

# Using Electronic Surveillance Systems in Resource-Poor Settings: Why and How

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## OBJECTIVE

In this presentation we will discuss the concept of electronic disease surveillance in resource-poor settings, and the issues to be considered during system planning and implementation.

## BACKGROUND

Difficulties in timely acquisition and interpretation of accurate data on communicable diseases can impede outbreak detection and control. These limitations are of global importance: they contribute to avoidable morbidity, economic losses, and social disruption; and, in a globalized world, epidemics can spread rapidly to other susceptible populations.

SARS and the potential for an influenza pandemic highlighted the importance of global disease surveillance. Similarly, the World Health Organization's (WHO) newly implemented 2005 International Health Regulations (IHR) require member countries to provide notification of emerging infectious diseases of potential global importance.<sup>1</sup> The challenges arise when Ministries of Health (MoH) in resource-poor countries add these mandates to already over-burdened and under-funded surveillance systems. Appropriately adapted, electronic disease surveillance systems could provide the tools and approaches MOHs need to meet today's surveillance challenges.

## METHODS

Information gained during site visits to functioning disease surveillance systems in low and middle income countries is used to help define and discuss the issues to be considered when implementing electronic disease surveillance in resource-poor settings.

## RESULTS

A new paradigm is needed to adapt syndromic surveillance methodology to resource poor areas. The pre-existing electronic health care data, which are the hallmark of electronic disease surveillance systems in the U.S., are rarely available in low and middle income countries. In these settings, data must be collected actively at the lowest feasible level of the healthcare delivery system and encoded for use in

surveillance. The challenge is how to do this in an efficient and sustainable manner; and the methods used will likely vary by location. The first step is to define the purpose and requirements of the enhanced system, after thorough review of current practices, and decide whether the data collection and entry capacity needed for a system are available. Once it is determined the capacity exists, additional information to be collected during the review includes: the ultimate goal of the system; the current level of information technology and surveillance infrastructure, and integration with existing systems; the level at which data will be collected and encoded; the type and frequency of data collection, encoding, and analysis; the skill sets of current personnel and the training needed for the new system; and the commitment of government, politicians, and the health care community at all levels. Software and hardware for data entry, management, analysis and visualization must also be considered. Once in place and operational, evaluations must be done to quantify the cost, benefits and limitations of the new systems.

## CONCLUSIONS

Electronic disease surveillance can and is being used in developing countries<sup>2</sup> where there is a desire and commitment on the part of every level of the health infrastructure. But system requirements, for both implementation and long term sustainability, must be clearly understood at the outset in order for systems to succeed.

## REFERENCES

1. WHO (2005) International Health Regulations.
2. Chretien JP, Blazes D, Mundaca C, Glass J, Happel Lewis S, Lombardo JS, Erickson RL. Surveillance for Emerging Infection Epidemics in Developing Countries: EWORS and Alerta DISAMAR. In: Lombardo JS, Buckeridge D: (eds.). Disease Surveillance: A Public Health Informatics Approach. Hoboken (NJ): John Wiley & Sons, Inc. p 367-396.