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IT STRATEGIC PLANNING IN HOSPITALS: FROM THEORY TO PRACTICE

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Objectives: To date, IT strategic planning has been mostly theory-based with limited information on "best practices" in this area. This study presents the process and outcomes of IT strategic planning undertaken at a pediatric hospital (PH) in Canada.
Methods: A five-stage sequential and incremental process was adopted. Various tools / approaches were used including review of existing documentation, internal survey ($n =$ 111), fifteen interviews, and twelve workshops.
Results: IT strategic planning was informed by 230 individuals (12 percent of hospital community) and revealed consistency in the themes and concerns raised by participants (e.g., slow IT projects delivery rate, lack of understanding of IT priorities, strained communication with IT staff). Mobile and remote access to patients' information, and an integrated EMR were identified as top priorities. The methodology and used approach revealed effective, improved internal relationships, and ensured commitment to the final IT strategic plan. Several lessons were learned including: maintaining a dynamic approach capable of adapting to the fast technology evolution; involving stakeholders and ensuring continuous communication; using effective research tools to support strategic planning; and grounding the process and final product in existing models.
Conclusions: This study contributes to the development of "best practices" in IT strategic planning, and illustrates "how" to apply the theoretical principles in this area. This is especially important as IT leaders are encouraged to integrate evidence-based management into their decision making and practices. The methodology and lessons learned may inform practitioners in other hospitals planning to engage in IT strategic planning in the future.

Keywords: IT strategic planning, Health information technology, Evidence-based management, Technology assessment, Hospitals

With the increase in healthcare spending in numerous countries around the world, including Canada and the United States (1–3), executives and policy makers are turning to Information Technology (IT) for curbing the escalating costs of care. The promise of decreased costs through improved efficiency and patient safety is putting increased pressure on Information Systems (IS) departments in hospitals (3). A recent Delphi survey of IT executives revealed that lack of sufficient funds and competing priorities for scarce resources within the hospital environment represent two of the top three critical IT management issues facing Canadian hospitals today (4). In light of these conditions, hospitals are expected to make informed decisions in relation to their IT investments and be held accountable for them (5;6). As per Glaser (5), "it is crucial that healthcare organizations apply strategic thinking, questioning, and analysis to their investments in information technology".

IT strategic planning represents an opportunity for hospitals to analyze their internal and external environment, assess their IT capabilities, outline their IT needs, and develop an operational plan for IT implementation (5). It represents of a formal approach to ensure the money allocated for IT is appropriately spent in line with the strategic priorities of a hospital (7). Several critical success factors have been generally discussed in the literature including stakeholders' involvement (8), corporate alignment (5;9), appropriate and careful resource allocation (7;10), and detailed implementation planning (9;11). Yet, with the exception of a few articles on strategic planning in the context of hospitals (e.g., references 2;9;12), managers are often faced with a theory-based environment that provides limited evidence on the actual application of a specific framework / methodology in the context of IT strategic planning in hospitals.

With the recent calls for increasing use of evidence-based management in healthcare organizations (e.g., references 13–15), it is important to generate evidence that IT managers / directors may refer to when engaging in IT strategic planning. This study presents the process and outcomes of the IT strategic planning undertaken at a tertiary care pediatric hospital (PH) in Canada. Specifically, we describe the framework and methodology used with a focus on the important role of stakeholders' engagement, discuss the critical success factors and lessons learned, and provide evidence informed recommendations, which may be useful for other hospitals engaging in a similar exercise in the future.

A preliminary version of this study has been accepted for presentation at the Hawaii International Conference on System Sciences-45. Mr. Hy Eliasoph is gratefully acknowledged for his guidance and support in the project. The project was funded by the hospital (PH).

CONTEXT AND SETTING

The IT strategic planning described in this study was conducted in a 167-bed teaching tertiary care pediatric hospital located in the province of Ontario in Canada. On average, the hospital treats 6,100 inpatients annually with an additional 200,000 children coming through the ambulatory clinics and emergency room; it employs approximately 2,000 staff and 300 physicians. The IS department at PH consists of 24 employees and was running with a capital budget of CAD 4.7 million in 2009/10.

