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 EWORS system developed in SE Asia by Naval Medical Research Unit (NAMRU).

Background

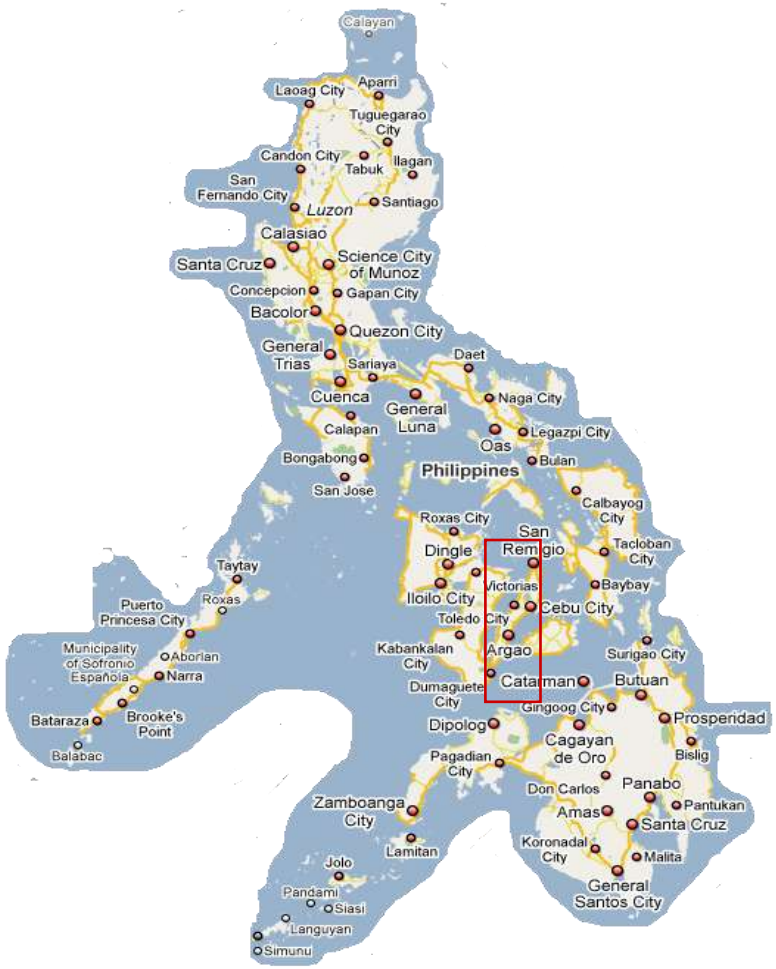
- Also invited to the Republic of the Philippines (RP) by the Philippines office of the Armed Forces Research Institute for Medical Research (AFRIMS) and the RP National Epidemiology Center (NEC).

- NEC was preparing to introduce a new electronic surveillance system (PIDSR).

Background

•JHU/APL and PAVRU, with funding from AFHSC, proposed a collaborative effort to identify, develop and pilot surveillance activities and tools that would be useful in the RP.

Background



- Project was funded by AFHSC and begun in 2008.
- Field work has been done in conjunction with the Cebu City, RP Health Office (CHO).

Background

- 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, suggests an increase in or late identification of cases.

Background

- A recent assessment showed that there was a minimum 2 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.

Background

- Few Barangay Health Centers (BHC) have a working computer or an internet connection.
- Interactive Voice Response (IVR) was suggested, but phoning is expensive.
- *But* SMS texting is cheap and everyone has a cell phone.

