

An evaluation of mobile phone technology use for Integrated Disease Surveillance Project (IDSP) in Andhra Pradesh, India

Vivek Singh^{1*}, B Madhusudan Rao² and Jagan Mohan²

¹Indian Institute of Public Health (IIPH)—Hyderabad, Hyderabad, Andhra Pradesh, India; ²State Surveillance Unit, Directorate of Health, Hyderabad, Andhra Pradesh, India

Objective

To assess the impact of use of mobile phones use on the efficiency and effectiveness of the Integrated Disease Surveillance Project (IDSP) in the state of Andhra Pradesh (AP).

Introduction

Public health surveillance systems are constantly facing challenges of epidemics and shortage in the healthcare workforce. These challenges are more pronounced in developing countries, which bear the greatest burden of disease and where new pathogens are more likely to emerge, old ones to reemerge and drug-resistant strains to propagate. In August 2008, a mobile phone-based surveillance system was piloted in 6 of the 23 districts in the state of AP in India. Health workers in 3832 hospitals and health centers used mobile phones to send reports to and receive information from the nationwide Integrated Disease Surveillance Project (IDSP). Like in many other states, the IDSP in AP is facing many operational constraints like lack of human resource, irregular supply of logistics, hard to reach health facilities, poor coordination with various health programs and poor linkages with nonstate stakeholders. The mobile phone-based surveillance system was an attempt to tackle some of the barriers to improving the IDSP by capitalizing on the exponential growth in numbers as well as reach of mobile phones in the state. Promising results from the pilot of the system led AP state to extend it to about 16,000 reporting units in all 23 districts. This study evaluates how the system has affected the efficiency and effectiveness of IDSP in the state.

Methods

Key informant interviews, focus group discussions, record reviews and surveillance data analysis were conducted at the District Surveillance Units (DSUs), Primary Health Centers (PHCs) and Health Subcenters (HSCs). Five out of the 23 districts were selected for the evaluation using a probability proportion to size sampling strategy. Six PHCs were selected randomly from each of these 5 districts and 1 HSC was selected randomly from each of the PHCs. A total of 30 PHCs and HSCs were visited for evaluation.

Results

The mobile phone-based system was being used only by 20 to 60% of the reporting units. Since the start of the system, there was an increase of 10 to 25% in completeness of IDSP reports. There were significant gains (12–30%) in timeliness of reports. The system was saving time and money on logistics when compared to paper-based reporting. Public health workers in the field were enthusiastic about the system but were not using it as widely or extensively as was possible, because of lack of clear

directives for implementation; lack of guidelines for usage and lack of systematic training of workforce for using the system.

Conclusions

Use of mobile phone technology has the potential to enhance the overall efficiency and effectiveness of the IDSP but will require clear policy directives and guidelines for deployment and usage, systematic training plans and adequate resources for the technology to be accepted and used universally in the state. Our evaluation findings suggest that to maximize the potential benefits of mobile technology in health systems, its use should be based on evidence from operational, technical and technological feasibility studies. This study will prove useful for scaling up such strategies toward disease surveillance systems in countries with similar operational challenges and ready access to mobile phones.

Keywords

Integrated disease surveillance; mobile technology; surveillance quality; feasibility; policy

References

1. Suresh K. Integrated Diseases Surveillance Project (IDSP) through a consultant's lens. *Indian J Public Health*. 2001;52:136–43.
2. Challenges in improving infectious disease surveillance systems. Global Health, United States—General Accounting Office; 2001.
3. Beaglehole R, Bonita R. Challenges for public health in the global context—prevention and surveillance. *Scand J Public Health*. 2001;29:81–3.
4. Binder S, Levitt AM, Sacks JJ, Hughes JM. Emerging infectious diseases: Public health issues for the 21st century. *Science*. 1999;284:1311–3.
5. Health for development: the opportunity of mobile technology for healthcare in the developing world. Washington, DC and Berkshire, UK, UN-Vodafone Foundation.
6. Chretien JP. Electronic public health surveillance in developing settings: workshop summary. *Disease Surveillance: Role of Public Health Informatics*. Bangkok, Thailand; 2008.
7. Buehler JW, Hopkins RS, Overhage JM, Sosin DM, Tong V, CDC Working Group. Framework for evaluating public health surveillance systems for early detection of outbreaks: recommendations from the CDC working group. *MMWR Recomm Rep*. 2004;53(RR05):1–11.

*Vivek Singh

E-mail: vivek.singh@iiph.org