

# Canada's E-Health Journey and HIMSS Analytics' Canada Information and Communications Technology Study

Patrick Powers

**W**hy are so many Canadian provincial healthcare delivery organizations now participating in the Healthcare Information and Management Systems Society (HIMSS) Analytics' Canada Information and Communications Technology (ICT) Study? The answer is tied to the character of the HIMSS Analytics' Study, the value offered to all participants and specific Canadian healthcare issues that are addressed by the Canada ICT Study.

## HIMSS Analytics' ICT Study

For several years, HIMSS Analytics – a wholly owned, not-for-profit healthcare data and research subsidiary of HIMSS based in Chicago, Illinois – has provided comprehensive information on the information technology (IT) environments of more than 5,000-plus acute care hospitals and 30,000 medical facilities associated with these hospitals in the United States. The IT data captured details more than 100 software applications and hardware platforms; outsourced service providers; server, long-term storage and computer inventories; wireless network and security issues; and specialty questions about Picture Archiving and Communication System (PACS), computerized practitioner order entry (CPOE) and bar-coding. As well, information is collected on regional and hospital characteristics and statistics including total and information services (IS) operating and capital expenses, salary expense, total and IS full-time equivalents (FTEs) and numbers of users supported by the IS Department.

What goes into the HIMSS Analytics' database on the front end as quantitative IT information emerges on the back end, after a rigorous quality assurance process involving over 250

algorithms, as high-quality measurement and analysis of legacy and emerging IT systems, current technologies and emerging technologies and more. The database assists all stakeholders in assessing trends and return on investment (ROI) of E-Health strategies and specific solutions. For healthcare providers – such as Canadian provincial ministries of health and regional healthcare organizations – providing the technical information on the front end results in free access on the back end to a myriad of benchmarking reports.

In spring 2007, HIMSS Analytics began developing its first Canada Information and Communications Technology (ICT) Study. By December 2007, 28 of 65 regional healthcare organizations (regional health authorities [RHAs], district health authorities [DHAs], health authorities [HAs]) in eight provinces and three territories had provided data on clinical and financial systems, operating and capital expenses and FTEs. Three Local Health Integration Networks in Ontario and 21 CSSSs (centres de santé et de services sociaux) and hospital systems in Quebec had also participated.

Less than one year later, by contrast, 38 RHAs, DHAs and HAs were already on board having provided more comprehensive data than last year, with some 20 more scheduled to participate by year's end. The Ontario Hospital Association and HIMSS Analytics' joint E-Health Adoption Survey on Technologies and Applications has secured participation by approximately 60 percent of Ontario hospitals. The Montreal ADRLSSSS (Agence de développement de réseaux locaux de services de santé et de services sociaux) was organizing its acute care facilities to participate in the study. HIMSS Analytics' leadership had made nine provincial presentations, as well as

presentations before the Montreal ADRLSS and at the COACH annual meeting in Vancouver, British Columbia.

### **Benchmarking Reports and the Electronic Medical Record Adoption Model Score**

Participating Canadian regional organizations and their hospitals, which complete the full ICT Study, have easy web-based access to 61 benchmarking reports, including 48 at the hospital level and 13 at the regional level. Each of these reports allows them to compare their organization against ten peers based on hospital or regional IS department expense, operational or FTE factors. The jewel in the crown of HIMSS Analytics' efforts to benchmark healthcare organizations' progress at implementing a fully paperless electronic medical record environment, often understood in Canada as an electronic patient record (EPR), is HIMSS Analytics' EMR Adoption Model (EMRAM) score.

The EMRAM measures levels of electronic medical record (EMR) or EPR capabilities ranging from limited ancillary department systems to a fully electronic environment in a continuum of eight stages from zero to seven (Figure 1). The latter allows clinical information to be readily shared via electronic transactions or exchange of electronic records within a health information exchange, including other healthcare organizations, government entities and patients in Canada. The methodology and algorithms of the EMRAM, which are currently used to automatically score more than 5,000 hospitals in the US database, will be employed to score those Canadian acute care facilities participating in the 2008 Canada ICT Study. Regional healthcare organizations and their hospitals, which receive EMRAM scores, will have free access to 21 EMRAM benchmarking comparisons based on factors such as IS Department operating budget, nurse FTEs, IS Department FTEs and comparisons with other hospitals' EMRAM scores.

