



Credit: DataDyne

### **Disease and Epidemic Outbreak Tracking**

#### **Project 36: The Acute Encephalitis Syndrome Surveillance Information System (AESSIMS)**

**Country:** India

**Sponsoring Organization and Partners:** Voxiva, Program for Appropriate Technology in Health (PATH) and the Government of Andhra Pradesh

**Application Area:** Disease and Epidemic Outbreak Tracking

Every year, more than two million children die from preventable diseases in the developing world, and millions more are left impaired. One such culprit, Japanese Encephalitis, a devastating mosquito-borne illness, can be prevented by a vaccination, but it is not always administered due to its high cost and a lack of data on the disease's true prevalence and impact. To begin to tackle this problem, the Government of Andhra Pradesh, where the disease is endemic, pilot tested an Acute Encephalitis Syndrome Surveillance Information Management System (AESSIMS) in one of its districts. Local health workers used mobile phones (or web-based technologies) to report incidences of the disease to the AESSIMS system. Decision makers could access and analyze this data in real time via a variety of tools, including GIS-based maps. It was envisioned that if the pilot test were a success, the AESSIMS system could be rolled out across India and into other Asian countries. There is no evidence yet, however, that this project was either scaled up or extended.

Reference sources:

<http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN030003.pdf>

<http://www.voxiva.com/casestudies.php?caseid=21>

## Project 37: Alerta DISAMAR

**Country:** Peru

**Sponsoring Organization and Partners:** The US Navy, the Peruvian Navy and Voxiva

**Application Area:** Disease and Epidemic Outbreak Tracking

When disease outbreaks occur, timely transfer of information is of the essence. Alerta DISAMAR is a disease surveillance system, based on Voxiva technology, deployed by the Peruvian Navy with support from the US Navy. The system's strength lies in its 'multi-platform flexibility,' which allows users to transmit or access data through multiple technologies, including mobile phones and the Internet. Alerts of disease outbreaks are also sent via multiple mechanisms (text messages, voice mail, and e-mail). An evaluation of the project conducted in 2003 found that within the first year of deployment, Alerta DISAMAR "rapidly improved disease reporting, allowed officials to obtain quality data in real time, and, most importantly, facilitated improved response to disease outbreaks in a remote region." Since its launch, the system has reported more than 80,500 health events over a wide range of medical problems, including diphtheria, yellow fever, snake bites, diarrhea, and acute respiratory infections.

Reference sources:

[http://www.thepresidency.gov.za/learning/cell\\_tech4.pdf](http://www.thepresidency.gov.za/learning/cell_tech4.pdf)

<http://www.govhealthit.com/online/news/94946-1.html>

<http://revision.dev.voxiva.net/news/121603.asp>

## Project 38: FrontlineSMS

**Country:** Worldwide

**Sponsoring Organization and Partners:** kiwanja.net, the MacArthur Foundation and the Open Society Institute

**Application Area:** Education and Awareness, Remote Data Collection, and Disease and Epidemic Outbreak Tracking

One of the largest and most ambitious mHealth programs in the world is FrontlineSMS. FrontlineSMS is a PC-based software application used for sending and receiving group SMS messages. It allows NGOs to run awareness-raising campaigns and competitions, and carry out text-based surveys, or to simply keep in touch with fieldworkers and supporters. FrontlineSMS gives access to 'bulk' SMS technology designed specifically with the NGO sector in mind. Although other bulk SMS systems do exist, almost all require reliable Internet connectivity—not an option in many developing countries. FrontlineSMS does not require an Internet connection and works with any GSM network. The software communicates via a mobile phone or modem, which can be attached to a computer with a USB cable. Users are encouraged to share views, experiences, and ideas in an online forum and to provide feedback for future versions of the product.

FrontlineSMS has been used for many healthcare campaigns worldwide including:

**Africa-wide:** Reporting and monitoring avian flu outbreaks

**Benin:** Sending health alerts to young people about HIV/AIDS, TB, and malaria

**Botswana:** Coordinating a blood donation program

**Ecuador:** Running surveys among rural healthcare workers and radio listeners

**Malawi:** Coordinating healthcare workers and collecting data in the field

**South Africa:** Providing HIV/AIDS information services to teachers

**Tanzania:** Tracing patients who fail to keep clinic appointments and sending patient reminders

**Uganda:** Aiding community-based healthcare in rural communities

Reference sources:

