Developing the Web-Based Seamless Discharge Communication Tool

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Abstract

Discharge summaries are a primary means to convey information regarding a patient's hospitalization. However, problems with completeness, timeliness, and a lack of standardization of manually generated summaries can create a barrier to appropriate care. A collaboration between the Ward of the 21st Century (W21C), and Clarity Inc., sought to address this problem through the creation of a Web-Based Seamless Discharge Communication Tool. Electronic discharge summaries can be structured to ensure that critical data about the hospitalization is consistently documented and can be transmitted instantly via the internet. This innovative program has used an integrated KT approach in engaging end-users in all stages, from identification of knowledge needs to implementation and evaluation. The authors conclude that successful and highly productive partnerships that address healthcare challenges can be built between universities, industry partners, and health organizations. These relationships can be complex and require special attention to the interests of each party.

Background

Information about a patient's hospitalization is commonly transferred to the primary care physician via a discharge summary.[1, 2] This is typically a manually generated document in a narrative or semi-structured format. Content may include: diagnosis, medical history, brief hospital course, treatment provided, diagnostic/laboratory results, discharge medications, and follow-up needs. The document is then generally faxed, mailed, or given to the patient to hand deliver to their primary care physician.

Major deficits exist with respect to the adequacy of content and timeliness of information transfer with these manually generated discharge summaries.[1, 2, 3, 4, 5, 6, 7] Lack of a standardized structure has resulted in either too little documentation or excessive and irrelevant documentation. Inaccurate, inconsistent, and misleading content is also often included. Hospital physicians most often neglect to include diagnostic findings, treatment/hospital course, discharge medications, tests results, and whether the patient and family received counselling.[1, 2] As few as 12% to 34% of summaries are received by the primary care physician in time for the patient's first post-discharge appointment and, in many cases, the discharge summary is never received.[1, 2, 6–8] This lack of access to information at the community level is a barrier to appropriate care for approximately 25% of patients.[1, 2]

Electronic discharge summaries may represent a solution to these issues because they improve legibility and timely delivery, and can be structured to ensure consistent critical data about the hospitalization is documented for each patient.[1, 2, 4] Information can be transmitted almost instantly via the internet or by automatic fax. Additional content such as laboratory and diagnostic findings, allergies, and medication lists can be uploaded in seconds from hospital databases and physician order entry systems.[1, 2] Storing data electronically or in internet data repositories is secure, practical, and often does not require the user to have any special training or to acquire additional software. Finally, there is mounting evidence that physicians in both acute and community settings prefer electronic discharge documents over hand written/dictated summaries with respect to clarity, comprehensiveness, and positive impacts on continuity of care. [7, 9–13]

KT Objectives

The objectives of our research were to:

1. Investigate the communication gap between hospital and community care providers identified in the international literature as well as within Alberta Health Services (AHS) through a qualitative descriptive study. This goal of this phase was to inform continuing research and potentially inform policy decisions.

2. Conduct a systematic review of the efficacy of computer-enabled discharge communication compared to traditional communication for patients discharged from acute care hospitals with respect to mortality, readmission, and adverse events, as well as several key secondary outcomes. The goal of this phase was to add to the body of knowledge that will inform future research.

3. Collaborate with a Calgary-based company, Clarity Inc., to develop a highly functional and user-friendly electronic discharge summary that can be marketed to other hospitals/health organizations on a provincial, national, or international level.

4. Integrate the electronic discharge summary into the AHS computer infrastructure (Sunrise Clinical Manager 5.0), thereby changing the practice of how patients are discharged.

5. Provide an evaluative framework for the new electronic discharge summary through a pilot test protocol and a formal clinical trial protocol.

Audience

Traditionally, only the discharging physician and the primary care physician exchange information about a patient's hospitalization. This research identifies many other previously overlooked, yet critically important stakeholders and provides a mechanism for these individuals to become engaged in this communication circle. The target end-users of this research are hospital care providers (physicians, residents, nurses, allied health professionals, transition services staff, hospital management), and community care providers (primary care physicians, pharmacists, home care nurses), as well as patients and their families.

There are a number of barriers that must be overcome in order to effectively link care provider groups. Some of these include balancing access of records with protection of private health information, addressing different levels of access to (and knowledge of) computer technology, and integrating new software with existing hospital/community information systems to ensure accurate information and reduce duplication of work. Once new technology is successfully implemented, other key factors such as strategic thinking, strong leadership, collaboration with stakeholders from an early stage, communication, and coordination, must be in place to ensure improved patient outcomes.[10,14]

KT Strategy

This innovative program of work has been conducted with ongoing knowledge translation occurring at all stages. The end users described above were initially consulted to identify data requirements, and were then engaged in a process of co-developing the seamless discharge communication tool by providing extensive feedback in nine focus groups.

The work has been conducted as a committed partnership between the Ward of the 21st Century initiative, the University of Calgary, and champions within Alberta Health Services, who have bro-kered the significant in-kind support that is now permitting the build of the Seamless Discharge Tool into the Calgary zone computerized physician order entry system (SCM 5.0). The final evaluative component of this research will again involve clinical end-users and patients to provide nationally and internationally novel evidence regarding the efficacy of such information tools for improving health care delivery.

Other KT strategies that have been used include targeted face-to-face meetings, conference presentations, submission of findings to peer-reviewed journals, and interviews on CBC radio.

