



BRITISH
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OCT 17 2013

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Mr. Craig James
Clerk of the Legislative Assembly
Room 221
Parliament Building
501 Belleville Street
Victoria BC V8V 1X4

Dear Mr. James:

In accordance with Section 14 of the *Budget Transparency and Accountability Act*, please find enclosed a major capital project plan for the Clinical and Systems Transformation Project.

Yours truly,

A handwritten signature in black ink, appearing to read 'Terry Lake', written in a cursive style.

Terry Lake
Minister

Attachment

**CAPITAL PROJECT PLAN
CLINICAL AND SYSTEMS TRANSFORMATION PROJECT
AUGUST 14, 2013**

1. Project Background

The primary purpose of the Clinical and Systems Transformation (CST) Project is to establish a common standardized, integrated, end-to-end clinical information system and environment (“Integrated Clinical Information System (CIS) Environment”) for Provincial Health Services Authority (PHSA), Vancouver Coastal Health Authority (VCHA) and Providence Health Care (PHC) (collectively “the Health Organizations”). The three Health Organizations enable approximately 1.2 million patient visits each year and provide health services that serve each citizen in British Columbia. In addition, the facilities within the Health Organization’s are central for teaching and research in British Columbia.

The vision of this integrated system is “One Person. One Record. Better Health”. A single health record for each patient will promote high quality care and improve health outcomes throughout the region by ensuring clinicians have a greater level of accurate and consistent patient information. A single electronic health record per patient across the continuum of care (acute, ambulatory, and residential integrated with lab, medical imaging, health information, and pharmacy) will streamline the care process, improve the safety and efficiency of patient care, and provide clinicians with a longitudinal view of a patient’s medical history for better care decisions.

The CST Project is more than a change in technology platform—it will transform the way practitioners care for patients. The Health Organizations are standardizing clinical processes and systems in acute, ambulatory, and residential sites throughout the Lower Mainland and some of the outlying regions serviced by PHSA. This initiative will enhance the Health Organizations’ ability to ensure accuracy, safety, and the integrity of patient identification.

The CST Project will deliver real-time health information to clinicians and researchers in a way the current heterogeneous systems do not. It will enable the standardization of administration functions, such as referrals, scheduling, and registration. It will also enable the Health Organizations to better manage and measure wait times as well as provide comparable and timely data for efficient resource management. This will in turn allow British Columbia to better manage future health care costs while improving the quality of patient care.

The core components of the CST Project include the design, build, integration and implementation of the Integrated CIS Environment, based on the Cerner system (Cerner). This solution will not be built from “scratch” but rather leverage the existing PHSA instance of Cerner to save time and reduce costs. By creating a standardized clinical platform, the foundation for a provincial clinical and technology asset is established and available to other Health Authorities in British Columbia and if desired, nationally.

2. Project Objectives

The key objectives for the CST Project are to:

- Transform care delivery through standardized protocols, order sets and clinical documentation with the focus to improve patient safety and quality;
- Standardize key clinical and business processes including admitting/registration, discharge, transfer, referral, medical imaging, laboratory services and pharmacy;
- Standardize acute, residential and ambulatory care information systems on a non-customized Cerner application;
- Standardize and enhance technology infrastructure including access and medical devices (IV pumps, medical equipment for closed-loop, monitors, computers), servers, storage and networks; and
- Achieve a HIMSS¹ Analytics score across the Health Organizations of Level 5+ ² in 5 years.

3. Project Status

Preparations for the project have included:

1. The CST Project has been approved by the Board of Directors of each Health Organization;
2. A service agreement has been signed with IBM Canada Limited;
3. The Project Director and Chief Transformation Officer has been appointed;
4. Communication on project approvals and signing of the service agreement have been circulated within the Health Organizations;
5. A Memorandum of Understanding between the Health Organizations is being finalized;
6. A Project Board has been established to govern the project.

4. Project Costs and Benefits

Project Costs:

The ten-year total cost of ownership (TCO) for the project is projected to be \$842 million, comprising of a capital and an operating cost component. This TCO includes expenditures on the

¹ The Health Organizations use the Electronic Medical Record Adoption Model (EMRAM) to benchmark, set targets and track progress toward a complete electronic health record. The model, developed by the Healthcare Information and Management Systems Society (HIMSS – see www.himss.org) is internationally recognized.

