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).

- 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.
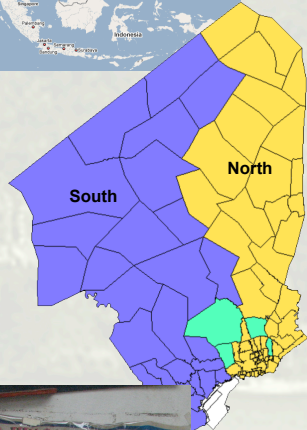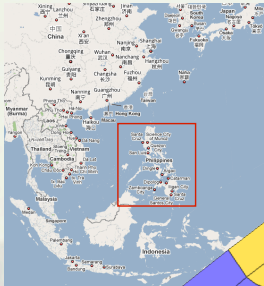
OBJECTIVE

- 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 these 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 Ceneters
- Guadalupe/Banawa
- Lorega
- Labangon
- Kamputhaw

DENGUE CASE DEFINITION

- Age ≥6 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

DATA COLLECTION

- Information for all patients meeting the case definition is recorded on the DSMS Log Book.


TEXTING DATA

SMS Texting Format

Date.Barangay Code.Sitio Code.Family Serial Number.Last Name.First Name,MI.Age.Sex.Date of Onset.Sx1-Sx2-Sx-3 etc

- 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:
  - *fev* = Fever
  - *ha* = Headache
  - *joint* = Joint Pain
  - *nb* = Nosebleed
  - *stool* = Brown/coffee stool
- Messages are sent from BHC → CHO at the end of the day or saved and sent overnight.

PILOT SITE, CEBU CITY, RP
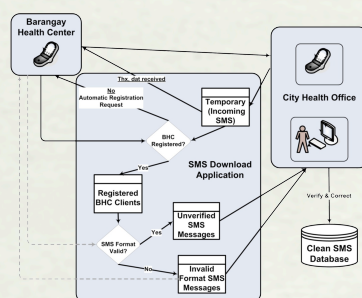
- Custom SQL application automatically downloads the data from the CHO phone SIM card.

- 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.
  - Dovetailed with a pre-existing 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 BHC text all fever cases to the CHO daily
  - ~25% of BHCs bring a hard copy of the logbook to the CHO daily.
  - ~40% Send hard copy to the CHO weekly.
  - ~5% Send hard copy to the CHO monthly.

- JHU/APL & PAVRU provided technical and logistical support for the project.
  - Joint development of the original proposal.
  - PAVRU presented, and received approval 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
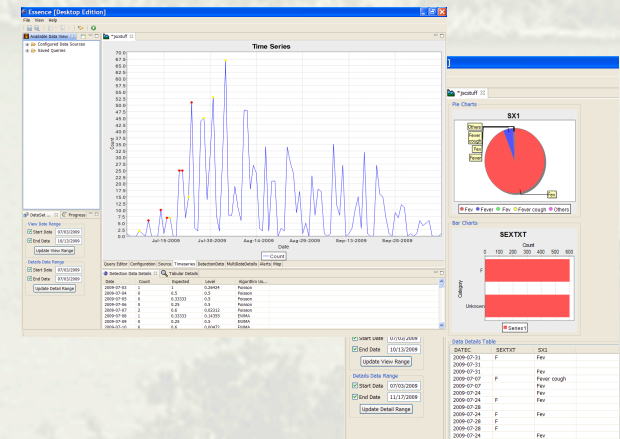
CONCLUSIONS

- Created the first near real-time syndromic fever surveillance system in the RP.

- Adoption and adaptation by the Cebu City CHO suggests that the system will be sustainable.

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

- Caveats
  - Still being expanded into all BHCs.
  - Only limited results currently available.

FUTURE WORK

- Data collection began incrementally in July 2009, so more data is needed..

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