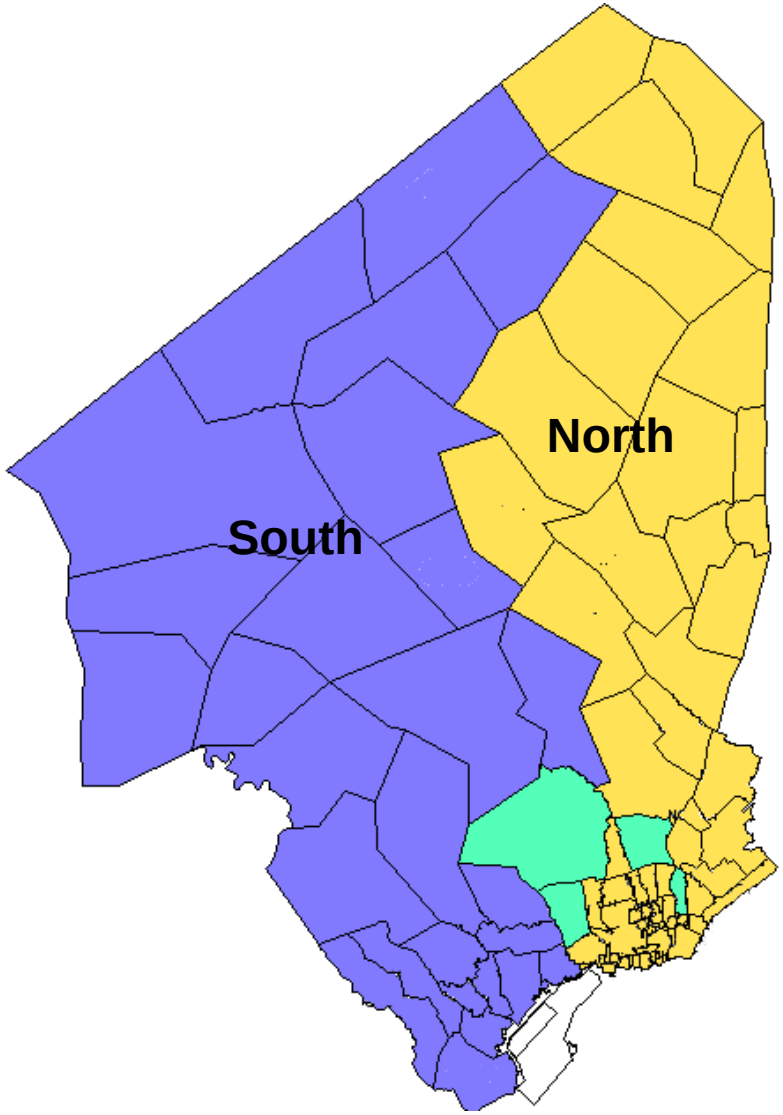
Original Objective

- To pilot an active surveillance reporting system for dengue fever in Cebu City, RP using a simple, standardized SMS texting protocol.
- The timeliness, sensitivity and representativeness of the SMS system will be compared to the current surveillance process at the end of the traditional dengue season.

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.

Methods
Pilot Site, Cebu City, RP



Pilot BHCs

- Guadalupe/Banawa
- Lorega
- Labangon
- Kamputhaw

Methods
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

Methods
Data Collection

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

Dengue SMS (DSMS) Log Book for BHC

Date _ _/_ _/_ _ Name of Barangay_____ RGY Code_____

DSMS Daily Log #	Sitio Code	Family Serial Number	Last Name	First Name	MI	Age	Sex	Address	Date of Onset (dd/mm/yy)	Symptoms (sx1-sx2-sx3
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Methods
Texting Data

SMS Texting Format Definition

Date.Barangay Code.Sitio Code.Family Serial Number.Last Name,First Name,MI.