The technological needs in a tertiary care hospital are significant. Nevertheless, being a pediatric hospital limits the population being served and results in a smaller hospital budget based on federal and provincial funding compared with other general tertiary care hospitals. The hospital was also struggling with challenges felt across the healthcare sector in relation to IT: conflicting demands and priorities internally; IT department budget cuts; diverse group of clients; and a growing IT department workload to support existing technologies and new IT projects. In light of these conditions, the hospital decided to engage in IT strategic planning in the summer of 2009 with the goal of producing a 5-year IT strategic plan that meets the needs of patients, care providers, administrators, and IT staff.

METHODS

The IT strategic planning project was led by the Chief Information Officer (CIO), and the IS Executive Steering committee at the hospital agreed to oversee the process. This committee, which represents different hospital perspectives at the executive level, usually meets on a monthly to oversee IS operations and approve plans and request for changes when needed. The IT strategic planning project was added to its responsibilities. A graduate student, who is a co-author on this study (M.T.), worked on the project and was directly involved in the data collection and analysis phases. The hospital also sought the expertise of an external consultant familiar with the healthcare environment in the province of Ontario, and experienced with IT strategic planning, who facilitated the workshops (explained below) and contributed to the gap analysis.

A triangulation of data collection approaches was used to inform and support the IT strategic planning effort, which will be explained in details in the following sections. As shown in Figure 1, a sequential process of five stages was adopted (16), which focused on capturing the Current State of IT, defining the desired Future State of IT, and mapping the work required to achieve the desired goals. Information collected in each stage served as the basis for the subsequent one, which created an incremental dynamic process.

Throughout the IT strategic planning process, there was extensive internal and external stakeholders' engagement (Figure 2) to ensure a rigorous assessment of the hospital IT needs, and a thorough understanding of its challenges and requirements (16). This also presented an opportunity for informing stakeholders and engaging them in the work of the IS department. Details about the approaches used for engaging stakeholders appear in the sections below.

1. Project Initiation

The IT strategic planning project was kicked off in August 2009 by the hospital CIO. The IS Executive Steering committee at the hospital agreed to oversee the project with the Partnership Council representing the staff perspective in the process. The committee included representatives of the major stakeholders including clinical programs (e.g., medical and nursing staff), corporate teams (e.g., financial management, human resources management, planning and marketing, facilities management), support services, and IS services. The first stage consisted of the project initiation during which an outline of what was to be considered in the process of IT strategic planning was developed (Supplementary Table, which can be viewed online at http://dx.doi.org/10.1017/S0266462314000269), which served as a guideline for the subsequent stages.

2. SWOT Analysis and Stakeholder Interviews

The second stage of the IT strategic planning process, and first phase of stakeholders' engagement, consisted of an analysis of the strengths, weaknesses, opportunities, and threats in relation to IT.

First, existing documentation provided insight into the Current State (e.g., previously developed reports on past projects implementation and hospital readiness; the hospital strategy documentation; external practices) before stakeholders' engagement. Over twenty documents were consulted including three major ones: the strategy of the Local Health Information Network (LHIN) (17), a not-for-profit corporation working with health providers and the community to determine health service priorities; the level of maturity of the hospital's technology compared with other health sciences centers in Ontario (18); and the Electronic Medical Records (EMRs) adoption model developed by the Health Information and Management Systems Society (HIMSS) analytics, which classifies the level of EMRs capabilities along eight stages ranging from limited systems in ancillary departments to paperless environments (19). These documents were used to develop the questions that were further used in the survey and workshops, and inform participants about technology trends within the healthcare sector.

Second, a survey was made available online to all staff and physicians in the hospital, which represented the preliminary step for engaging stakeholders. It later revealed to be an integral source of input for the IT strategic planning project. The survey included eight open-ended questions that assessed the vision and expectations of IT, strengths and weaknesses of the current IS services and department, major gaps and requirements, impacts of EMRs and electronic documentation and support for

