

## **Beyond Traditional Surveillance: Applying Syndromic Surveillance to Developing Settings—Opportunities and Challenges**

**Larissa May, MD, MSPH<sup>1</sup>, JP Chretien, MD, PhD<sup>2,3</sup>, Julie Pavlin, MD, PhD, MPH<sup>4</sup>.**

- 1. Department of Emergency Medicine, The George Washington University, Washington, D.C.*
- 2. Division of Health Sciences Informatics, Johns Hopkins University School of Medicine, Baltimore, M.D.*
- 3. Division of Preventive Medicine, Walter Reed Army Institute of Research, Silver Spring, M.D.*
- 4. Global Emerging Infections System, Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand*

**Objective:** To review applications of syndromic surveillance in developing countries

### **Background:**

The revised International Health Regulations (IHR) have expanded traditional infectious disease notification to include surveillance diseases of international importance, including emerging infectious diseases. However, there are no clearly established guidelines for how countries should conduct this surveillance, which types of syndromes should be reported, nor any means for enforcement. The commonly established concept of syndromic surveillance in developed regions encompasses the use of pre-diagnostic information in a near real time fashion for further investigation for public health action. Syndromic surveillance is widely used in North America and Europe, and is typically thought of as a highly complex, technology driven automated tool for early detection of outbreaks. Nonetheless, applications of syndromic surveillance using technology appropriate for the setting are being used worldwide to augment traditional surveillance, and may enhance compliance with the revised IHR.

**Methods:** In this presentation, we review examples of syndromic surveillance in low resource settings identified through literature review and consultation with experts. We hope to demonstrate that syndromic surveillance in its basic version is a feasible and effective tool for surveillance in developing countries and may facilitate compliance with the new IHR guidelines.

**Results:** Syndromic surveillance is currently being used in developing countries for a wide range of applications, including early warning for vector-borne diseases, foodborne illness, and sexually transmitted infections.

**Discussion:** Syndromic surveillance in its well known form often is a high technology tool. In reality, surveillance of syndromes is not a new phenomenon, with an early and effective example being acute flaccid paralysis for detection of poliomyelitis (1). While syndromic surveillance is augmenting traditional surveillance in the developed world, it also has the potential to improve timely

detection of disease outbreaks in developing countries, most of whom lack access to a resource-rich public health infrastructure and specialized laboratories. Syndromic surveillance may be especially useful for early epidemic control of certain vector borne diseases as well as for diseases of public health importance that have the potential to cross international boundaries. The WHO, in its revised IHR, has made recommendations for surveillance of syndromes as well as mandated the reporting of diseases of international importance; all countries must comply with these new guidelines to ensure global control of public health. There is currently little infrastructure in place to enforce these guidelines, and each country must design a national surveillance system that can allow for timely detection and notification of these disease outbreaks. Such systems should build on existing public health surveillance infrastructure, as well as work that has been done in electronic and syndromic surveillance in other regions.

**Conclusions:** With increasing access to internet, and decreased cost and improved user friendliness of information technology in developing countries (2), novel applications for syndromic surveillance are enhancing traditional surveillance and will hopefully continue to improve the detection of outbreaks worldwide, fulfilling the goals of the IHR. We hope this review will be the starting point for further development of guidelines for how to conduct syndromic surveillance in developing countries.

### **References**

- Buehler JW, Hopkins RS, Overhage JM, Sosin DM, Tong V. Framework for Evaluation Public Health Surveillance Systems for Early Detection of Outbreaks. Recommendations from the CDC Working Group. *MMWR* 53 (RR05); 1-11, 2004.
- JP Chretien. Howard S. Burkom. Endang R. Sedyaningasih, Ria Larasati, Andres G Lescano, Carmen C Mundaca, et al. Syndromic Surveillance: Adapting Innovations to Developing Settings. *PloS Medicine* March 2008 (5:3), e72.