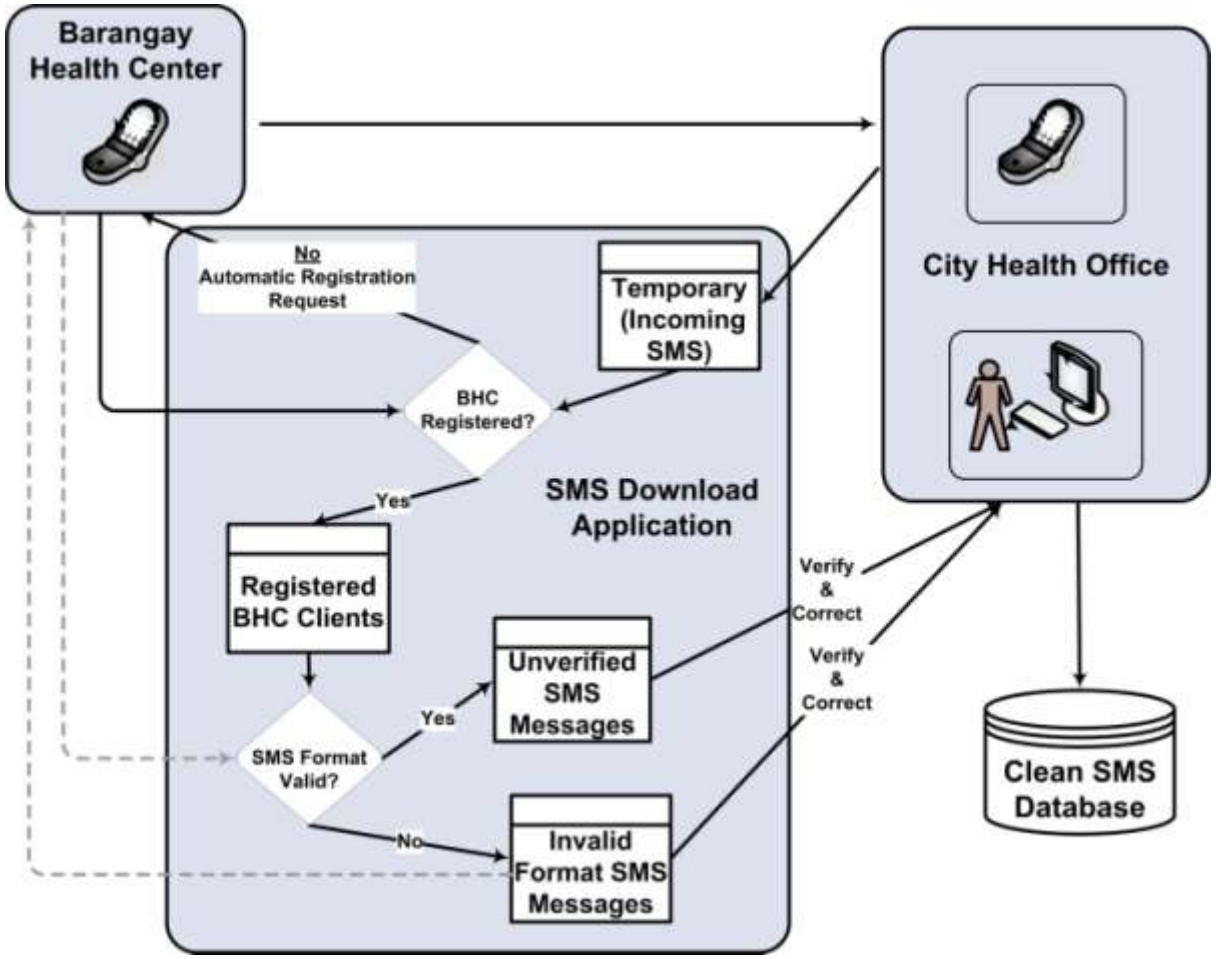
Age.Sex.Date of Onset.Sx1-Sx2-Sx-3 etc.

- Each case is sent in an individual SMS text message.
- The logbook format is maintained.
- Periods, commas and dashes are used as delimiters.