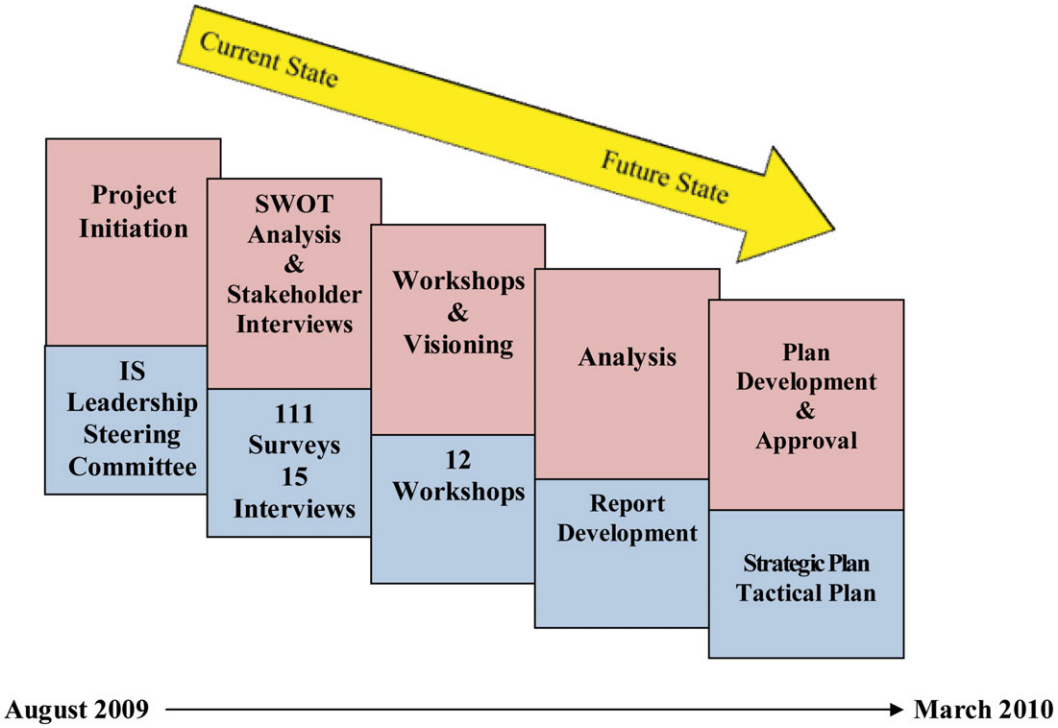

Figure 1. Stages of the IT strategic planning process.

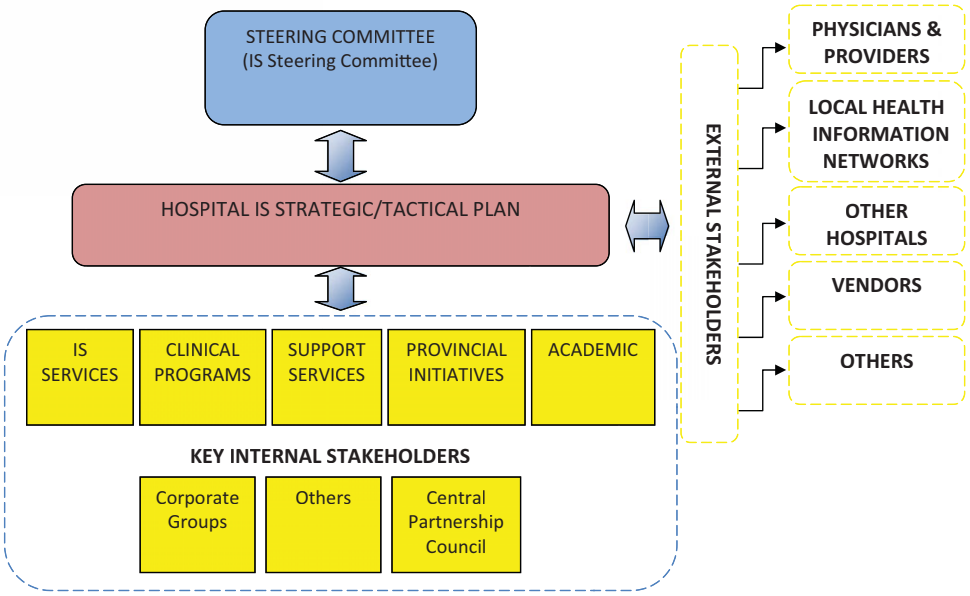

Figure 2. Stakeholders' engagement.

their implementation[1]. Access to the survey was open to all staff and physicians in the hospital over a 4-week period (September 2009). Respondents were given the choice to identify themselves and their respective departments / units. The feedback from the survey was further used to drive the discussion in the subsequent workshops and inform the Current State and Future State definitions.

Third, a total of fifteen individual interviews were also conducted during the same period with the hospital executive team (e.g., Chief Executive Officer, Vice President Patient Services, Chief Financial Officer), key external stakeholders (e.g., representative from eHealth Ontario, Chief Information Officer of the LHIN), and senior staff in the IS department (e.g., Chief Information Officer, Director of Infrastructure). The targets of

[1]A copy of the survey instrument may be obtained upon request.

