

Monitoring the Vital Signs of Community Health-The Pyramid Syndromic Surveillance Project

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Objective

This paper describes the use of a multiple collective community health care database to monitor the occurrence of natural and manmade illness and injuries.

Background

Syndromic surveillance systems have long been an important part of the public health arena [1]. The long standing goal of early detection of disease outbreak has gained new urgency and requires a broader spectrum in the era of potential bioterrorism. A number of programs have used syndromic surveillance to broadly monitor community health [2]. Outpatient chief complaints as well as positive laboratory tests have been used to monitor the occurrence of natural diseases [3-4].

Limitations of the systems currently attempted include overbroad syndromic categories, labor intensive syndrome recognition training and time intensive manual data entry [5]. Optimal use of laboratory data has been impeded by some of the same issues as well as a too often narrow focus and significant limitations on real time reporting [6]. Given the likelihood of blunt and/or penetrating trauma being a manifestation of terrorist activity, the continuous inclusion of common traumatic and medical emergency conditions is a valuable tool for surveillance.

Methods

Spokane County's four major community hospitals with a total of approximately 900 inpatient beds and approximately 165,000 emergency visits annually share a combined patient care database that includes comprehensive patient care records as well as laboratory and imaging studies. A software program, the Pyramid Syndromic Surveillance Program, was designed and implemented using Metropolitan Medical Response System (MMRS) funding to download and display an organization of ER Chief Complaints, Hospital ICD9 Codes, and Laboratory Data. The ER syndromic level of surveillance includes broad categories which are further subdivided to increase the likelihood of our ability to appreciate and quantify an unusual occurrence. Similarly, but with more specificity and more granularities, the Hospital ICD9 Codes are comprised of a broad spectrum of specific agents causing infectious disease as well as a

wide range of major medical admissions and trauma. The Laboratory Level tracks the occurrences of specific viral and bacterial communicable agents, as well as unusual bacteria acknowledged for their potential to be used in a bioterrorist event. The information in each of these categories is automatically downloaded (no additional steps needed) every 24 hours and graphically displayed on a 1 day, 7 day, 30 day, 1 year, and 3 year timeline. The system is on a displayed password protected website intended to be made available to all health care providers, public health officials, and hospital administrators in our county (see p 2-3).

Conclusion

The Pyramid System attempts to provide real time surveillance for an unanticipated occurrence of disease so as to allow an early, coordinated health care response to meet necessary resource staffing demands as well as mitigate a potential epidemic. On a regular basis, information from the Pyramid database can inform providers regarding the occurrence of natural disease and provide valuable system management for the drivers of our community health care system. The intended expansion of the data base to include EMS and a Homeland Security Alert Level will further enhance the sensitivity of the system to detect significant events and engage public health officials at the earliest opportunity.

The Pyramid system monitors the natural occurrence of disease and injury that has daily relevance to a broad spectrum of health care providers. By virtue of its ease of access, simplicity, and utility, it provides a tool for the early detection of a major disease occurrence giving our health care system the best opportunity to respond.

References

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