



Nursing Informatics in Home Care: The Missing Link

by

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Abstract

The need for nursing informatics specialists in the home care sector has never been greater. In the era of the electronic health record, health care organizations must begin to ensure that clinicians have the appropriate informatics knowledge and competencies to drive the evolution of health care forward. Despite some movement in implementing nursing informatics roles in the acute care sector in Ontario, there have been very little investment made in adopting these roles in the home care sector. This paper will examine the current state of nursing informatics in home care and provide rationale and recommendations to improve the implementation and access of this specialty in the home care sector in Ontario.

Introduction

The movement towards evidence-based practice in health care is dependent upon improving the access, speed, accuracy and uptake of data, information and knowledge. As a result, health care leaders and policy makers have stressed the importance of utilizing information technology to improve quality, safety, cost and satisfaction within health care. Nurses with advanced competencies in informatics are key players in ensuring the success of these initiatives in the clinical setting (Canadian Nurses Association, 2001; Hersh, 2006; Nagle, 2000). Nurses collect, document, and evaluate enormous volumes of patient care information: indeed, the management and utilization of data is a core component of nursing work. Nursing informatics is focused on the application of computer and information science in the management and processing of nursing related data, information and knowledge. Nursing informatics (NI) is a specialty that has slowly gained recognition in the health care system over the last 30 years (Hannah, Hammell, & Nagle, 2006; Staggers & Bagley Thompson, 2002).

Implementation of health information technology (HIT) has predominantly developed in the acute care sector, with a focus on improving the financial management and business operations of large hospitals. More recently, a considerable drive to measure outcomes has led to the development and implementation of technologies to support and enhance clinical care (Canadian Home Care Association, 2008; Nagle, 2000). Very few information technology (IT) and information management (IM) initiatives have been implemented in the home care sector. Elinor Caplan's review of the Ontario home care system in 2005 revealed that service providers delivering home care lack the appropriate information technology infrastructure to collect clinical and administrative data. Lack of data from the home

care sector creates an enormous barrier in evaluating the quality and cost-effectiveness of community care services, and limits the future development of the electronic health record. Nurses with informatics skills and knowledge are the "missing link" between the current reality and the future direction of information management in home care.

Current State of Nursing Informatics in Ontario Home Care

The profession of Nursing includes the vast majority of health care professionals and this is particularly true in home care. Nursing knowledge forms the basis for much of home care practice today, yet, very little of this knowledge is captured due to the lack of appropriate systems to collect, store, and retrieve data. Home care in Ontario is significantly paper based. Referrals, documentation, medical supply requisitions and service reports are rarely sent electronically, and are still faxed or hand delivered, creating a huge paper burden for nurses working in this sector. Clinical and administrative data are rarely captured, and when it is collected, the data is often inconsistent (Caplan, 2005).

Similarly to the acute care sector, nurses working in home care lack knowledge of the concepts of health informatics. On the other hand, the significant advancements in home care nursing have been facilitated by the implementation of various technologies into the community setting. Programmable ambulatory infusion pumps, home ventilators, and patient monitoring devices are only a few of the technological innovations that have successfully been implemented in the home setting. By nature of their exposure to technology, nurses in home care would likely be adaptable to the implementation of computer-based clinical information systems, but, these systems have yet to be perfected and implemented.

Caplan (2005) found that when information technology initiatives were adopted in the Ontario home care sector, they were independently funded, separated from other services and had an independent steering committee. Very few initiatives involved multiple partners, and the majority of successful IT/IM projects involved the Community Care Access Centre's (CCAC's) with little participation from the direct service providers. This lack of collaboration in the sector is a significant barrier to the creation and adoption of IT/IM systems that are specific to the needs of the home care setting.

The home care sector in Ontario operates under a managed care structure. The ability for service providers to collect information and report on the quality of their care and patient outcomes is necessary for the procurement of further contracts. The paper burden processes that predominate create a significant barrier for the monitoring of quality, effectiveness and cost-efficiency (Caplan, 2005). The majority of research and knowledge related to successful implementation of clinical systems comes from the hospital sector. In the acute care sector, the successful implementation of many IT/IM solutions have been supported with the inclusion of nursing informatics (NI) roles. Yet, the benefits of NI roles have not been realised in the home care setting. Many of the solutions developed for the acute care setting, such as, computerized physician order entry (CPOE), and electronic medication administration record (e-MAR) applications are not easily implemented in the home care setting. Likewise, hospital-based research is not easily translated to community based care. Therefore, successful initiatives in the home care sector require specialised knowledge of the needs and activities of the practice environment in combination with informatics competencies.