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the interviews were selected in light of their knowledge of the internal and external IT environment, and their capacity to identify local and regional needs in this area. Each interview lasted approximately 1 hour during which respondents presented their thoughts on the current state in relation to IT investments and services in the region, their perspectives of the challenges and opportunities facing the IS department at the hospital, and their expectations of the IS department in the future. Notes were taken to capture the responses of the interviewees.

3. Workshops and Visioning

In the third stage of IT strategic planning, workshops were held with internal and external stakeholders, which contributed to the development of the *Current and Future State* of IT in the hospital. Key existing internal committees (e.g., nursing and medical advisory committees), executive team, operations director, vendors, etc.) were identified and leveraged whenever possible to conduct the workshops.

A total of twelve workshops (range between 2 and 30 participants) were held over a period of one month (October 2009), including a vendor day with six major vendors of health information technologies / solutions, which were facilitated by the external consultant hired to assist in the process. Each workshop lasted 2–3 hours (45 min for presentation and the remaining time for discussion) during which the following agenda was addressed:

- Introduction – workshop objectives
- Level setting – understanding IT in health care and how the hospital compares with other health centers
- "What was heard" – initial findings from the survey guided the discussions
- Discussion and feedback – introduction and discussion of further thoughts
- Conclusion – next steps

4. Analysis

Analysis was conducted based on the stakeholders' feedback obtained in the previous stages, internal documentation, and available standards in relation to IT. In the analysis process, the LHIN strategy and eHealth Ontario strategy documents provided information necessary to align the hospital with the regional vision. The Ontario Hospital Association (OHA) website (18) allowed a comparison of the hospital's technological maturity to other regional hospitals. And the HIMSS analytics EMR adoption model (19), which details the applications required to reach a fully functional Electronic Health Record (EHR), represented a reference roadmap. The hospital was identified at stage 2 of this model, which informed the Future State in relation to applications prioritization. The analysis led to the development of a final document (100+ pages), which was further reviewed by the executive committee at the hospital.

During this period, the H1N1 epidemic hit Canada, and the hospital was particularly affected in light of the younger vulnerable population it serves. Hence, the attention and resources in the hospital were directed to the situation and the IS department refocused its efforts on the emergency department, which delayed the final report delivery.

5. Plan Development and Approval

The final product, based on the data collected in the previous stages, consisted of two parts: a strategic plan and a tactical plan. The strategic plan specified the long-term objectives of the hospital and focused on determining the strategic directions in relation to IT and the most important initiatives that should be undertaken. The tactical plan defined the short-term objectives that clearly mapped to the strategic directions above. Specifically, the goals, objectives and success indicators were identified for each of the strategic directions.

It is important to note that a second round of stakeholders' engagement took place during which presentations were made to inform the participants of proposed changes and give them the opportunity to offer feedback before finalizing the IT strategic plan.

RESULTS

Stakeholders' engagement and feedback played a pivotal role in the development of the *Current and Future State of IT* and the overall IT strategic plan. The results below underscore current realities related to the environment at PH, which may be common to other similar tertiary care specialized hospitals.

Overall, the IT strategic plan development was informed by 230 individuals (12 percent of the hospital community). Of interest, the feedback from the survey, interviews, and workshops showed significant consistency in the themes and concerns raised by the participants, which are further elaborated in the next sections.

1. Survey findings

A total of 111 surveys were completed by respondents from 38 departments / units in the hospital. Among those who identified themselves, half were clinicians. The results were grouped by themes as indicated in Table 1. When analyzing the responses, "access to information" (mostly remotely or through handheld devices and wireless services) was the most reported theme in reference to current IT gaps, as well as the requirements needed to leverage technology to meet patients' needs. Insufficient resources and poor support services were also identified as challenges. Importantly, "getting it done" was also a recurrent theme, indicating that the respondents were open to change but needed to actually see things happening and moving forward.

