

fast facts

Project: Real-time Hepatitis Reporting and Surveillance System in low- resource settings using ICT and mobile phones

Lead Organization: UM Healthcare Trust

Country: Pakistan

Budget: 30,107.82 AUD



situation

Hepatitis is tremendous health problem not only in Pakistan but worldwide. In Pakistan, many regions of the country have alarmingly high rates of uncontrolled outbreaks of hepatitis. Regardless of these statistics, there is little effort to curb the disease outside of urban areas. However, 75% of the Pakistani population resides in the rural areas, where Hepatitis A and E are spread rapidly due to a lack of access to clean water and proper sanitation. 20% of the patients treated at UM-Healthcare Trust in Mardan are carriers of Hepatitis and are unaware of their health hazards. The rates of viral Hepatitis challenge the country's progress in achieving the health-related United Nations Millennium Development Goals (UN-MDGs)

solution

Hepatitis is the third largest disease threat in Pakistan. To this end, the UM Health Trust has developed a mobile phone-based system to track and monitor the spread of Hepatitis A and E in rural communities. The system will enable 20 Rural Health Workers (RHWs) to record hepatitis cases in 25 villages, as well as track the cases back to their original sources, making it easier to provide preventative care. This SMS-based system is the first geographical map of Hepatitis in Pakistan, enabling medical professionals to view collected data in Google Maps in real time. The system leverages the existing Jaroka Telehealth system, which was developed to connect Lady Health Workers and clinicians in Mardan with specialists in major cities of Pakistan and the Association of Pakistani Physicians of North America (APPNA) in the United States.

The goals of this project, "Real-time Hepatitis Reporting and Surveillance System in low- resource settings using ICT and mobile phones" included:

- Devising and implementing a replicable Hepatitis surveillance system using GIS, ICT and mobile technology.
- Developing an innovative solution for tracking and tracing Hepatitis back to its source
- Bringing awareness to general public on the preventive methods of the spread of virus.
- Sharing the data with Ministry of Health, policy makers and relevant stakeholders to develop and implement strategies if outbreaks seem imminent.
- Fostering collaboration with national and international partners to strengthen Hepatitis prevention, control and mitigation, focusing on the health and economic impacts of the disease.

This project focused on training Rural Healthcare Workers because they mostly work in isolation and lack essential information about various variants of Hepatitis (HCV, HAV, HEC etc). They are also the frontline medical workers in rural Pakistan. It is vital that awareness about preventive measures and treatment options be disseminated to the masses because early detection of the disease increases the probability

of complete recovery. The system design recognizes that many RHW will have only minimal knowledge of computer technology, and supports both Urdu and English.

The system consists of five main modules: an open source software application for patient data and records, SMS and MMS support, a data portal for sharing patient medical records with APPNA doctors for expert advice, audio and video clips to help train RHWs, and a Google Maps based health grid/map to track disease incidence. The development team involved a variety of stakeholders including medical professionals, community members and Rural Health Workers in system design and requirements gathering. One of the major takeaways from these focus groups was the suggestion to train female school teachers about Hepatitis A and E, as well as preventative care. That way, women and children would learn about the disease and ways to stay healthy.

Over the past two years, the UM Health Trust team has procured telecommunications equipment and deployed the first GIS-based hepatitis mapping prototype. While setting up the prototype site was a challenge, the greatest challenge was hiring a female doctor who could train female health workers and women in the community. In this region of Pakistan, women and men have very limited interaction outside of their families. Having a female doctor in the area has enabled women with Hepatitis to come to the clinic to be treated and educated about the spread of the disease. As women are generally responsible for the health of the family, it is

anticipated that this will ultimately reduce cases of Hepatitis.

The Mardan medical clinic offers free Internet, and RHWs as well as community members can use the network to gain additional health and development information.

outcomes

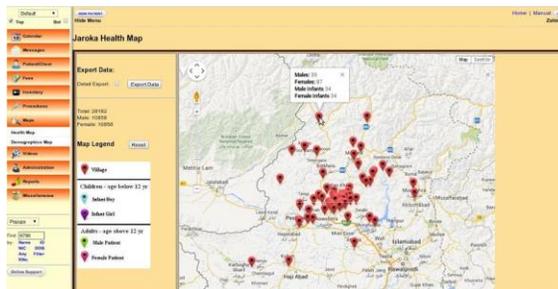
- The project has signed a contract with the National Rural Development Program (NRDP) to replicate the project in Narowal, Punjab for 250 Community Health Workers; a similar contract with the Comprehensive Disaster Response Services (CDRS) is also underway.
- Authored a research paper, "Hepatitis Surveillance System for Rural Pakistan using web and mobile based technologies, to be given at the 2014 High Capacity Optical Network and Enabling Technologies conference.
- Another article, "Epidemic tracking and disease monitoring in rural areas of Pakistan," has been accepted as a chapter in "The E-Medicine, E-Health, M-Health, Telemedicine and Telehealth Handbook" by CRC Press/Taylor & Francis Group, LLC.

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Hepatitis Awareness Session



GIS plotting of patient data