### **EMRAM and Canada's Progress**

Although findings from the Canada 2008 ICT Study, about the extent of electronic healthcare delivery across the ten provinces and three territories, will not be available until early 2009, already some patterns are emerging. Implementation of the major ancillary clinical systems for pharmacy, laboratory and radiology is widespread (stage one). The regional character of provincial healthcare insures that most of these systems (less so for radiology) are live at rural as well as large urban and academic medical centers. Installation of a clinical data repository, providing physician access for retrieving and reviewing results, is complete or under way at the main hospital in a majority of the RHAs, DHAs or HAs for eight provinces, with the verdict on Ontario and Quebec still to come (stage two). Implementation of clinical or nursing documentation lags, as does the electronic medication administration record. Substantial access to PACS is available outside the radiology department via the organization's

Internet (stage three). Order entry is fairly widespread, while CPOE is still rare (stage four). In light of these broad findings, it seems that few Canadian hospital systems, let alone few regional organizations, have reached the closed loop medication administration environment of stage five.

### **American Analysis**

While more rigorous analysis of HIMSS Analytics' Canadian ICT data is premature, comprehensive findings for American healthcare have been available for three years. Unlike Canada, where healthcare delivery – including acute, non acute, long-term and ambulatory – has been regionalized for a decade, US healthcare delivery is still defined and measured in stand-alone hospital or health system-centric terms.

Findings from the 2007 HIMSS Analytics' Database point to capital spending for IT applications of 47–52% of hospitals' total capital budgets in 2008 with projected decreases from 2009 to 2011 due to the current US economic recession (HIMSS Analytics' 2008). New US regulations impacting the revenue cycle management environment (e.g., adoption of ICD-10-CM coding and new HIPAA claims formats by 2011), and the growing need to improve outcomes and quality management in care delivery environments, will force extreme budgeting competition between financial and clinical applications over the next five years.

HIMSS Analytics identified several applications with a projected compounded annual growth rate of 5% or greater in 2008–2013: dictation with speech recognition, eligibility, encoder, outcomes/quality management; cardiology information systems, data warehousing/financial; radio frequency identification (RFID) – patient tracking and RFID – supply tracking. Integration of financial and clinical systems for quality, outcomes and cost-effective improvements, is slowly increasing.

In terms of EMRAM scores, the number of US organizations reaching stage three is growing rapidly as more hospitals implement nursing documentation. Transitioning to stage five continues to be delayed at stage four by questions about how to get physicians to buy into CPOE and about whether the ROI of achieving closed loop medication administration is worth the investment. EMRAM scores are updated every quarter (Figure 1).

### **Canadian E-Health Issues**

In several respects, Canadian healthcare organizations – which enjoy some distinctive E-Health advantages not experienced by their American peers, but also face special difficulties – are well poised to reap important benefits from accessing HIMSS Analytics' benchmarking capabilities. Two of the more prominent pan-Canada E-Health projects, which are currently defined by a mix of promise laced with challenges, are the Electronic Health Record (EHR) and Regionalization.

**Figure 1. EMR Adoption Model 2008 Q2 and Q3: United States**

Stage	Cumulative Capacities	Q2 2008	Q3 2008
Stage 7	Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; data warehousing in use	0.0%	0.1%
Stage 6	Physician documentation (structured templates), full CDSS (variance and compliance), full R-PACS	0.9%	1.0%
Stage 5	Closed loop medication administration	1.0%	1.3%
Stage 4	CPOE, CDSS (clinical protocols)	1.8%	1.9%
Stage 3	Clinical documentation (flow sheets), CDSS (error checking), PACS available outside radiology	32.0%	32.9%
Stage 2	CDR, CMV, CDSS inference engine, may have document imaging	33.9%	33.2%
Stage 1	Ancillaries – lab, rad, pharmacy – all installed	12.6%	12.5%
Stage 0	All three ancillaries not installed	17.7%	17.1%
<b>Total Hospitals</b>		<b>n = 5048</b>	<b>n = 5050</b>

CCD = Continuity of Care Document; CDR = Clinical Data Repository; CDSS = Clinical Decision Support System; CMV = Controlled Medical Vocabulary; CPOE = computerized practitioner order entry; EMR = electronic medical record; HCO = Health Care Organization; Lab = laboratory; Rad = radiology; R-PACS = Radiology – Picture Archiving and Communications System; Q1 = first quarter.  
 Source: HIMSS Analytics Database.

