



EHR Innovation and the Triple Helix Concept

A comparative study of Canada and New Zealand

Extended Essay Option

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Introduction

Since the emergence of advanced technologies in the 1980s, many Western states have adopted eHealth policies to capitalize on the benefits technology can provide to the health-care system. After policy directions were created, technologies were designed and implemented over several decades. Some countries adapted faster than others. New Zealand was able to create and implement information technologies into their health-care system as early as the late 1990s. Alternatively, Canada implementation of eHealth innovations began around the mid to late 2000s. One innovation of particular importance is the electronic health record (EHR). This technology is the crux of eHealth success and paves the way for endless subsequent innovations for health-care. EHRs save time and energy in the daily activities of practitioners and save

taxpayer dollars. Overall, EHRs at full integration increase the efficiency of health-care operations. The timely introduction of this technology is paramount with the growing burden of chronic disease placed on the health-care system.

“There is widespread consensus among policy-makers and researchers that current systems of healthcare are unsustainable. In many developed nations, ageing populations and increasing chronic disease, combined with rising expectations, have led to escalating costs. Many commentators claim that deep-seated reforms are necessary, and that healthcare would be cheaper, more efficient and better co-ordinated if more use were made of digital technologies that share information across organisational boundaries” (Garrety, McLoughlin and Zelle 2014)

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With the sustainability of current health-care systems in question, innovations in health-care information technology become of vital importance. The nature of the health-care industry demands constant improvements because it is “constantly burdened with unlimited demand for, and limited supply of its services, and the necessity for innovation applies in the health-care sector as in any other industry” (Cooper and Lucas 2010, 6). It is not enough to simply integrate technology into the system, the need for continual innovation is emerging.

New Zealand has demonstrated continual success in creating, improving and innovating electronic health records (EHRs) and subsequent technologies. Canada has struggled mainly with creating effective technology, implementing, innovating and incorporating improvements. Upon examining the difference in EHR success, themes reminiscent of the triple helix emerged. It became apparent that university-industry-government relationships are integral to health-care innovation. New Zealand’s ability to continually innovate health care technologies, specifically electronic health records (EHRs), is due to an integrated relationship between government,

university and industry; while the fragmentation or absence of this relationship has led to a lack of innovation progress in Canada.

Country Profiles & the Triple Helix Concept

New Zealand's Dynamic EHR Success

New Zealand has led the way in many aspects of health-care innovation, specifically with electronic health records. Most notably, the state has achieved a high rate of clinical interoperability early on and within a remarkably small time frame. The electronic exchange of information “across providers’ systems commenced in 1994” (Gray, et al. 2011, 4). The technology created primarily by HealthLink, “facilitates communications between physicians’ offices and other elements of the health sector (e.g., laboratories and hospitals). The integrator also provides expertise to solve technical issues” (Gray, et al. 2011, 4). After the initial implementation of the technology, the government continued to prioritize EHR policies and the need for constant improvements. New Zealand “has had primary care IT systems in place for 20 years and has steadily expanded and refined them. In some cases, this means through four or five generations of software” (Gray, et al. 2011, 4). This expansion had included innovations such as e-referrals, patient access and specialized report creations.

Innovations in 2009 surrounded greater patient access to health records.

“Seven of New Zealand's 21 District Health Boards are collaborating to develop an electronic health record (EHR) system that will replace their old hospital-based information systems. Three other large DHBs have also expressed interest in developing the initiative. The broad 'vision' of the initiative is characterised as 'Wrapping the Health Management System around the individual rather than

