

Syndromic Surveillance from a Local Perspective – A Review of the Literature

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Objective

Review of the origins and evolution of the field of syndromic surveillance. Compare the goals and objectives of public health surveillance and syndromic surveillance in particular. Assess the science and practice of syndromic surveillance in the context of public health and national security priorities. Evaluate syndromic surveillance in practice, using case studies from the perspective of a local public health department.

Introduction

Public health disease surveillance is defined as the ongoing systematic collection, analysis and interpretation of health data for use in the planning, implementation and evaluation of public health, with the overarching goal of providing information to government and the public to improve public health actions and guidance [1,2]. Since the 1950s, the goals and objectives of disease surveillance have remained consistent [1]. However, the systems and processes have changed dramatically due to advances in information and communication technology, and the availability of electronic health data [2,3]. At the intersection of public health, national security and health information technology emerged the practice of syndromic surveillance [3].

Methods

To better understand the current state of the field, a review of the literature on syndromic surveillance was conducted: topics and keywords searched through PubMed and Google Scholar included biosurveillance, bioterrorism detection, computerized surveillance, electronic disease surveillance, situational awareness and syndromic surveillance, covering the areas of practice, research, preparedness and policy. This literature was compared with literature on traditional epidemiologic and public health surveillance. Definitions, objectives, methods and evaluation findings presented in the literature were assessed with a focus on their relevance from a local perspective, particularly as related to syndromic surveillance systems and methods used by the New York City Department of Health and Mental Hygiene in the areas of development, implementation, evaluation, public health practice and epidemiological research.

Results

A decade ago, the objective of syndromic surveillance was focused on outbreak and bioterrorism early-event detection (EED). While there have been clear recommendations for evaluation of syndromic surveillance systems and methods, the original detection paradigm for syndromic surveillance has not been adequately evaluated in practice, nor tested by real world events (ie, the systems have largely not 'detected' events of public health concern). In the absence of rigorous evaluation, the rationale and objectives for syndromic surveil-

lance have broadened from outbreak and bioterrorism EED, to include all causes and hazards, and to encompass all data and analyses needed to achieve "situational awareness", not simply detection. To evaluate current practices and provide meaningful guidance for local syndromic surveillance efforts, it is important to understand the emergence of the field in the broader context of public health disease surveillance. And it is important to recognize how the original stated objectives of EED have shifted in relation to actual evaluation, recommendation, standardization and implementation of syndromic systems at the local level.

Conclusions

Since 2001, the field of syndromic surveillance has rapidly expanded, following the dual requirements of national security and public health practice. The original objective of early outbreak or bioterrorism event detection remains a core objective of syndromic surveillance, and systems need to be rigorously evaluated through comparison of consistent methods and metrics, and public health outcomes. The broadened mandate for all-cause situation awareness needs to be focused into measureable public health surveillance outcomes and objectives that are consistent with established public health surveillance objectives and relevant to the local practice of public health [2].

Keywords

evaluation; biosurveillance; situational awareness; syndromic surveillance; local public health

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