Methods
Texting Data

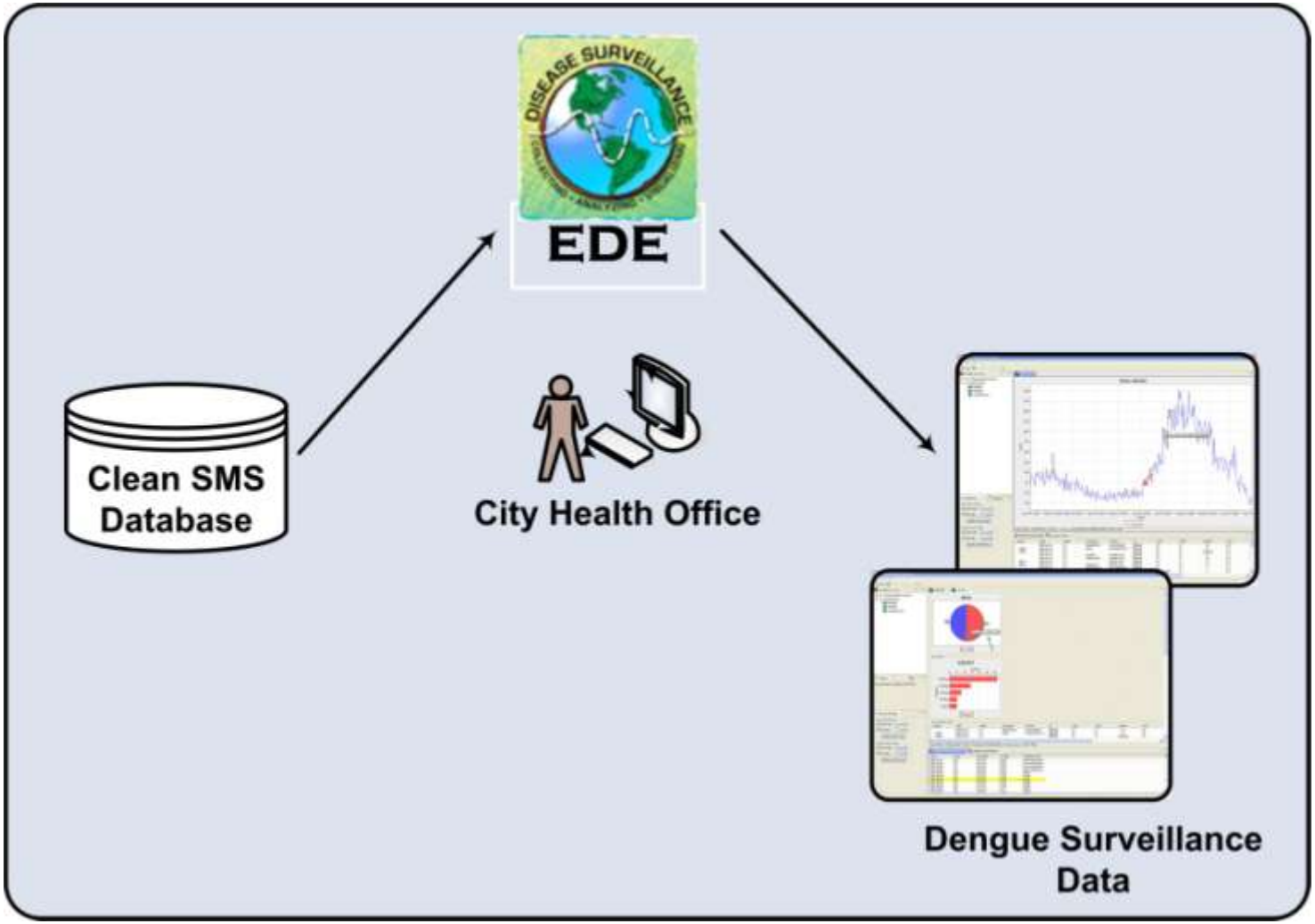
- A code was assigned to each Barangay to simplify analysis.
- Standardized abbreviations suggested, and generally adopted for symptoms:
  - –*fev* = Fever
  - –*ha* = Headache
  - –*joint* = Joint Pain
  - –*nb* = Nosebleed
  - –*stool* = Brown/coffee stool
- Messages are sent from BHC → CHO at the end of the day or saved and sent overnight.

Methods
Data Download Application



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

Methods
Ongoing Dengue Surveillance



Results
If A Little is Good...