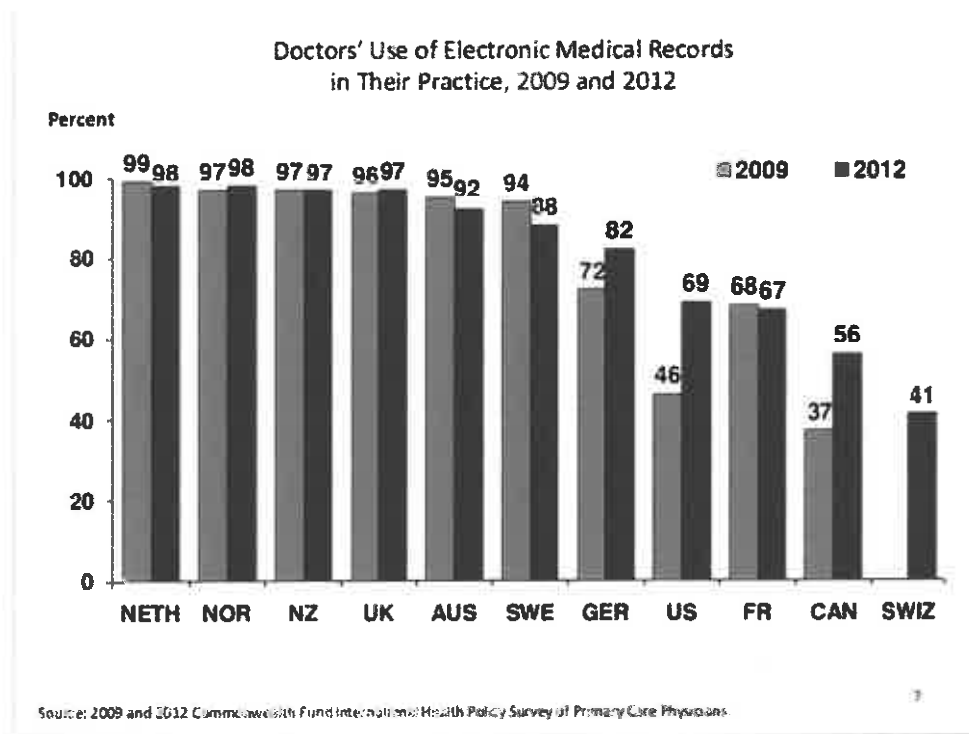
around the provider'. The main purpose of this initiative is to develop a new type of electronic health record (EHR) that is 'person-focused'" (Tenbensen and Ashton 2009).

Having successfully created practitioner EHRs was not enough for New Zealand, the next innovation sought after would help the country realize its new direction of patient-centered medicine. This improvement took EHRs one step further into the hands of patients to empower them to make informed decisions for their health. This involves accessing their records directly from their home. Another subsequent innovation involves the use of electronic referrals. With electronic referrals "the hospital can define the information it wants about the patient and the GP's EHR automatically extracts and sends relevant information, including appended reports" (Gray, et al. 2011, 7). Other specialized reports and data innovations include improvements in "clinical and administrative information, radiology and diagnostic test results, hospital discharge summaries, emergency department visit reports, specialist reports, communication with immunization databases and other national registries, and reporting on quality indicators" (Gray, et al. 2011, 4).

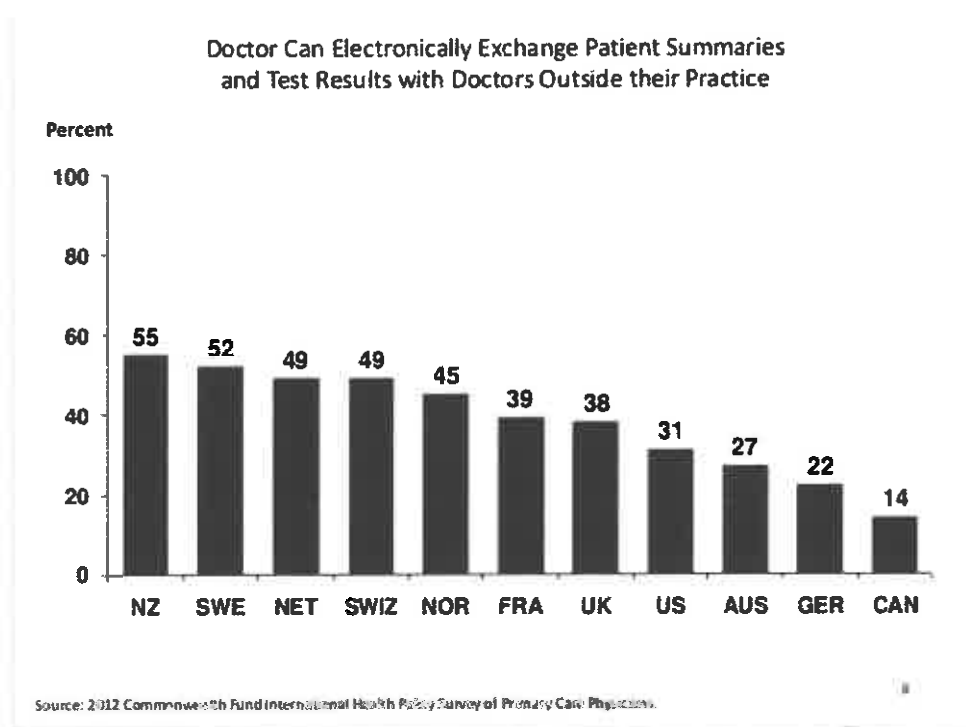
New Zealand has not only integrated EHRs successfully into the health-care system to improve function, the state has continually improved upon the technology and creatively incorporated new advancements for optimal performance. The long-term vision for the EHR system involves "transitioning from office-based EHR systems to remotely hosted systems" explain (Gray, et al. 2011, 4). Improving upon e-referral systems is another area of attention for New Zealand. The state recognizes the need for continual improvements even with an already high functioning system. "From a technology perspective we will continue to leverage our data exchange capabilities for things like e-referral, while at the same time rationalizing

