing.
• Financial support for texting and additional work was provided for only 5 pilot sites.
• At the other BHCs, daily texts are sent by BHC personnel using their personal cell phones.

PRELIMINARY SURVEILLANCE DATA

• Created the first near real-time syndromic fever surveillance system in the RP.
• Adaption and adoption by the Cebu City CHO suggests that the system will be sustainable.
• Adaptation from dengue to fever surveillance increases the utility of the system.
• Cautious:
  - Still being expanded into all BHCs.
  - Only limited results currently available.

CONCLUSIONS

• Adaptation from dengue to fever surveillance increases the utility of the system.

FUTURE WORK

• Proposal under consideration to expand this system to collect data on other syndromes, such as gastroenteritis illness.

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AFHSC
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