- Agreed to pilot protocol at 5 BHC in March 2009.
- Expanded in June 2009 to include all ‘fever’ cases seen in all BHCs in Cebu City.
  - –Dovetailed with a pre-existing fever surveillance program.
- August 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.

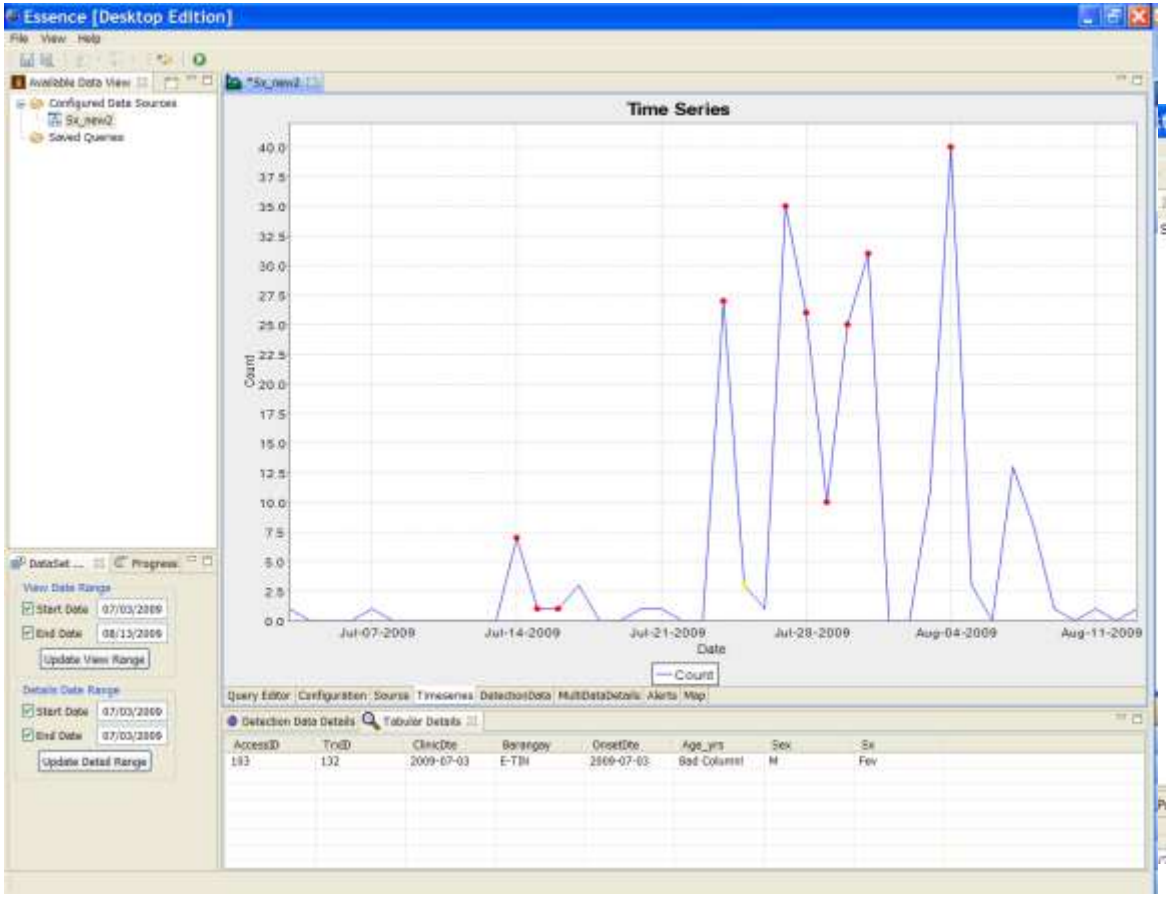
Results
If A Little is Good...

- 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.