regional/national legacy systems and implementing linked regional repositories to support shared personalized care” (Hodge 2012). Additionally, the state hopes to incorporate e-prescribing into existing EHR systems. This is a crucial area for improvement, where “electronic communication of prescriptions has lagged other forms of health sector communication, but electronic prescribing trials involving hospitals, general practices, and pharmacies are now under way” (Gray, et al. 2011, 4). New Zealand is continually improving upon their EHR success.

Figure 1: Country Comparison of EMR Use, 2009 to 2012



Practical results?

Figure 2: Country Comparison of Electronic Exchange Capabilities

Canada's Slow EHR Progress

Canada's quality of health care is falling behind other OECD countries and the state has yet to fully utilize "information systems to improve quality and efficiency" (Office of the Auditor General of British Columbia 2010, 17). Recognized as an area for improvement in 2001, "the federal government set up Canada Health Infoway (CHI) to support and accelerate the development of an EHR system that will be compatible across the country" (Office of the Auditor General of British Columbia 2010, 18). In 2004, the state introduced a "10-year plan identified EHRs as a priority for primary health care reform" (Health Council of Canada 2013, 15). One of the main goals outlined in this framework prioritized electronic medical record (EMR) integration within the health system. The technology was still in the process of development when integration policies were implemented. EMR integration in physician offices

was slow to start. Integration has been extremely uneven throughout the provinces. A report from early 2015 indicates Ontario, British Columbia and Alberta are all within the eighty percent range of adoption (Collier 2015, 17). Other provinces are slowly catching up with funding from their governments. ~~With adoption targets~~ ^{means?} met in a few provinces, the problem of clinical interoperability has emerged.

The majority of physicians have adopted EMRs; however, the benefits of the technology may not be fully realized yet. Specifically, “the lack of interoperability between different information systems poses a challenge to further implementation of EHR components” (Health Council of Canada 2013, 15). Though this was the aim of EMR integration, it appears problematic clinical interoperability has remained largely unresolved. Canada’s current EHR innovation strategy is outlined by the Health Council of Canada below:

“Electronic medical records are critical to improving primary health care. But despite progress, Canada’s performance remains poor compared to that of other countries, including the United States, Australia, and the United Kingdom.³¹ The federal government, through Canada Health Infoway, must continue to work with provincial and territorial governments and primary health care teams to understand what barriers still exist and what incentives are needed to accelerate change” (Health Council of Canada 2013, 16).

Future plans for EHR innovations involve e-referrals, e-prescriptions and advanced data utilization. While these technologies are currently being created by vendors, specifically e-prescriptions, Canada must focus on improving and innovating EHR systems themselves to be able to successfully incorporate any new inventions. Though Canada has integrated EHR

systems; the state is unable to move beyond this stage and successfully innovate the systems and incorporate new technology.

The Triple Helix Concept

To aid in the explanation of the differences between New Zealand and Canada's EHR success, the Triple Helix concept will be employed. This concept was "initiated in the 1990s by Etzkowitz (1993) and Etzkowitz and Leydesdorff (1995)" (Stanford University n.d.). It explains innovation in a knowledge society as "a growing triadic relationship between university-industry-government" (Stanford University n.d.). The study of innovation is an ever-changing discussion but core theories remain viable and useful. The Triple Helix concept is one way to examine the potential for innovation.

"The Triple Helix thesis is that the potential for innovation and economic development in a Knowledge Society lies in a more prominent role for the university and in the hybridisation of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge" (Stanford University n.d.)