Results

Overall, the project has been successful to date in that:

1. A thorough understanding of the communication gap between hospital and community care providers has been accomplished along with identification of five themes and 11 concrete recommendations that can improve the overall quality of communication and the value of the discharge summary.

2. The efficacy of computerized discharge interventions has been described and critical endpoints that are not well understood have been identified for future research to address.

3. The Web-Based Seamless Discharge Communication Tool, an innovating electronic discharge summary, has been developed. This electronic discharge summary will: a) provide a standardized template for a multi-disciplinary group of care providers to communicate relevant clinical information; b) be immediately available at time of discharge; and c) be web accessible to community-based providers (primary care physicians, specialist consultants, home care nurses, community pharmacists), and patients/families.

4. The AHS Seamless Discharge Summary was built on the foundation of the work done in earlier stages of this research and the new tool has been integrated into Sunrise Clinical Manager (SCM 5.0) in collaboration with the AHS Information Technology (IT) Department.

5. The final evaluative phase of this work is set to commence in November 2010. It will involve a pilot test of the AHS Seamless Discharge Summary with 100 actual patient discharges. It will involve formal usability testing as well as a detailed assessment of provider and patient satisfaction with the discharge tool and with the completeness and timeliness of discharge summaries produced. This will then be followed by a formal prospective clinical trial involving 1,400 patient discharges. The trial will evaluate the efficacy of the prototype with respect to reducing hospital readmission and mortality (at three months), adverse events, and adverse drug events.

Screen shots of both the Web-Based Seamless Discharge Communication Tool and the AHS Seamless Discharge Summary are provided below.
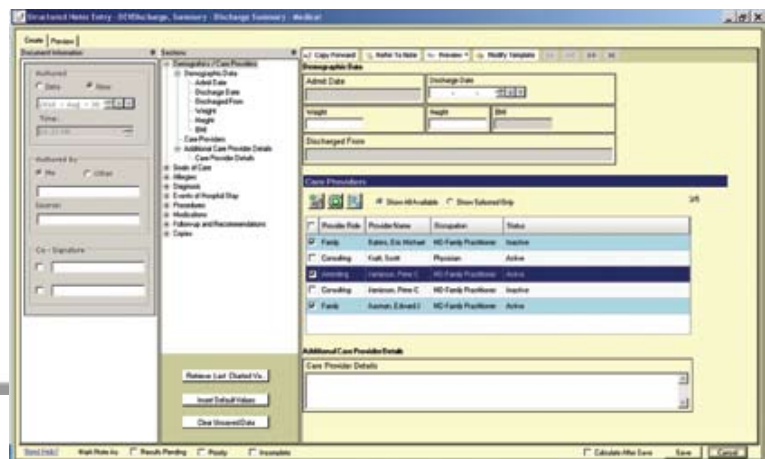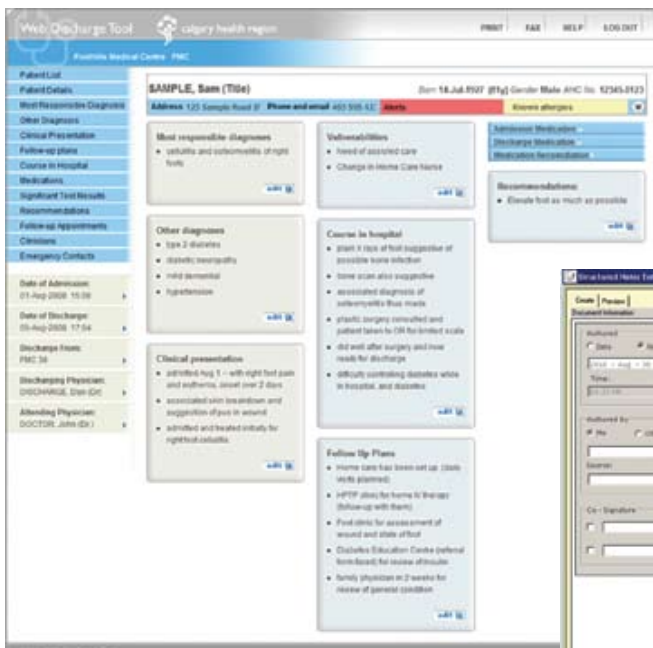
Key Messages

The key lessons learned from this initiative include the understanding that:

- successful and highly productive partnerships that address health care challenges can be built between universities, industry partners, and health organizations. These relationships can be complex and require special attention to the interests of each party.
- engagement of all key stakeholders up front and throughout the research process is critical to ensuring widespread ownership and eventual large scale uptake.
- electronic discharge summaries can provide a potential solution to some of the existing deficiencies in hospital/community communication.
- the electronic discharge summaries developed during this research can be implemented directly into other healthcare organizations

About the Authors

Mona Motamedi, M.Sc., currently works within the Patient Safety Portfolio of Alberta Health Services. This research was conducted as part of her graduate thesis work. Dr. Charlotte Tang (Ph.D., Computer Science) is a post-doctoral research fellow, University of Calgary, under the guidance of Dr. William Ghali. Shandra Kimpton, M.Sc., is the administrative director for the Ward of the 21st Century. Dr. William Ghali, M.D., M.P.H., F.R.C.P.C., is the director of the Calgary Institute for Population and Public Health as well as a physician with Alberta Health Services and a researcher within the University of Calgary.

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