In the era of the electronic health record (EHR), the home care community in Ontario has fallen behind in making investments to improve health information management. However, it is clear from the mandate of the government and initiatives through Canada Health Infoway that all health care sectors must gather speed in embracing data management systems that will support the development of a national EHR. Significant developments in moving this agenda forward are required in the home care sector. It will be critical to have clinicians with frontline home care experience be involved in the decision making processes. These clinicians will also require the development of knowledge and skills in health informatics to ensure the potential of these technological solutions is realized.

Analysis

Silos of Information

As evidenced by numerous examples in the literature, a critical success factor in the advancement of HIT is the elimination of professional silos (Nagle & Ormston, 2003). Unfortunately the Ontario home care sector suffers greatly from these types of silos, professionally and organizationally. Multiple providers, programs and independent health care professionals providing care in the community add further complexity to an already disjointed system for managing client's health care information. Progress towards elimination of these silos will require an investment in ensuring clinicians become leaders in driving the informatics agenda forward in home care (Nagle & Ormston, 2003).

Building capacity in the health informatics infrastructure in Ontario home care requires the adoption of nursing informatics leadership roles. These roles are instrumental in the building of bridges that connect government bodies with direct

service providers to move forward to collectively measure quality and performance. Eliminating silos between business, clinical and information technology and management is supported when clinicians are involved in the process from beginning to end. One simple solution initiated in the hospital sector is to second nurses to work in specialty projects; there are lessons to be learned from these approaches. As Nagle (2000) articulates, when nurses are hired into full-time roles as informaticians the growth in knowledge and capacity in this area results in the overall improvement in the success of organizational IT/IM strategies. Home care organizations also need to consider creating opportunities for nurses to become leaders within their IT/IM departments.

Nursing informaticians bring an understanding of system design, usability and evaluation as well as knowledge related to maintaining the security of electronic health information and current data standards. Home care nurses bring knowledge of case management, clinical care, nursing workflow and the complexities of moving clients through the complicated system of home care services in Ontario. Together, the combination of informatics knowledge with home care nursing knowledge could result in the development and implementation of IT/IM initiatives that will be successfully adopted into the home care clinical environment (Trafton, 1999).

Research

A literature search using *CINAHL* (from 1982 to present) was conducted, using the search terms "nursing informatics" and "home care", that retrieved only 10 articles that specifically addressed the role of informatics in home health care. In *Medline*, 19 articles were retrieved (from 1996-present) and the majority of these articles focused on home monitoring devices and telehealth applications. Clearly, very

little published research is available that addresses the concepts of nursing informatics in home care. This lack of evidence to support the role of nurse informaticians in this practice setting only highlights the need for home health care organizations and policy makers to address the need for building capacity in this area.

Home care nursing research is not only invisible in the health informatics literature, but also within the general research literature. As nurses struggle to prove that their role in health care is integral in optimizing patient care outcomes, home care suffers from an ever-increasing research knowledge gap. The implementation of standardized data sets, common nomenclature and electronic client records would enhance the ability to conduct research in this area (Caplan, 2005). Moving the research agenda forward relies on nursing informatician involvement to incorporate informatics concepts and principles into the future development of home care information management systems.

Engagement

There is significant potential for improving client care through access to standardized clinical data at the point of care. Home care organizations must begin to engage nurses in the process of identifying their IM needs and educate nurses about the endless possibilities that could be realised through the effective design and implementation of clinical systems. It is widely accepted by professional organizations that informatics competencies are a requirement for all nurses (Canadian Nurses Association, 2006; Registered Nurses Association of Ontario, 2008). However, nurses will require the support of their peers who have advanced knowledge and interest in this area.

Gaining acceptance of new HIT requires 6 key factors: leadership, clinician involvement, demonstrated benefits for clinicians, ease-of-use, alignment with work-flow, and technical support (Robinson, 2007). To realise these key factors within home care, nurses will need an in depth understanding of these issues. Without immediate strategies to engage nurses in the informatics agenda, the home care sector will fall short in moving HIT initiatives forward.

Recommendations

As previously stated, nurses with skills and knowledge of informatics are the “missing link” between reality and the future direction of information management in home care. Building nursing informatics knowledge and capacity in home care nursing professionals will facilitate the implementation of IT/IM solutions that have the potential to improve patient care. The following recommendations could be implemented to improve home care nurses' ability to advocate for the inclusion of these solutions in the future.

