Infection Watch Live - A real-time, geospatial mapping tool of hospital triage data for public consumption

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OBJECTIVE

To inform health professionals and the public directly about real-time utilization of local Emergency Departments for respiratory and gastrointestinal illness to enable enhanced communication and collaboration between Public Health and health care workers.

BACKGROUND

While most public health departments do not incorporate spatial information into disease surveillance there is a growing body of knowledge that indicates such data can be a useful tool in tracking the spread of certain diseases. The prompt detection of respiratory and gastrointestinal related diseases are of particular importance due to the rapid transmission and potential burden such illnesses have on the community. In particular, the threat of a pandemic raises significant concern which necessitates the early spatial detection of an outbreak for appropriate public health action. Our Canadian research team intends to undertake an initiative for the creation of a novel Geospatial Decision Support System (GDSS) that will use anonymized, non-identifiable, real-time hospital respiratory and gastrointestinal data, in an effort to improve the sharing of information and enhance communication between the community, professional end-users and decision makers. This will be accomplished using data from an already existing real-time Emergency Department Syndromic Surveillance (EDSS) system in Kingston, Ontario. The EDSS system has already been demonstrated to be a valuable addition to the public health surveillance toolkit and has been recognized provincially and internationally as a highly valued and worthwhile approach to disease surveillance [1]. Our new system will be known as Infection Watch Live, which will publish publicly available maps (generated using ArcGIS Server) and be available at www.klfapublichealth.ca in September 2008.

METHODS

Design activities developed a 'blueprint' for the application. The project team created a conceptual system design and functional specifications for the proposed system. Analysis activities were conducted to ensure that the GDSS system design employed robust User-Centered Design (UCD) techniques. This was achieved through meetings with stakeholders and research of the existing EDSS system. This resulted in additional system needs and requirements and design constraints. Development will involve implementation of the system to meet the defined design requirements. Database development will involve creating a physical database to support the GDSS application. The database model, when implemented, must interface with the current syndromic surveillance applications. The primary user interface will be a web-based GIS application component developed using ESRI ArcGIS Server. Deployment will involve migrating the application from a development environment to its production environment, system testing, final modifications and launch. Testing will encompass quality assurance testing, user acceptance testing and performance testing. An external communications plan will be implemented, announcing the launch to end users, the public and other identified stakeholders.

DISCUSSION

While the system is currently in the testing phase, our maps will display aggregated levels of disease activity within postal code boundaries along with layers such as major roads and the locations of hospitals, schools, day cares and long-term care facilities. By mapping these two common syndromes and allowing the public to access these daily maps, it is hoped that the community will see a decrease in mortality and morbidity from these common infectious diseases.

ACKNOWLEDGEMENTS

REFERENCES

[1] Moore KM, Edgar BL, McGuinness D. Implementation of an automated, real-time public health surveillance system linking emergency departments and health units: rationale and methodology. *CJEM* 2008; 10(2):114-9.

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