



Shared Electronic Health Records

Implementation in the New Zealand Health Care System

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Introduction

When I commenced work as a registered nurse in a large private hospital in New Zealand I was surprised at the lack of access to information regarding individual patients. Patients were being admitted by nursing staff for elective surgery with very little documented prior health history. This was a vast difference from having access to patients records within the public health system where it was possible, at the very least, to be able to identify relevant health history documented during prior admissions to the public health system as well as have access to real time laboratory results. The admission process in the private health system relies heavily on the reporting of health information directly from patients and occasionally a summary letter supplied by the surgeon that may have been sent as a referral from the patient's general practitioner. If concerns regarding the health history are identified at admission it is necessary to request paper records either from the previous treating hospital or the individual's general practitioner. Electronic health records are hailed as the key to improving patient safety by improving the transition of care between health care providers and ensuring the right people have access to the right information at the right time. This research project intends to examine the advantages of the electronic health records in the provision of care and also the considerations that need to be made when implementing electronic health records at a national level. It will discuss the intention of the national plan in implementing electronic health records in New Zealand and how this will enhance care delivery to all New Zealanders.

Method

The method used to complete this research involved a literature review using the MEDLINE database, keywords included 'Electronic Health Records', 'Medical Record Systems, computerised' the search was then limited to articles available in full text, a date range of 2008-current and only those articles published in English language. The first 50 results were scanned for appropriateness for the purpose of this report. Quality of Health was then added as a keyword to the search. The 'Google' search engine was also used to identify further literature regarding the topic as well as Google scholar. The same keywords were used as well as the addition of the keyword 'New Zealand' to identify literature related to the local environment in regards to electronic health records. In addition the New Zealand Ministry of Health website was accessed and published material related to Health Information Technology were reviewed. The Health Informatics New Zealand (HINZ) website was also accessed and a search of the HINZ online journal was performed again using the keyword 'electronic health records'.

Electronic Health Records

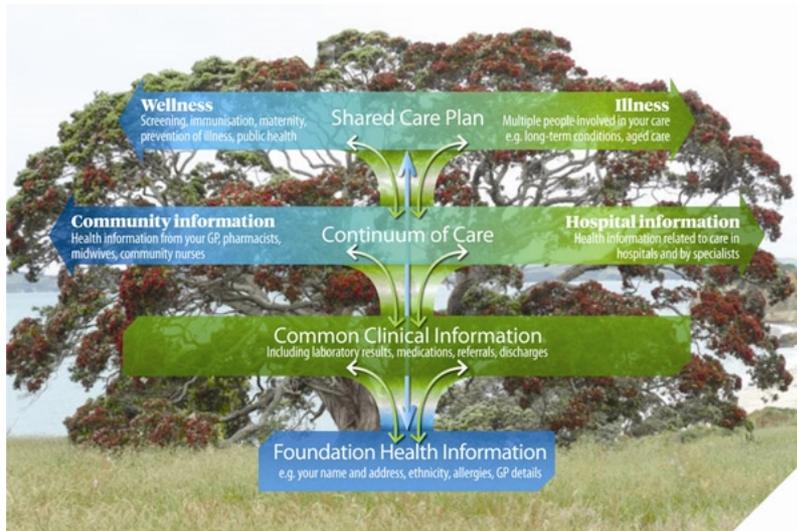
In 2004, The Health Information Network for Australia suggested the following definition for electronic health records:

‘...an electronic, longitudinal collection of personal health information, usually based on the individual, entered or accepted by healthcare providers, which can be distributed over a number of sites or aggregated at a particular source. The information is organised primarily to support continuing, efficient and quality healthcare. The record is under the control of the consumer and is stored and transmitted securely.’

(in Conrick, 2006)

When considering this definition, electronic health records are the software applications that provide integrated views of patient data in a networked environment. Health care providers can access this information irrespective of geographical location and indeed in order for electronic health records to reach their full potential clinicians providing care for patients need to have access to the information (Kerr, 2004). In New Zealand, the IT Health Board has created a Tree Diagram to illustrate the health care information collected over time included in a patient's electronic health record:

Commented [J11]: Are you not confusing the distinction between records and the software that manipulate the records or strictly speaking the data?



'Tree Diagram' (Ministry of Health, 2013)

The tree diagram provides a useful reference for the intended use of the electronic health record showing the information to be stored, which also illustrates those that will have access to the information and for what purpose. The trunk holds demographic information as well as information data such as allergies and general practitioner contact details. The branches show how other information is incorporated into the electronic health record. One example of a branch within the electronic health record is a link to common clinical information such as laboratory results and imaging, medications (including pharmacy information), referrals and discharge information from health care providers. The next layer of branches includes information relation to health prevention and promotion, planning of care for long term illness and specific input from community health care providers (Ministry of Health, 2013).