2. Interviews

Fifteen key stakeholders' interviews were completed and a summary of the results is presented in Table 2. Twelve interviews

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Table 1. Overview of the Major Survey Themes

Survey Question	Major Themes
1. How can the hospital leverage technology to better meet the needs of our patients (children and their families)?	• Access to Information and Communication facilitated by EHR • More or improved hardware • Technology to support patient experience
2. When you look 3 to 5 years down the road, what is your vision and what are your expectations of Technology to support effective, high quality patient care, processes and flow?	• Access to information and communication facilitated by EHR • Handheld devices to integrate technology into care process • More or improved hardware • Integration of information (not only clinical) • Support • Specific application requests
3. What are the top one or two strengths of the current hospital IS systems and processes? What is working well?	• Strong and helpful IS team • Project management team is good • Specific applications appreciated
4. What is / are the top one or two IS challenges/weaknesses? What isn't working so well?	• Insufficient IS resources • Wireless services • Support services • Hardware • Get it done!
5. What are the top IS and technology gaps? What is missing?	• Remote Access • EHR • Insufficient IS resources
6. What are your top one or two requirements of the hospital IS services? How could technology help you do your work more effectively / efficiently?	• Specific applications requested • EHR • Remote Access • Support services
7. What do you see as the biggest challenge associated with the introduction of electronic clinical documentation and electronic medication records?	• Hardware Requirements • Adequate Training • Ease-of-use • Insufficient resources for sustainability
8. What support would you expect to be required / needed to successfully implement electronic clinical documentation and electronic medication records?	• Training • Support services • Hardware • Additional resources
9. Additional Comments:	• Specific application & solution requests • Get on with it!

were held with the hospital executive staff and three with external stakeholders. The respondents reported mounting frustration due to the lack of progress in relation to the implementation of EMRs. They indicated an increase in IT funding over the past few years, which rectified the historical under funding of IT at the hospital; yet, no further increases were envisioned. Half of the interviewees referred to the failure of a previous Computerized Physician Order Entry (CPOE) project, attributed to poorly managed implementation and insufficient computer literacy among the clinicians' groups. And the interviewees agreed that ad hoc methods for requesting and prioritizing IS projects had been in place for a while with a tradition of not saying "No". Nevertheless, they expressed their frustration with the slow rate of delivery of IT projects. Last, the participants brought up the fact that the hospital had the same requirements as other teaching hospitals, and yet had a smaller budget and number of IT staff given that it is a specialized hospital. Therefore, they saw the pressing need to develop partnerships to address these constraints while maintaining the fundamentals necessary to support the delivery of systems and applications (e.g., skills to use it, hardware to access it, redundancy, training, support, privacy and security).

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Table 2. Overview of Interviews and Workshop Findings

Stakeholders' Engagement	Main findings
Interviews	• Mounting frustration (IS not supporting hospital in meeting corporate objectives by delivering EMR) • No further increase in IT funding • Repetitive reference to previous CPOE project failure and historical slow rate of delivery of IT projects • Existing ad hoc methods for requesting and prioritizing IT projects (tradition of not saying "No") • Value of developing partnerships to address budget and IT staff constraints
Workshops (clinical groups)	• Potential for IT to support the delivery of care • Need for EMR implementation • Need to better define the relationship between IS department and other departments (internal partnership) • Concerns over ongoing support, sustainability, availability of applications, and standardization
Workshops (non-clinical groups)	• Low rate of IT delivery (plans for EMR 15 years ago!) • Communication breakdown between IS staff and end users • Need for enterprise architecture
Workshops (IS group)	• Concern over IS department capacity to support systems • Lack of consistent model to manage IT projects • State of "hyperchange" • Lack of enterprise architecture • Communication issues internally and with other departments

3. Workshops Outcomes

The feedback from the workshops was analyzed across three groups in light of their differences in priorities and concerns: clinical; non-clinical; and IS.

Clinicians recognized that IT can support the delivery of care by reducing repetition in data entry and collection, thus freeing time to spend with patients. They also indicated the need for implementing EMRs, especially that data were distributed in various non-connected systems. They referred to the need to better define the relationship between the IS and other departments (internal partnership to deliver solutions). Ongoing support, sustainability and availability of applications, and lack of consistency and standardization regionally, provincially, and nationally were major concerns raised by the clinicians group.

Participants in the non-clinical group raised their own concerns over their inability to define where they fit in the hospital priorities, and their frustration over the low rate of IT delivery (e.g., plans for EMR and CPOE started 15 years ago). They indicated a communication breakdown between the IS staff and end-users, transparency issues (users' frustration at not understanding IS priorities and progress), and the need for an enterprise architecture. A need for clearly defining an EMR was also perceived as essential to understand the complexity of its implementation.

