COACTION PUBLISHING

Rapid ad hoc cross-jurisdictional sharing of syndrome data using Distribute technology

Ian Painter[1]*, Don Olson[2] and Bill Lober[1]

[1]University of Washington, Shoreline, WA, USA; [2]International Society for Disease Surveillance, Brighton, MA, USA

Objective

To demonstrate how rapid ad hoc sharing of surveillance data can be achieved through informatics methods developed for the Distribute project.

Introduction

Cross-jurisdictional sharing of public health syndrome data is useful for many reasons, among them to provide a larger regional or national view of activity and to determine if unusual activity observed in one jurisdiction is atypical. Considerable barriers to sharing of public health data exist, including maintaining control of potentially sensitive data and having informatics systems available to take and view data.

The Distribute project (1,2) has successfully enabled cross-jurisdictional sharing of ILI syndrome data through a community of practice approach to facilitate control and trust and a distributed informatics solution.

The Gossamer system (3) incorporates methods used in several UW projects including Distribute. Gossamer has been designed in a modular fashion to be hosted using virtual or physical machines, including inside cloud environments. Two modules of the Gossamer system are designed for aggregate data sharing and provide a subset of the Distribute functionality.

The Distribute and Gossamer systems have been used for ad hoc sharing in three different contexts: sharing of common ILI data for research into syndrome standardization, sharing syndromic data for specific events (2010 Olympics) and for pilot regional sharing of respiratory laboratory results. Two additional projects are underway to share specific syndromes of recent interest: alcohol-related and heat-related ED visits.

Methods

The Distribute system was initially designed to share 4 syndromes (broad and narrow ILI, and GI syndromes). To reduce barriers to entry, the Distribute project does not impose strict syndrome definitions. This lack of standardization introduces variability between jurisdictions and a pilot has been undertaken to compare sites with preferred definitions and to develop a common ILI definition. To enable the addition of a common syndrome considerable modifications to the structure of the Distribute system were required. The approach taken allowed for the use of arbitrary indicators and stratification ranges.

The Gossamer system uses a similar data storage architecture to that of the current version of Distribute, though Gossamer is more modular and better able to use external services. These features make it useful for moving beyond specific political structures or disease content areas.

Results

The expanded data model has now been used to support the ILI standardization effort through comparison of newly contributed 'ILI-S' syndrome data. Distribute was also used to develop a site to allow Washington State DoH to share specific syndromic data with British Columbia during the 2010 Olympics. An instance of Gossamer demonstrated sharing laboratory results for 14 viral isolates between two states. In addition to community-driven comparisons of ILI and GI syndromes, the data model has been applied at the design level to two additional syndrome types for ad hoc data sharing: alcohol intoxication-related visits and heat exposure-related ED visits.

While built around similar data models, each system has strengths and weaknesses for ad hoc sharing of data. Advantages of the Distribute system for sharing additional data include making use of the existing trust and community that is based around the system, which reduces many barriers to sharing data and facilitates adding more community members. In addition, data feeds and administrative details are already in place.

Disadvantages of using Distribute include limitations in the common data transmission format, limitations in stratifiers and limitations in compartmentalization.

The implementation of the very similar data model in Gossamer is able to address some of these issues by various strategies including virtualization and modular architecture, while extending the flexibility which supports new applications of the data collection, quality and analysis methods developed for use with influenza syndromes in Disribute.

Conclusions

The 5 examples illustrate the strengths of the community of practice approach to sharing data. The Distribute and Gossamer systems illustrate how lightweight systems can be designed to easily facilitate ad hoc sharing between jurisdictions.

Keywords

Informatics; surviellance; architecture; data sharing; public health practice

References

1. Diamond CC, Mostashari F, Shirky C. Collecting and sharing data for population health: a new paradigm.Health Aff (Millwood). 2009;28:454–66. http://www.ncbi.nlm.nih.gov/pubmed/19276005.
2. Olson DR, Paladini M, Lober WB, Buckeridge DL; ISDS Distribute Working Group. Applying a New Model for Sharing Population Health Data to National Syndromic Influenza Surveillance: DiSTRIBuTE Project Proof of Concept, 2006 to 2009. PLoS Curr. 2011;3:RRN1251. http://www.ncbi.nlm.nih.gov/pubmed/21894257.
3. www.gossamerhealth.org.

*Ian Painter
E-mail: ipainter@uw.edu

Citation: Emerging Health Threats Journal 2011, **4**: 11195 - DOI: 10.3402/ehtj.v4i0.11195