**Electronic Health Record**

In both the United States and Canada, healthcare stakeholders are pressing and being pressed to achieve full implementation of interoperable electronic health records (iEHR) across organizations and political environments. In the United States, the federal government’s call for implementing a summary EHR across hospital and ambulatory systems is not matched by federal funding for investments in healthcare organization EMR strategies. By contrast, the Canadian call, for achieving significant quality and safety benefits from implementation of a Canada-wide iEHR framework by 2015, is backed by Canada Health Infoway’s funding for the joint federal and provincial initiative. Canada’s iEHR initiative would benefit from access to measurement of improvements for healthcare quality and patient safety following on provincial implementation of the Infoway-sponsored electronic master patient index.

**Regionalization**

For a decade, Canada has been well advanced in regionalizing healthcare delivery and funding. More recently, several provinces have taken the step of reconsidering the ROI, clinically and financially, of regionalized healthcare. This year, both Alberta and New Brunswick began enacting pullbacks from full-scale regionalization. In the case of Alberta, the province as a single

RHA has replaced nine RHAs; and in the case of New Brunswick, eight RHAs have been consolidated into two large regions. As well, in recent years, Saskatchewan has considered some sort of consolidation of the existing 13 RHAs. In the wake of the consolidations in Alberta and New Brunswick, attention is focused on developing a strategy for a single, or at least more unified and integrated, province-wide clinical and financial application environment. How much will such a retooling strategy cost, how long will it take to implement across the province and what are its measurable benefits for improving health-care quality and outcomes?

**Conclusion**

In the case of Canada’s iEHR initiative, HIMSS Analytics’ annual measurement of the cost of IT systems and personnel, measured against statistical improvements in healthcare delivery, would

assist iEHR stakeholders to chart progress toward the 2015 deadline. In terms of Canada’s emerging reconsideration of regionalization, the kind of data, comparisons and analysis obtainable from the HIMSS Analytics’ Canada ICT Study will offer accurate, rigorous and rich E-Health information that can assist provincial stakeholders to better assess the appropriate strategy for the next steps at regionalization or devolution.

HIMSS Analytics’ will continue to advance our studies and research on the North American market through future reports on the results of HIMSS Analytics’ 2008 Canada ICT Study and US Hospital Study.

For more on HIMSS Analytics’ studies, research and findings on healthcare go to [www.himssanalytics.org](http://www.himssanalytics.org).

**Reference**

HIMSS Analytics. 2008. *Essentials of the U.S. Hospital IT Market* (3rd ed.). Chicago, IL: Author.

**About the Author**

**Patrick Powers**, PhD, is a senior research manager at HIMSS Analytics with oversight responsibility for the Canada Information and Communications Technology database and research, and a former faculty member at several American colleges and universities in government and the humanities.

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[www.electronichealthcare.net](http://www.electronichealthcare.net)

### Transforming Organizational Culture through Decision Support at Bloorview Kids Rehab

Hakim Lakhani, Lynn Guerriero, Linda Hatton and Christopher Lau

The establishment of a decision support management and planning process over the past decade at Bloorview Kids Rehab in Toronto, Ontario, formed a cornerstone of operational and physical changes at Canada's largest children's rehabilitation, teaching and academic health centre. Decision support provides Bloorview managers and senior executives with our first integrated, evidence-based and user-friendly tools to plan programs and allocate resources; measure organizational, program and staff performances; and provide timely accountability to the province's Ministry of Health and Long-Term Care, in an era of intensified focus on data-driven and data-shared decisions in healthcare. Not only has Bloorview shifted the internal culture to engage staff in planning the decision support system and developing more meaningful data, but the hospital has also situated decision support and its associated technology within the hospital's Planning and Organizational Effectiveness Department, supporting an integrated model of organiza-

tional performance. Users' and management's endorsement of decision support processes is foundational to our organizational and program effectiveness.

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### A Tale of Two Projects: Challenges Faced by Research Projects during a Change in Electronic Medical Record Systems

Alanna Kulchak Rahm, Bridget Gaglio, Michael Bodily, Ted E. Palen, Debra P. Ritzwoller, Anna Sukhanova and Russell E. Glasgow

Electronic medical record (EMR) systems are a rapidly growing form of documentation that has the potential to improve quality of care, physician and practice efficiency and accessibility of stored medical information. However, the implementation of EMRs has presented healthcare stakeholders with many challenges. Many reports have focused on the challenges and expectations of surrounding the adoption of EMRs into organizations and the clinical workflow. The primary purpose of this report is to present a case study that describes the challenges of data extraction for research studies occurring during an EMR system transition.

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