This concept can be directly applied to the health-care industry because of the necessity of the triad relationship. For the proper functioning of the health-care system, industry vendors, universities and governments must work together to innovate and improve constantly. According to Cooper and Lucas, "through contacts and networks, a solution to the most difficult problem can always be found" (Cooper and Lucas 2010, 6). Researching and creating not only new technologies but also analyzing and improving current systems is paramount. "Health information processes, being critical vertebrae in the healthcare system's backbone, provide essential advice on where innovations are required, where costs are escalating and where costs

can be minimised” (Cooper and Lucas 2010, 6). The Triple Helix concept places emphasis on a more prominent role for universities unlike other innovation strategies. Furthermore, an essential element of the concept are the “collaborative relationships among the three major institutional spheres, in which innovation policy is increasingly an outcome of interaction rather than a prescription from government” (Triple Helix IX International Conference 2015). This innovation theory will be employed to showcase the differences in triad relationship in both the New Zealand and Canadian context.

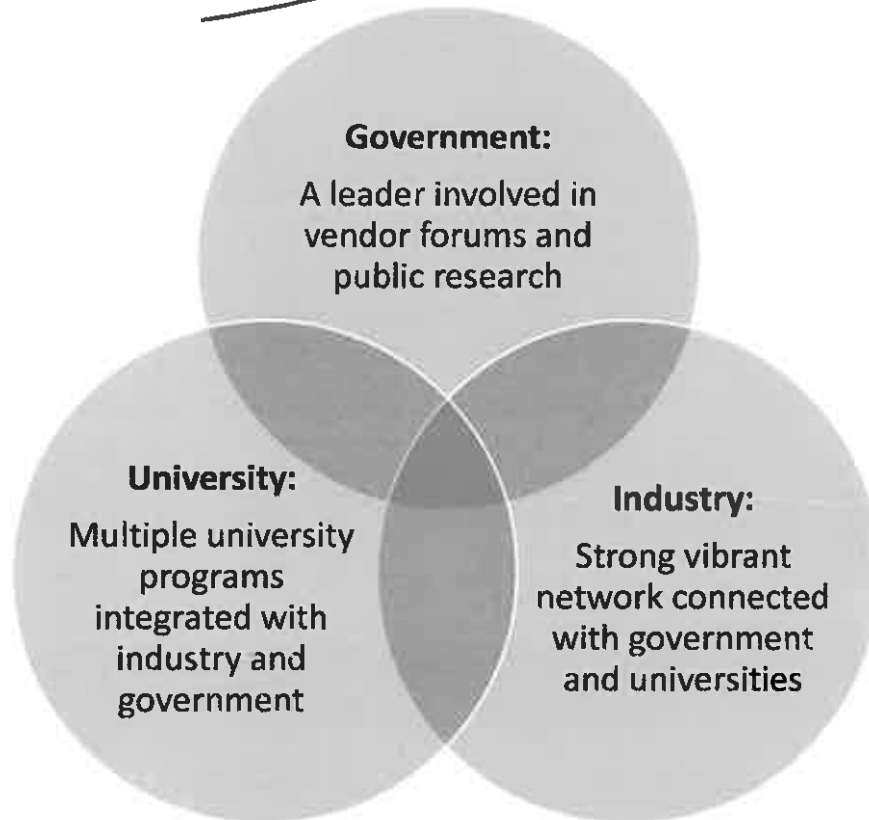
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Explanations for Innovation

New Zealand

New Zealand’s three helixes are highly integrated. This relationship was fostered slowly over several years; however, in 2008, government action solidified and improved it to where it is today. Frustrated with the lack of rapid improvement in eHealth, Health Minister, Tony Ryall, created the National Health IT Board as a sector group to create a national plan focused on implementation rather than strategy (McDonald 2012). He emphasized the importance of this collaborative plan for the achievement of patient-centered care. New Zealand has a collaborative relationship with its vendors far beyond policies. The national government, university researchers and industry vendors work together in multiple ways to encourage innovation.