The IS group that participated in the workshops (e.g., project managers, senior business systems analysts) raised concerns over the capacity of the IS department to support the same suite of systems as larger regional hospitals, with only 10 percent of their staff and budget. They referred to challenges in work distribution within the IS department in the absence of a consistent model to manage IT projects. Several participants also voiced their concern that the IS department was in a state of "hyperchange" (i.e., doing too much), resulting in little actual progress. In light of the absence of an enterprise architecture document, unexpected project complexities and delays were also being observed. Last, improving communication internally and with other departments in the hospital was also discussed.

The vendor day showed consistency in the themes discussed among participants and drivers for IT in the future: patient empowerment expected to change the dynamics of care delivery; future convergence of business and clinical intelligence; health care expected to learn from the banks and airlines experience with IT; telehealth and collaboration anticipated to transform the delivery of care.

4. The Strategic Plan

As a result of the planning effort, a 5-year IT strategic plan (2010–15) was developed that focused on five strategic directions: (i) Positioning technology as an enabler; (ii) Taking the hospital to EMR stage 5 by 2015; (iii) Balancing service delivery needs through shared services and partnerships; (iv) Developing a transparent governance structure and service-oriented culture; and (v) Focusing on patient and family needs and enabling their access to patient record. The plan kick off was in March 2010, and the implementation was expected to begin during the fiscal year 2010/2011.

In the process of the plan development, the hospital committed a capital budget of CAD 5 million per year, in addition to

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the creation of a data center. Staffing growth was also planned with an increase in IT operating budget of 5 percent.

DISCUSSION

This study contributes to an inherently theory-based environment, in which healthcare managers and health IT leaders are increasingly encouraged to apply evidence-based management into their decision making and practices. The IT strategic planning undergone at PH demonstrates an example of "how" to apply the strategic planning principles and concepts in practice in a hospital environment. As such, in addition to it representing a case on IT strategic planning that may be adopted in the education in this area and trigger further research in this area, this study also contributes to the training of future practitioners expected to adopt evidence of practical applications in their daily practices.

Among the advantages of an IT strategic plan is its use in communicating a vision to the entire organization given that it identifies a desired future state and describes the means to achieve it. Continuous presentations were done to inform the largest audience in the hospital about the IT strategic planning underway, which revealed to be essential for the success of the planning process. Ultimately, the plan represented "a bus road map" that organized the trajectory along the IT journey and informed people on what stop they will be picked up so they are ready when it is their turn.

Four primary challenges surfaced during the IT strategic planning at PH, which may be reflective of similar situations in other hospitals:

1. *Focusing on solutions before truly understanding the problems*. Many participants recognized the identified challenges for several years and believed they had the solutions before beginning the strategic planning.
2. *It is easier to plan based on past experiences than to be truly strategic*. Even when the Current and Future States are well defined, it is much easier to revert to traditional planning mechanisms than to think "outside of the box".
3. *Resourcing requires a team with clinical, technical, organizational and analytical skills*. The process outlined required a team combining technical, clinical, organizational, and analytical skills (e.g., CIO, IS Executive Steering Committee, graduate student). Finding team members with enough of these skills can be challenging, but may be alleviated by leveraging business analysts along with experienced IT leaders with healthcare expertise.
4. *It is frustrating to research the process and find limited evidence to consult.* Given the magnitude and significance of IT strategic planning, it is important to do the proper research before embarking on it. Surprisingly, limited evidence exist about IT strategic planning in hospitals (e.g., 9;14;15), which created initial uncertainty about how to proceed.

When making IT investments, it is important to apply strategic thinking and analysis especially in the context of the Canadian healthcare system, given the accountability to the public sector for appropriately spending the tax money. Hence, it is expected that IT inefficiencies would be reduced with a strategic plan in place, allowing more money to be spent on the care that benefits patients.

Originally, the IT strategic planning project was not intended as a project that is mainly research-focused. Therefore, some aspects of the methodology related to the data collection tools and processes were not thoroughly rigorous (e.g., taping of the interviews, careful attention to the questionnaire design and administration to support data analysis), which represented limitations at this level. Future IT strategic planning efforts and projects should carefully consider these aspects, which enrich the process and provide more solid ground supporting further evaluation of the framework used.

