Development of a multi-jurisdictional syndromic surveillance system

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Abstract

We have identified several potential barriers to shared public health informatics systems in the context of developing a syndromic surveillance. A formal charter process successfully navigated these barriers. A flexible development process enabled building of system to proceed while policy issues were addressed.

Introduction

Since disease does not respect geopolitical boundaries, Public Health surveillance systems must cross-jurisdictional boundaries to maximize effectiveness. Working professional relationships between public health officials has been the typical method of working across jurisdictional boundaries. The development of automated informatics systems (such as syndromic surveillance systems) that must be able to work across jurisdictional boundaries without human intervention presents policy and cultural challenges to public health.

Methods

We examined the technical feasibility of setting up a shared data-analytic application for syndromic surveillance across a number of jurisdictions and the policy issues involved with a shared surveillance system in the context of developing a syndromic surveillance system.

Results

We identified several issues that are potential barriers to examining and developing the necessary policies for a shared data system, including multi jurisdictional and hierarchical jurisdiction issues between the local public health agencies and the state public health agency, skepticism about the cost-benefit equation for syndromic surveillance, overlap with other projects and cultural differences between the developers and the public health agencies.

After exploring several options that did not work in developing policy consensus a formal charter process \(^1\) was initiated. The charter process took 18 months and was successfully completed December 2006.

The primary technical challenge that we faced was how to simultaneously proceed with technical development of the system while the development of the policy consensus proceeded. In particular it was not possible to get specific requirements for the system until policy consensus was achieved, which would not leave sufficient time for system development if the development process was to start once specific requirements were obtained.

This issue was been addressed in the development process as follows:

- By using a flexible application and data base architecture
- By making use of a surrogate end user with domain expertise to help develop detailed requirements.
- By using the Agile development process, with one month development cycles
- By the development of a prototype which is being used to refine the user interface and optimize application workflow.
- Through use of a large and realistic simulated data set, which simulates all ER visits in the State of Washington over a two year period, and includes a simulated major disease outbreak and simulated data errors.

A syndromic surveillance application was developed on a .NET platform and has been installed at the Washington State Department of Health on a trial basis, available for use to the WADOH and two local health jurisdictions. An evaluation on the usefulness of the system specifically to detect and track Influenza-Like Illness (ILI) is underway.

References