Development and Implementation of a Shared Electronic Health Record

In order to establish a shared electronic health record that improves the quality of health care provision the literature suggests key components required for implementation. While discussing the requirements for effective implementation of health information technology in the United States of America the key components described by Escobedo, Kirtane & Berman (2013) can be transferred to the New Zealand environment when considering those attributes required to implement electronic

health records. Three necessary components are described by the authors in designing health information technology infrastructure that support improvements in quality of care provision these are, the adoption and meaningful use of electronic health records, secure and trustworthy health information exchange, and interoperability of the technology used (Escobedo et al. (2013). Meaningful use of electronic records is a term used in American literature relating to an incentive program for organisations to implement electronic health records. Organisations are required to show the implementation of certified health records and how this improves health outcomes and quality of care to receive financial incentives (Anumula & Sanelli, 2012). Key components to the implementation of electronic health records are also listed by Kerr (2004), while standards, infrastructure and information are in line with those key components discussed by Escobedo et al. (2013) change management is included specifically related to a skilled health care sector and industry information management and information technology workforce and also the consideration of clinicians and patients using the electronic health record. The implementation of electronic health records is only the beginning to establishing shared health information between health care providers and patients. In New Zealand the National Information Health Information Technology Board, a subcommittee to the National Health Board was established to provide strategic leadership in information technology in health and released the National Health IT Plan in 2010. The plan is based on the direction of the National Health IT Board to achieve the eHealth vision, "...by 2014, New Zealanders will have a core set of personal health information available electronically to them and their treatment providers regardless of the setting as they access health services" (National Health IT Board, 2010).

Standards

In order to provide connectivity between health care providers and for health information exchange to occur seamlessly, interoperability is essential (Conrick, 2006). Standards are one element to enable this interoperability. The Health Information Standards Organisation has been established in New Zealand as an advisory group to the National Health IT Board to establish standards in New Zealand for information management in the health sector. Standards that are essential to the implementation of shared electronic health care records include system standards, vocabulary standards, messaging standards and security standards. Internationally there are also standards developing organisations including the International Standards Organisation, Technical Committee 215, Health Level Seven to name a few. According to Hammond, Boucher, Spohr & Whitaker (2010) these global organisations are now working together in the development of standards related to

health information and as a result of the work of standard organisations it is possible to develop interoperable systems.

One standard established in New Zealand is the unique person identifier. This is identified by Hammond et al. (2010), as a priority standard in order to make 'error-free identification of one particular patient. New Zealand has the National Health Index (NHI) as a unique identifier to enable health professionals to ensure they are accessing the right information for the right person, currently ninety-eight percent of the population have a NHI number (Ministry of Health, 2014). New Zealand is also updating the Health Provider Index, this index provides information of health providers with a unique identifier and the new system will include all health care providers not only those registered. The Health Provider Index number will also provide individual logins for health care professionals meaning that they can log in to different systems that are linked within the health system (Ministry of Health, 2014). New Zealand is advanced in the establishment of the Health Identity Programme, according to Hammond et al. (2010) there was resistance to the use of unique identifier numbers in the United States of America and some other countries as some believe this compromises patient privacy. Yasonoff, Sweeney & Shortliffe (2013) also suggest that unique identifiers are a privacy threat and also impractical. These concerns have not been identified within the literature related to the New Zealand environment.

Security and Privacy

Concerns over the privacy and security of electronic health records are well documented. In 2013, in New Zealand there was widespread publicity involving the breach of privacy of a well-known sporting personality where his electronic records were accessed by clinicians not involved in his care. The breach involved four staff members inappropriately accessing the medical records across four different district health boards. While this highlighted the possibilities of security breaches with the electronic health record it also has shown the success of the audit system to identify security breaches of the electronic health record (Quilliam, 2013). Prior to electronic health records there was no way of knowing if someone had inappropriately accessed the health record of an individual however access to paper records would be limited to the geographical location of the record. The above New Zealand case demonstrates how having electronic health records enables people in a much wider area to access records but also shows how the digital trail provides a more robust system for identifying breaches (Cassie, 2013/2014). In the article published in the Nursing Review the assistant Privacy Commissioner in New Zealand is interviewed regarding patient privacy in relation to electronic health records, the view of the assistant privacy commissioner is reported as not being about the information technology but about the health care professionals and the trust of

these professionals in maintaining privacy. New Zealand has legislation, codes and standards relating to privacy and security including the Privacy Act (1993) and the Health Information Privacy Code (1994), this legislation includes maintaining the privacy and security of health information irrespective of the form it is stored in. Evans (in Cassie, 2013/2014) states that 'sometimes IT can significantly improve your privacy situation' (p. 6).