Label



Government

The government of New Zealand has created the National Institute for Health Innovation, the National Health IT Board (NHITB), many District Health Boards and an ICT Implementation Group. These forums bring together representatives from universities, the industry and both regional and national governments. The Ministry of Health has taken on a national leadership role. This entails building stronger cross-government capacity (Ministry of Health 2013, 4). Furthermore, “the NHITB is seen as a model for sector ICT leadership as the Office develops its new ICT functional leadership role” (Ministry of Health 2013, 4). The original EHR innovation plan “recognised the importance of good leadership, engagement, partnerships and collaboration to support its successful implementation. Since 2010 much work has been done to build partnerships and relationships, and many working groups have been established” (Ministry of Health 2013, 9). The Ministry of Health has worked tirelessly to create different forums to

enhance the collaboration among government, industry and university. A snapshot of these forum is presented in Table 1.

Table 1: Forums created by the Ministry of Health

A Consumer Panel , which has 20 members from all walks of life and maintains representatives on all priority programmes
The National Information Clinical Leadership Group , which has 30 or more clinicians from all specialities, nominated by their Colleges, with an agreed work programme
The Telehealth Forum , which has 30 members, including clinicians, the IT cluster and the NHITB, and aims to promote the use of telehealth and maximise the benefits of the Government's broadband programme
Four DHB chief executive officers , who are responsible for the IT portfolio for their region and now attend NHITB meetings
A sector ICT Implementation Group , which is a forum of national and regional ICT representatives from the NHITB, DHBs, the Ministry of Health and primary care
The Vendor Boardroom , a collaboration of executives from selected application software companies, the National Health Board and the IT cluster, plus NHITB representatives
The Vendor Forum , primary sector focused vendors and health and disability sector stakeholders responsible for changes that affect those vendors
The Health Information Governance Expert Advisory Group , which has been established to develop a health information governance framework for the New Zealand health sector
The Sector Architects Group , a technical group formed to guide the development of a common architecture for national and regional information systems and infrastructure

(Ministry of Health 2013, 9)

The government of New Zealand has taken a hands on approach to EHR innovation as well. Not only have they created many ways to foster collaboration, the government also “played a role in developing and fostering health IT by implementing a unique national patient identifier system in 1992, developing a health information privacy code and security framework, creating standards and adopting the HL7 electronic messaging standard, and requiring that claims for payment be made electronically” (Gray, et al. 2011, 4). By taking on this role, the government

becomes well-versed and integrated into the intricate complexities of EHR systems and can collaborate more effectively with industry representatives and researchers.

University

University research plays a large role in EHR innovation in New Zealand. The research conducted by the National Institute for Health Innovation (NIHI), at the University of Auckland, regarding “mobile phone-based health interventions is world-leading” (The University of Auckland n.d.). Within the new direction of patient-centered medicine, the university research centre has been exploring “innovative delivery methods such as mobile phones, internet and social media, for health interventions. The team also conducts basic and applied health informatics research, evaluates national health informatics and health IT projects, and is responsible for health informatics education and training at the University of Auckland” (The University of Auckland n.d.). The university research centre is funded by and under the direction of the government. However they also collaborate with national and international research groups (The University of Auckland n.d.).

The Auckland University of Technology recently announced “the launch of its new interdisciplinary Centre for eHealth at the mid-year Research and Innovation Showcase Series which focused on advancing health” (Auckland University of Technology News 2014). The Research and Innovation Showcase Series also “highlighted a range of research and innovation activity from across the University, which focuses on advancing health” (Auckland University of Technology News 2014). The new centre at AUT University will add to the research provided by the University of Auckland and partner specifically with industry vendors to improve technology.

“The Centre for eHealth will see researchers working with industry partners in the health sector to help solve issues. Both academic and allied staff across areas such as health,

informatics, design, engineering and commercialisation are part of the centre which aims to collaboratively work together” (Auckland University of Technology News 2014).

The strong collaboration between the National Institute for Health Innovation and the government, as well as the coordination between the Centre for eHealth and industry vendors enhance the triadic relationship of the health-care industry.

Industry

The EHR industry in New Zealand is highly coordinated with both government and universities. The vendors also collaborate amongst themselves in several formats. All successful vendors belong to a Vendor Forum. Vendors also belong to Sector Architect Groups and New Zealand Health IT. New Zealand Health IT is an all-encompassing organization involving many key players in the health-care industry. They provide a description of their organization below:

“We are a strong and vibrant network made up of member organisations and individuals who represent the majority of technology vendors and providers operating in the health sectors in New Zealand and overseas. We also have a broad range of supporting members that include healthcare service providers, academia, clinicians, researchers and policy makers” (New Zealand Health 2013).