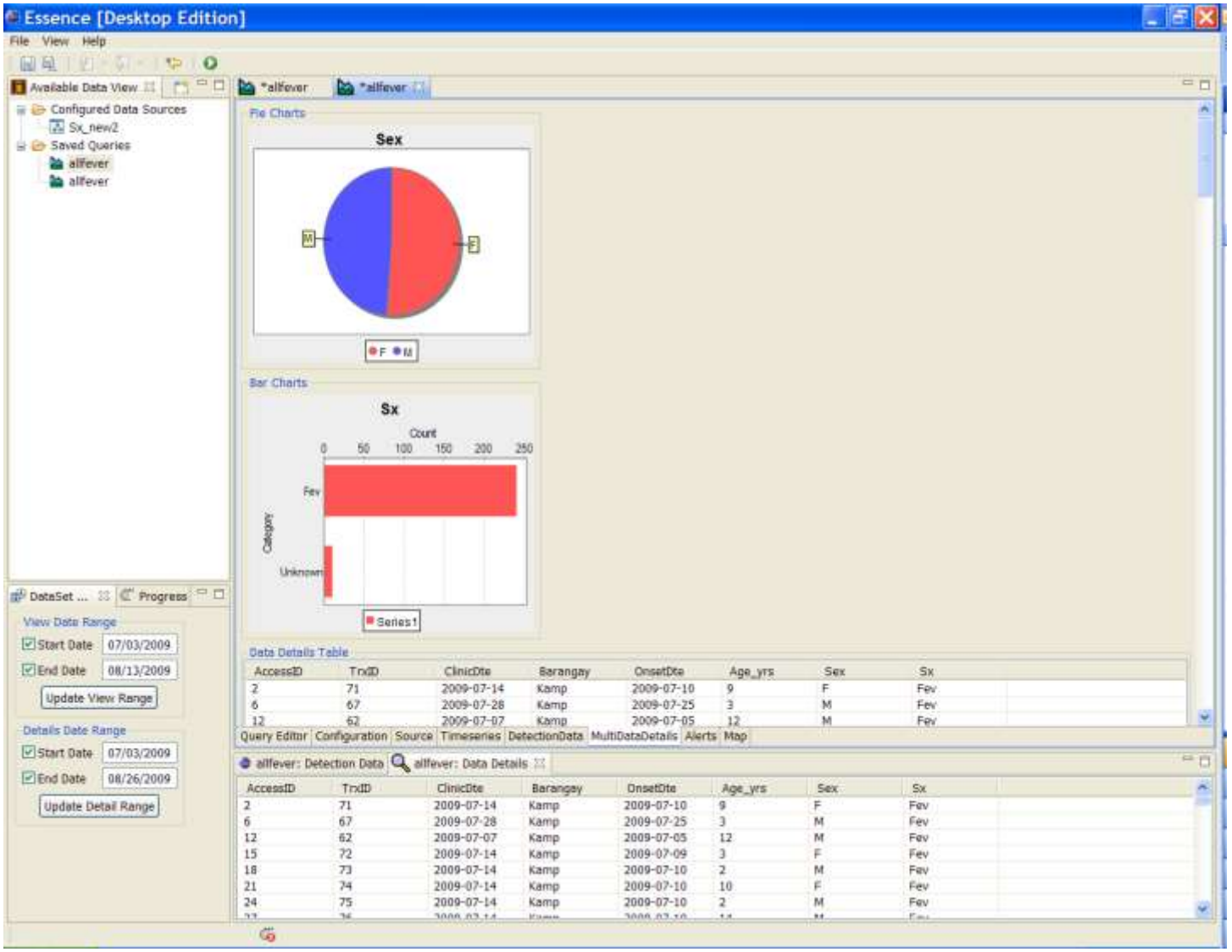
Results
If A Little is Good...

- JHU/APL & PAVRU provided technical and logistical support for the project.
  - –Joint development of the original proposal.
  - –PAVRU presented, and got approval for the protocol from the CHO.
  - –PAVRU helped the CHO implement the system.
- 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.

Results
Preliminary Surveillance Data



Results
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 data needs to accrue before further analysis.
- Proposal under consideration to expand this system to collect data on other syndromes, such as gastrointestinal illness.

Philippines Project Team

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