Collaboration

Many collaborative efforts are being initiated across the province of Ontario to enhance the e-health agenda. It is critical that nurse who work on the front lines of home care are involved in these efforts. More importantly, CCAC's, service providers, and other home health programs must work in collaboration to eliminate information silos within the sector. Nurses working in case management roles must connect with nurses in front line clinical roles to create recommendations for systems that will reduce duplication of information and documentation and improve communication between providers.

As Nagle (2000) stated, "The technician-dominated models of information management are no longer sufficient to derive the right solutions for clinical care settings. Rather clinician led structures and processes seem to be an evolving trend as the clinical perspective is deemed essential for success". Leadership in home health organizations must begin to support the development of synergistic relationships between clinicians and technicians. Roles should be created for nursing informaticians who can continue to support and advocate for the advancement of clinical systems in home care (Nagle, 2000; Nagle & Ormston, 2003).

Funding

Previous experience in the acute care sector has shown that the improvement of information management requires a significant investment of funding. In addition to investing money into the development of clinical and IM systems, government bodies and home health organizations must begin to invest funding to develop informatics knowledge and competencies in clinicians. Nurses must be recruited and supported to attend conferences and educational opportunities offered by organizations such as the Ontario Nursing Informatics Interest Group (ONIG). Financial support could also be provided for nurses to complete the Registered Nurses Association of Ontario's (RNAO) self-directed learning course, "eHealth for Every Nurse" (RNAO, 2008).

The priority of the government to expand and improve home health care must include the development of nurses' capacity to implement and utilize technology and clinical systems to improve client care. The current funding structure through managed competition leaves much of the onus on service providers to invest money into these initiatives. There is currently little incentive for home care service providers to initiate this work. Funding incentives should be developed that support

collaborative IT/IM projects involving frontline clinicians from multiple providers. The government must also begin to provide significant funding support for initiatives to improve informatics capacity in home care including: research proposals, innovative technology pilots and programs that support competency development and engagement of nurses in informatics.

Strategic Planning

Elinor Caplan (2005) recommended the development of an IM/IT strategic plan for the CCAC's, however; little focus was placed on the roles of nurses and service providers in this initiative. Information silos will continue to exist unless collaborative efforts are made to create a broader strategic plan for the management of health information in home care. This strategic plan must involve all partners involved in the delivery of home care services and should include a focus on the development of data standards and nomenclature to allow for the capture and sharing of client data across the system.

Ultimately, the focus should be on creating community health information networks that connect all health care providers to share patient information within a single system (Canadian Home Care Association, 2008). This access to information would improve the translation of relevant patient data to promote continuity of care, track client outcomes, and build new knowledge about home health care. Such a communications system would also provide the data required to support the development of the national EHR. Furthermore, point of care technology provides the opportunity for remote data collection directly at the client bedside. Strategic planning should include the investigation of various decision support tools that will enhance the quality of client care using these technologies and nurses should be directly involved in this process (Struk, Peters, & Saba, 2006).

Chronic Disease Management

Lastly there is significant potential for the use of technology to support client self-management in the home setting. Enabling clients to manage self-care independently in their own home for as long as possible is the ultimate goal of many home care nursing interventions. Many self-management devices also help to reduce the number of home care visits required to support individuals living with chronic conditions in the community. The prevalence of chronic disease in the home care patient population necessitates further research and funding to support telemonitoring programs that will truly facilitate client self management in the community (Canadian Home Care Association, 2008)

Conclusion

Home care services, perhaps even more than the hospital sector, significantly rely on the knowledge and skill of nurses that provide patient care. The volumes of client data collected by frontline clinicians need to be captured to provide direction to improve the quality of client care. Nurses are the predominant health professionals that provides care in the home. This unique role of nursing in the home health environment, supports the significant potential for nursing informatics to be fully applied and implemented in the home health care sector.

Leaders supporting the health informatics agenda can no longer continue to disregard the important contribution that home care nursing will provide in directing the future of the EHR. The benefits of the EHR will truly be realised in the home care sector where access to information is a constant battle for nurses. Engaging and educating home care nurses about the client care benefits when

information is collected and shared electronically will result in increasing support for the implementation of these initiatives.

The growth of evidence to support home care nursing practice is dependent upon nurses leading the development of clinical IT/IM systems. No longer can nursing leaders continue to allow technical departments to control the direction and development of health information technology without the input of nurses themselves. Engaging and educating nurses about the concepts of nursing informatics and inviting them to participate in the development of these tools will ensure that these solutions are accepted and adopted by clinicians at the point of care. Once this vision for nursing informatics in home care is realised, the potential for improving quality and safety of patient care will be enormous.

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