They seek to develop a network for “identifying opportunities and delivering value to its members that enhances their ability to innovate, grow and thrive” (New Zealand Health 2013). Vendors collaborate with universities and the government through many other forums including the examples listed in Table 2. The well-established relationship between the health sector and the government is enforced and enhanced through these vendor forums. The government works closely with all of the forums to enhance the potential for innovation.

Table 2: Vendor Forums in New Zealand

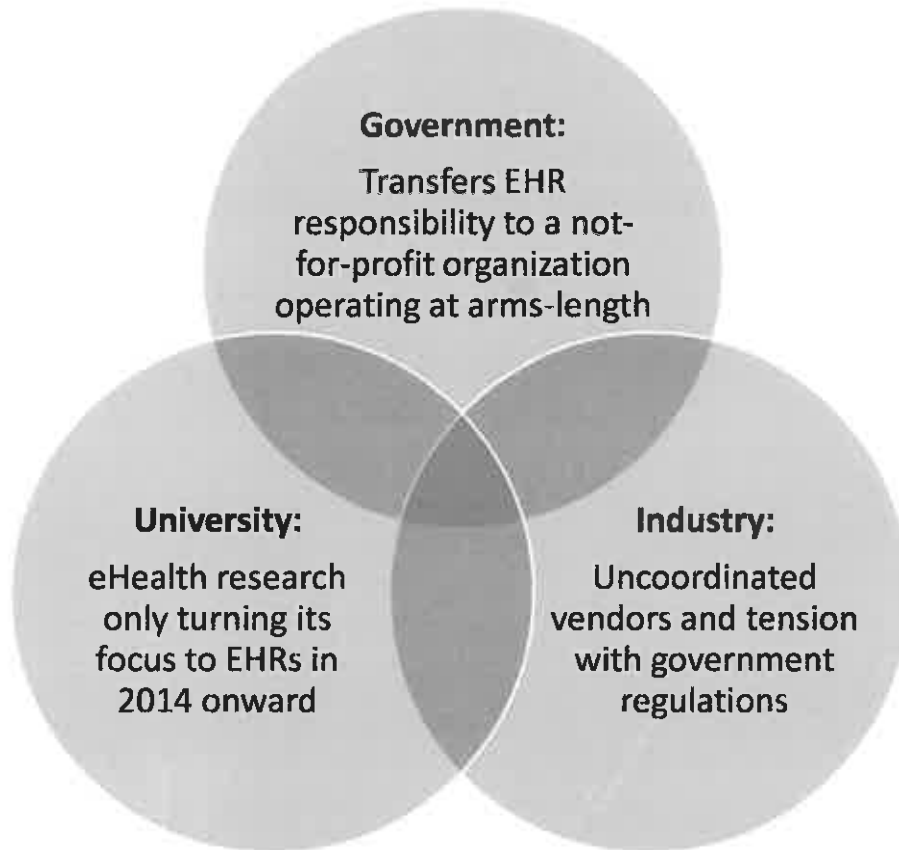
The National Information Clinical Leadership Group representing clinical leaders who can provide leadership on the design and use of information solutions
The Sector Architects Group , representing health IT architects and helping to develop the sector information model
The Health IT Cluster , representing health IT vendors
New Zealand Health IT , an independent, representative organization that advocated on behalf of members and the health sector to decision makers, policy setters and planners

(National Health IT Board 2010, 27) (New Zealand Health 2013)

Canada

In Canada, the three helixes are highly fragmented. ✓ The government did not take on a leadership role directly, nor did it incorporate the importance of collaboration with industry and university into its strategies for EHR. Instead, the national government passed the responsibility for EHR onto a not for profit they created called, Canada Health Infoway. No strategic initiatives were outlined to partner with research institutions in universities. Though one eHealth research centre existed, EHR focused research only became highly important in 2014. Furthermore, vendor communication is limited and has mostly been contentious. Decades of little regulation created fierce competition but recent extensive regulatory measures introduced by the government have created a host of problems for the industry. The lack of coordination among government, university and industry has hindered innovation of EHRs in Canada.

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Government

The primary vehicle for EHR innovation through the government is the independent, not-for-profit organization, Canada Health Infoway. “Created in 2001 as a not-for-profit corporation that operates at arm’s length from governments, Infoway describes its role as that of a ‘strategic investor’ that makes focused investments to foster and accelerate the development of electronic health records across the country” (Office of the Auditor General of Canada 2010, 4).