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It is important, however to design robust security measures when designing systems in order to provide confidence to patients within the health sector that sensitive health information is shared securely and only by those authorised to access the information. The Connected Health Programme has been established under the National IT Health Board to provide connectivity between health professionals while ensuring the sharing of health information is secure. In order to do this it has identified foundation principles and agreed specifications for product suppliers to adhere to ensure safe and reliable transfer of information within networks (Ministry of Health, 2014).

Patient Engagement

The access of electronic health records by patients is a significant goal of the National Health IT Board eVision. This involves patients being able to access their own health record, make additions and corrections and use the system to communicate with health care providers. The literature suggests having this access to your own health information improves the responsibility of the patient in their own health, empowering them to be engaged in health care planning and improving compliance with treatment plans and medication compliance and reduces readmission to hospital (Escobedo et al., 2013 & Chhanabhai, Holt & Hunter, 2006). In 2010 the National Health IT Board ran a series of workshops throughout New Zealand this involved people with various links to the health care sector as consumers with the aim of gaining an understanding of consumer perspectives of information technology use in Health. One of the themes identified throughout the workshops was that consumers wanted shared health records, consumers were surprised at the lack of sharing between health care providers (National Health IT Board, 2010).

The benefits for patients in using shared electronic health records to communicate with health care providers were identified in a qualitative study of medical practices that use electronic health records to communicate electronically with patients (Bishop, Press, Mendelsohn & Casalino, 2013). The electronic tasks performed by the medical practices using electronic communication within the electronic health record included reporting test results, making appointments, responding to questions about their care plan, and refilling medication prescriptions. The advantages described by the medical practitioners involve more convenient access to healthcare for patients resulting in increased patient satisfaction, convenience was also reported by health care providers and patients, including the ability to communicate directly with a health care provider and be provided with solutions to simple problems without having to attend the medical practice was a reported benefit to the patient. There were patients ~~that who~~ preferred not to use electronic communication with health care providers and also there was ~~not~~ standard practice for charging for electronic communications with the health care providers; however the advantages of this use of the electronic health record provides a model for the use of information technology to achieve a patient centred health model of care. Medical practitioners also reported increased safety as the advice or interaction was recorded meaning both the medical practitioner and the patient could refer to the details of the communication later. One disadvantage reported by medical practitioners was an increased workload related to electronic communications (Bishop et al. 2013). Yasonoff et al. (2013) also describes the burden of ensuring the correctness of data in an electronic health record falls on health professionals and institutions, if the patient has access to their health record they have the ability to identify and correct errors within their health care record.

Improving Quality of Care

In relation to the example provided in the introduction of this paper, improved quality of care provided can be achieved with electronic health records by improving the transition of care between healthcare providers. Without access electronic access to healthcare records obtaining relevant information such as medication or laboratory results 'can often be a frustrating series of phone calls and faxes away' (Cassie, 2013/2014, p. 4). The ways in which electronic health care records can improve the transition between health care providers are listed by Escobedo et al. (2013), this includes access to real-time data and decision support for both the health care team and patients and families, immediate answers to questions that may prevent hospital readmissions, and the elimination of repeat laboratory tests, diagnostic imaging and procedures. In the non-government organisation described in the introduction access to relevant health history of individuals as supportive data in the health assessment will improve the safety and ability to individualise care

planning, increasing the efficiency and accuracy of the patient health data collected. The National IT Health Board has identified the importance of connectivity with non-government organisations, such as private hospitals in the future plan. Only then will this be a truly patient centred model as patients. This will enable the access to electronic health care records by all appropriate health care professionals to improve the journey of the patient through the health care system (Ministry of Health, 2013).

Conclusion

Electronic health records are the way forward to providing an improved standard of care for patients. This paper has described those issues related to electronic health records and their implementation in New Zealand. New Zealand is in line with and in some ways more advanced in the infrastructure and plans for a truly shared health record with patient access to health records being a significant goal. This will improve the quality of patient care provided by enabling seamless transitions between health care providers. It is encouraging to note the future direction of the National IT strategy includes working with non-government organisations to improve the experience of patients along their health care continuum. Standards have been identified throughout this paper as an important component to the implementation of the electronic health record and the paper has reviewed how standard development has been approached and how these standards are being implemented to ensure the electronic health record is interoperable within the New Zealand Health Sector. Patient access to their own health record is also an initiative that can improve patient engagement in their own health plans and promises to improve health outcomes for patients. This paper has only addressed a small sample of what is a very big national and international topic it has however shown that if a national plan for electronic health records can be implemented with due consideration given to the infrastructure of health information technology the health outcomes and experience of individual patients as well as health care providers can be improved.

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