The framework and methodology presented in this study may inform practitioners and be useful to other hospitals that plan on engaging in IT strategic planning in the future. Several themes and issues that appeared in this case represent similarities with current preoccupations and needs of hospitals in Canada and other developed countries (e.g., fragmentation of applications / systems in hospitals (20), need for information access (4), managing demands / expectations for IT services) (4). Yet, it is important to note that this study represents a case of IT strategic planning undergone at one site, which may have its unique characteristics and dynamics. Therefore, despite the fact that the framework may be applicable in other settings, the results should be consdered with caution. As evidence becomes more available in the literature on IT strategic planning, hospitals will develop a better understanding of the practical approaches for strategic planning, learn about existing frameworks and methodologies that were successful in other settings, and better position themselves compared with similar organizations. Most importantly, they will benefit from the lessons learned in other settings.

Evolution and Lessons Learned

Originally, PH relied on a best-of-breed model that suggested coordinating and integrating systems from different vendors. Nevertheless, the flow of information between systems was evidently cumbersome and slowing down the progress along the set timetable for the plan (e.g., one vendor went out of business, another was acquired by a new company, a third was not delivering on the promised integration with existing systems). In Fall 2011, the discussion and questioning of the best-of-breed approach was raised at the IS Steering committee, and the recommendation to change this approach was brought to the board and approved in March 2012. At present, PH has moved to stage 3 of the HIMSS model.

Of interest, the anticipation of mobile technologies was underestimated. The iPad "trend" and wide deployment of this technology for use by clinicians in a major neighboring and partner hospital proved disruptive on the plan delivery. PH was going toward a cloud environment with an architecture allowing users to connect by any mobile technology. Thus, investing in a new technology like the iPad was not a priority, but the users were requesting it to support their clinical practice.

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Below are recommendations based on the IT strategic planning process at PH, which may be helpful for other hospitals engaging in a similar exercise:

1. *Create research tools amenable to analysis*. The survey instrument used in this project was originally designed to gather basic stakeholders' feedback to drive the discussion in subsequent stages, but its success resulted in it playing a larger role within the IT strategic planning project. Careful consideration to the design and administration of the survey would provide rigour to the process and strengthen the methodology.
2. *Hearing from all involved stakeholders* produces a comprehensive view of existing issues, and supports solutions to identified challenges representing multiple perspectives.
3. *You cannot communicate too much*. There were participants who heard about the project regularly through committee meetings, which was often appreciated.
4. *Time investment is significant*, which covered a period of 8 months (August 2009 to March 2010) for completion of all stages, and it is critical to leverage existing opportunities wherever possible to minimize the impact on stakeholders.
5. *Grounding the final product in existing models* is an effective way to justify priorities (e.g., HIMSS EMR adoption stages was used to support the final plan).

One of the most significant lessons learned in this case is the importance of developing trust between the IT and clinical groups, and maintaining communication between them, even after the plan is developed. Extensive stakeholders' engagement at PH built trust in the process and improved the relationship between the clinical and IT groups that has been historically strained. One of the byproducts of this improvement was a collaboration to address emerging challenges facing the emergency department (ED) in relation to long wait time and distribution of resources. A business intelligence and data analytics software, originally deployed to support administrative functions at the hospital, was leveraged to meet the pressing needs to decrease patient wait time and better use the human resources in the department (Supplementary Figure, which can be viewed online at http://dx.doi.org/10.1017/S0266462314000269). The dashboard divides the emergency area into four zones (recess, acute care, mental health, and urgent care) so that the physician teams can monitor the volumes in these areas and move between them.

Lastly, existing research in the area of IT strategic planning remains limited. As evidence becomes more available in this area, future research should investigate the effectiveness of various IT strategic planning approaches, and their long-term impact on the performance of IS departments and the overall success in IT implementation projects.

CONCLUSION

As per Dwight Eisenhower, "In preparing for battle I have always found that plans are useless, but planning is indispensable." The process followed in the development of the IT strategic plan is as valuable as the resulting plan itself. Intensive stakeholders' enagagement and continuous communication were pivotal for the success of the project as they improved the relationships between the clinical and IT groups and were essential for developing a good understanding of the Current and Future IT state. In an inherently theory-based environment, this study presented the process and outcomes of IT strategic planning in a pediatric hospital, which may be useful to other hospitals engaging in a similar exercise in the future. As more research becomes available for managers on IT strategic planning, "best practices" will be developed to guide their decision making and support evidence-based management in this area.

SUPPLEMENTARY MATERIAL

Supplementary Table 1:
http://dx.doi.org/10.1017/S0266462314000269
Supplementary Figure 1:
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CONFLICTS OF INTEREST

No conflicts of interest.

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