Specifically, it works closely with provincial governments to ensure a coherent national direction. The Infoway also works with vendors and academics to transform health-care in Canada. “Infoway works with information technology professionals in the private and public sectors by engaging in working groups and forums, such as the Chief Information Officer Forum” (Canada Health Infoway 2014). Though the Infoway discusses its relationship with researchers and academics; it does not mention any universities. Instead, it discusses its

relationship with the Canadian Institute of Health Research as its primary partnership. The Canadian Institute of Health Research researches all aspects of health-care and has only a small section devoted to eHealth and an even smaller section to EHRs.

The government's national role with vendors is contentious. The absence of federal governance has been highly problematic.

“Several physicians and academic experts say the political will to implement national standards appears non-existent. EHR vendors are fuming. Health Canada stepped into the fray by introducing new certification and licensing requirements, some of which are fuzzy. Canada Health Infoway, meanwhile, has thrown its hands into the air and says it has no authority to compel provinces to comply with national standards” (Webster 2010)

The lack of authority of the Canada Health Infoway is troubling. While they act as a information go between, the lack of authority creates problems when tension such as this arises between vendors and the government. Vendors and the government have not communicated for decades and this creates complex problems when new requirements are introduced. The government's non-existent role in EHR innovation causes it to be out of touch with the current demands of the industry and research needs.

University

In Canada, there are only a few eHealth research units in universities. The main research unit is situated at Memorial University. Focused on all aspects of eHealth, the university focused mostly on telehealth through the past few decades. Only recently has EHR innovation become a priority. The eHealth research unit not only conducts research but also tests developments of health-care delivery, among other things described below.

“To provide a forum for students, faculty and health care providers to exchange ideas and perspectives related to the use of information technologies in the health care system in order to enhance health care delivery and the evaluation of the impact of these technologies” (Memorial University 2014)

The innovative approach the eHealth research unit takes will be undoubtedly helpful as it turns its attention to EHRs. Unfortunately, the lack of EHR focus until recently has stifled the influence of universities in the triple helix of health-care.

Along with the shifting focus of the Memorial University eHealth unit, the government has recognized the need for greater university involvement in EHR research. It began consulting research universities in 2014. Specifically, “the creation of the new Advisory Panel on Health Care Innovation” (Group of Canadian Research Universities 2014). This panel will visit campuses to “meet researchers, faculty and students working in multidisciplinary groups to find innovative policy, regulatory, and technological solutions to our health care and health care system problems” (Group of Canadian Research Universities 2014). This direction will hopefully enhance collaboration between the government and universities. However, no results have surfaced as of yet.

Another recent development is the creation of the eHealth Innovations Partnership Program (eHIPP). This program will run at several universities across Canada, including the University of Calgary and the University of Toronto.

“The Canadian Institutes of Health Research (CIHR) is proud to launch the eHealth Innovations Partnership Program (eHIPP), a collaborative funding opportunity designed to create a new generation of cost-effective patient and population-centered health care solutions” (University of Calgary 2015).

This brand new program was created to run in 2015 and is still in the process of accepting applications. This potential for collaboration could lead to enhanced communication between the government and universities.

Industry

Canadian EHR vendors are highly uncoordinated. The industry experiences little communication with the government other than acquiring certification. The industry has been highly competitive and remains largely closed off from research universities. As a result, technologies are not being improved for the needs of the end user and innovations are nonexistent. Furthermore, vendors are “often reluctant to adopt the systems to meet the physicians’ needs” (Arellano 2011). The emerging problem of new requirements has created tensions between the government and vendors. The introduction of these standards came as a surprise to vendors since there was no prior communication from the government.

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“Others are as disturbed by Health Canada’s August 2009 decision to commence policing data management products. In an unexpected decree that was released without advance consultation or subsequent opportunity for comment from industry or health practitioners, Health Canada announced that it would obligate all manufacturers of electronic products that manage patient data to comply with certification procedures. In addition, EHR products would have to meet undefined licensing requirements” (Webster 2010).

Clarifications on the exact requirements requested by vendors were met with silence by the government (Webster 2010). With no communication prior to and after, the government has shown little interest in collaborating with vendors to create innovative EHRs.

Conclusion and Policy Implications

New Zealand has demonstrated continual success with EHR innovations. The capacity to continually innovate and improve existing systems is aided by the state's integrated relationship with universities and the EHR industry. New Zealand has used its national leadership role to learn the specifics of the industry and prioritize collaboration within the triple helix.