<http://www.frontlinesms.com/who/>

<http://mobilesinmalawi.blogspot.com>

<http://wiki.mobiles.tacticaltech.org/index.php/FrontlineSMS>

## Project 39: GATHER

**Country:** Uganda

**Sponsoring Organization and Partners:** Dimagi, Inc. (privately held software company), AED-SATELLIFE and the Rockefeller Foundation

**Application Area:** Disease and Epidemic Outbreak Tracking

Achieving data and device interoperability is one of the central challenges in improving data collection in developing countries. GATHER is a consortium that has developed a set of tools that enable data entry from a broad range of devices, including desktops, laptops, telephones, PDAs, GPS systems, and bar-code scanners. GATHER's first field test is currently taking place in Uganda with the collaboration of the Ugandan Ministry of Health. Weekly disease surveillance data for 20 health clinics is being collected by mobile phone and sent to a GATHER server located at the Health Ministry's Department of Epidemiology. The results of the Ugandan field test will inform future phases of GATHER development. The developers hope the technology will be ready for broader deployment by late 2009.

Reference sources:

<http://www.gatherdata.org/>

<http://www.dimagi.com/content/gather.html>

## Project 40: Handhelds for Health

**Country:** India

**Sponsoring Organization and Partners:** St. John's Medical College (Bangalore), Indian Institute of Management (Bangalore) and Encore Software

**Application Area:** Disease and Epidemic Outbreak Tracking

Disease outbreaks often start in small clusters. Technology can play a crucial role in quickly detecting and containing initial outbreaks so that broader spread of communicable disease can be prevented. In India, Shashank Garg and Dr. Isha Garg have created Handhelds for Health, a social enterprise that is developing an open source disease surveillance system. With this system, health workers will be able to use mobile devices to collect, validate, and transmit data to a centralized server. The server will be accessible to resident experts, who can use the real-time data to rapidly identify disease trends and make informed public health decisions. Handhelds for Health will also be able to track non-communicable diseases, such as diabetes, that require continual medical attention and follow-up. The founders further hope to use the solution to collect and transmit the data required for large, community-based, longitudinal studies of diseases and other health issues.

Reference source:

<http://handheldsforhealth.org/>

## Project 41: Remote Interaction, Consultation, and Epidemiology (RICE)

**Country:** Vietnam

**Sponsoring Organization and Partners:** Microsoft Corporation, Thayer School of Engineering at Dartmouth College and the National Hospital of Pediatrics (Hanoi)

**Application Area:** Disease and Epidemic Outbreak Tracking

Rural locales in China and Southeast Asia have been identified as potential high-risk areas for SARS and avian influenza transmission. The Remote Interaction, Consultation, and Epidemiology (RICE) telemedicine system will include a disease tracking component to facilitate the early detection of such communicable diseases. Through mobile technology, RICE will also enable "remote medical consultation, epidemiological surveillance and access to medical knowledge in regions of the world without access to computers or the Internet." Most of the interactions among the rural clinics, regional hospitals, and national hospitals will be conducted via smartphones. A pilot test of the RICE solution was conducted in March 2007 in Vietnam. Volunteers from Dartmouth tested the connection between clinics and hospitals in rural areas and the National Hospital of Pediatrics (NHP) in Hanoi. The researchers also investigated the information needs of rural clinics to inform continuing development of the solution.

Reference sources:

<http://media.americantelemed.org/conf/2007/concurrent.htm#t3d>

[http://dartmed.dartmouth.edu/summer07/pdf/vs\\_hanoi.pdf](http://dartmed.dartmouth.edu/summer07/pdf/vs_hanoi.pdf)

## Project 42: Tamil Nadu Health Watch

**Country:** India

**Sponsoring Organization and Partners:** Voxiva

**Application Area:** Disease and Epidemic Outbreak Tracking

Following the devastating 2004 tsunami, the US-based technology company Voxiva deployed a phone- and web-based data collection and disease surveillance system in India's hard-hit Tamil Nadu state. The 'Health Watch' program, launched in May 2005, makes use of existing communications infrastructure (i.e., mobile phones, fixed-line phones, and the Internet) to allow health workers in remote areas to report disease incidence data to health officials in real time. The program also allows health professionals in distant medical centers to quickly analyze and share information and resources, and to adequately respond to specific health-related questions. For the Tamil Nadu project, over 300 primary health center doctors were trained by Voxiva. The interactive training sessions featured simple, easy-to-use bilingual manuals. Training was coordinated with local authorities so that disease surveillance and outbreak response protocols were promoted and reinforced.

Reference sources:

<http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN030003.pdf>

<http://news.asiaone.com/News/the%2BStraits%2BTimes/Story/A1Story20080627-73159.html>



Credit: DataDyne