A Patient-centric, Internet-based Application for the Data Management of a Multi-centre Respiratory Syncytial Virus Prophylaxis Program

Marianne Bracht RN\textsuperscript{1}, Andrew James MBChB FRACP FRCP\textsuperscript{2,3} for the Toronto Tri-Hospital RSVP Program. \textsuperscript{1}Paediatrics, Mount Sinai Hospital, Toronto, \textsuperscript{2}Neonatology, The Hospital for Sick Children, Toronto and \textsuperscript{3}Department of Paediatrics, University of Toronto, Toronto, Ontario, Canada.

Abstract: Respiratory syncytial virus prophylaxis (RSVP) has been shown to be effective and RSVP programs exist in many jurisdictions. The success of these RSVP programs is dependent upon meticulous administration, comprehensive tracking of at risk infants, and excellent management of data. The Toronto Tri-Hospital RSVP program was established at Mount Sinai Hospital, Sunnybrook and Women’s College Hospital, and the Hospital for Sick Children in 1999. Over 600 infants at risk for severe respiratory syncytial virus (RSV) disease are identified annually. The majority of these at risk newborn infants are transferred from the three level III Neonatal Intensive Care Units to a community hospital before discharge home under the care of a paediatrician. We designed and built an integrated, shared, user driven but infant-centric data management application that enables an infant’s healthcare provider to determine an infant’s RSV prophylaxis status throughout the RSV season. The security and confidentiality of each infant’s information is protected by rigorous integrity constraints that have been integrated into the database schema.

Description: Respiratory syncytial virus prophylaxis (RSVP) has been shown to be effective and RSVP programs exist in many jurisdictions. The Toronto Tri-Hospital RSVP program functions as a shared, collaborative model that facilitates the dissemination of knowledge and skills from the three academic health science centres into the surrounding community. Support is provided for local hospitals and health care professionals.

We evaluated our RSVP program in 2001 and determined that the administrative requirements could be improved by a data management application.

A desktop application was developed specifically for use at Mount Sinai Hospital. Although this application delivered the desired outcomes, our attempt to share it with other hospitals was unsuccessful. Workflow issues and insufficient information technology support to maintain the application’s functionality were the dominant obstacles to uptake of this application.

We have developed an integrated, shared, user driven but infant centric data management application for the Toronto Tri-Hospital RSVP program and its community partners. Users include RSV Nurse Coordinators, hospital-based paediatricians and community paediatricians.

The application was developed as a project involving the following activities:

- the identification of the desired functionality for the application
- definition of the application’s core and secondary functionality through a collaborative approach with tertiary and community hospital based users
- development of the technical specifications for the application
- design of the user interface
- the build of the application and user interface
- usability testing together with revisions of the application
- implementation of the application

The application is dependent upon a relational database that supports the maintenance of security and confidentiality of patient information. The security and confidentiality of each infant’s information is protected by rigorous integrity constraints that have been integrated into the database schema.

The application has been subjected to extensive usability testing within the three academic health science centres during the 2006-07 RSV season. It will be implemented across six regional paediatric centres for the 2007-08 RSV season.

The application will be demonstrated with particular emphasis upon the user interface, the features that protect the security and confidentiality of each infant’s information, and the application’s reporting capabilities.

This project demonstrates the evolution from a paper-based data management system to a user centric desktop application, and then to a patient-centric, Internet-based application for the data management of a multi-centre RSVP Program.