Alternatively, Canada has been slow to implement improvements and create EHR innovations. The government's hands-off approach has contributed to a lack of coordination with universities and industry. The emerging focus on EHR research in universities is a tremendous step forward. However, the growth of tension between industry vendors and the government will undoubtedly hinder future innovations of EHR systems.

Following the successful model of New Zealand, Canada should continue to place emphasis on opening research departments devoted to EHR innovation in universities. The government must also take on a national leadership role and prioritize collaboration within the triple helix. Fostering open communication with vendors will be a challenge but a necessity for EHR innovation capabilities in the future.

Bibliography

- Arellano, Nestor. 2011. *Cost, data ownership, reliability issues plague Canada's EMR program*. IT Business .
- Auckland University of Technology News . 2014. *AUT launches new Centre for eHealth*. July 28. Accessed 03 18, 2015. http://www.news.aut.ac.nz/news/schools/computing-and-mathematical-sciences/aut-launches-new-centre-for-ehealth?SQ_DESIGN_NAME=det.
- Canada Health Infoway. 2014. *Clinical Interoperability*. Accessed 02 15, 2015. <https://www.infoway-inforoute.ca/index.php/programs-services/clinical-interoperability>.
- Collier, Roger. 2015. "National Physician Survey: EMR use at 75%." *CMAJ* 187 (1).
- Cocper, Helen, and Alisha Lucas. 2010. "Innovation." *HEALTH INFORMATION MANAGEMENT JOURNAL* 39 (1).
- Garrety, Karin, Ian McLoughlin, and Gregor Zelle. 2014. "Disruptive Innovation in Health Care: Business Models, Moral Orders and Electronic Records." *Social Policy and Society* 13 (4): 579-592.
- Gray, Bradford H., Thomas Bowden, Ib Johansen, and Sabine Koch. 2011. "Electronic Health Records: An International Perspective on "Meaningful Use"." *Issues in International Health Policy* (The Commonwealth Fund) 28.
- Group of Canadian Research Universities . 2014. "Research universities working to provide innovative solutions for Canada's health care system."
- Health Council of Canada. 2013. "Progress Report 2013: Health care renewal in Canada."
- Hodge, Trevor. 2012. *National Electronic Health Perspectives: New Zealand*. Canada Health Infoway.

McDonald, Kate. 2012. *2014 AND BEYOND: NEW ZEALAND'S EHEALTH AGENDA*. PULSE
IT. 2014 AND BEYOND: NEW ZEALAND'S EHEALTH AGENDA.

Memorial University . 2014. *Faculty of Medicine*. Accessed 03 18, 2015.

<http://www.med.mun.ca/ehru/home.aspx>.

Ministry of Health. 2013. *National Health IT Plan Update*. Ministry of Health New Zealand.

National Health IT Board. 2010. "National Health IT Plan." Wellington, 1-69.

New Zealand Health. 2013. *New Zealand Health IT*. Accessed March 18, 2015.

<http://www.healthit.org.nz/>.

Office of the Auditor General of British Columbia. 2010. *Electronic Health Record
Implementation in British Columbia*. Library and Archives Canada Cataloguing in
Publication Data.

Office of the Auditor General of Canada. 2010. "Electronic Health Records in Canada: An
Overview of Federal and Provincial Audit Reports ."

Stanford University . n.d. *The Triple Helix concept*. Accessed 03 20, 2015.

http://triplehelix.stanford.edu/3helix_concept.

Tenbenschel, Tim, and Toni Ashton. 2009. "Patient-centred electronic health records." *Health
Policy Monitor* . <http://www.hpm.org/survey/nz/a13/1>.

The University of Auckland . n.d. *The National Institute for Health Innovation* . Accessed 03 20,
2015. <http://nihi.auckland.ac.nz/>.

Triple Helix IX International Conference. 2015. *Theoretical Framework* . Accessed 03 18, 2015.

<http://www.triplehelixconference.org/th/9/the-triple-helix-concept.html>.

University of Calgary. 2015. *eHealth Innovations Partnership Program (eHIPP)*. Accessed 03
30, 2015. <http://www.ucalgary.ca/research/node/1582>.

Webster, Paul Christopher. 2010. "National standards for electronic health records remain remote." *CMAJ* 182 (9).