² Level 5 involves the integration of Labs, Radiology and Pharmacy, clinical documentation, clinical protocols and closed loop medication administration. Level 6 is the addition of Physician documentation (structured template), and full R-PACS (PACS – Picture Archiving and Communications System). Level 7 is the final stage, and achieves a complete Electronic Medical Record.

installation and implementation of the new system and related maintenance and support costs for the ten-year period.

The industry average annual expenditure on IM/IT operating costs is approximately three percent of the total annual Health Organizations operating budget. This average is based on information from Canada Health Infoway.

During the ten-year period of this project, the total operating budget expenditure for the Health Organizations will be approximately 60 billion. Prior to the initiation of the project, the Health Organizations spend approximately 1.2 percent of their operating budget on IM/IT costs, which is 1.8 percent less when compared with the industry average.

This project will help to close this investment gap, although the ratio anticipated will stay below industry average.

The capital cost component of the CST Project is estimated at \$480 million over the next ten years. The operating cost component of \$362 million is projected over the ten years for supporting the new Integrated CIS Environment and the current legacy systems, until such systems are replaced by the Integrated CIS Environment. The Health Organizations are committed to have a rigorous governance process in place to oversee and manage the project and adequately fund the CST Project during its implementation and ongoing support as required.

Project Benefits:

The most significant benefit to patients and the care delivery process is in relation to the reduction of adverse events associated with a hospital stay. The anticipated benefits of the CST Project are listed below under several high-level benefit categories. Many of the listed technical and system benefits work together in the interest of the patient and delivery of care.

Quality, Patient Safety and Clinical Excellence:

- Enhanced patient experience and higher levels of satisfaction related to information flow and retrieval during hospital stay or outpatient visit
- Reduced number of forms to complete for clinicians
- Decreased need to repeat information by both clinicians and patients
- Decreased need to carry written copy of history
- Decreased need to remember medications taken while in hospital
- Care providers have comprehensive information at the point of care
- Decreased need for repeating tests
- Increased ability for preventative care, such as reminders for immunizations and screening
- Automatic alerts for results out of range
- Records easily shared with other providers which facilitates decision making as not dependent on having chart with them
- Decreased adverse events (drugs, blood transfusion errors, infections)
- Increased clinical documentation compliance (inpatient admission, discharge, education, wounds, shift assessment)
- Improved care maps/pathway compliance

- Increased computerized physician order entry adoption rates
- Medications are reconciled more quickly and accurately with less effort

Process Redesign and Workflow:

- Reduced medical record deficiencies
- Reduced duplicate ancillary testing and decreased cycles times (Lab, Radiology)
- Increased standardization of workflow within and across the Health Organizations
- Improved data quality for research and health system planning
- Decreased need for standalone research databases
- Decreased cycle time for first medication dose administered
- Decreased time from medication order to medications available at point of care
- Improved access to information at patient care transfer points
- Decreased call backs to physicians for order clarification
- Improved reporting and health planning decision making

Efficiency and Cost Avoidance:

- Increased productivity as repetitive tasks related to paper charts are removed
- Cost avoidance for drugs, laboratory and radiology
- Decreased transcription costs
- Reduced length of stay
- Fewer reports missing on charts that require repeating to determine plan of care
- Improved wait times
- Decreased operating cost per exam/test
- Increased report turnaround time
- Improved medication management (improvement in inventory, packaging and distribution processes)
- Efficient clinical documentation (decreased clinician overtime)
- Reduced readmission rates
- Cost avoidance associated with legacy systems
- Increased system security, audit capability and accountability

5. Project Risks & Mitigation Strategies

As a large project spanning multiple years and Health Organizations, challenges could arise and have adverse impact on the project unless properly mitigated. Some of the common issues with other major projects would include: achieving agreement around standard practices, having the appropriate internal resources to meet project timelines, and consistent engagement with stakeholders for timely decision making.

Major Risks:

- Project timelines or scope are not achievable or keep changing to meet shifting expectations
- Clinical stakeholders are not engaged and accountable

- Clinical standardization is not accepted by all Health Organizations and decisions are not based on best practices or evidence-based clinical practices
- Strong organizational identities clash with shared project vision impacting on collaboration and rapid decision making
- End users and other stakeholders are not aware of required changes, not adequately prepared for changes, or not sufficiently supported after implementation
- Decision-making governance structures not clear, efficient or timely, or decisions once agreed are not followed
- Leadership is not visible or effective at influencing change across the Health Organizations
- Appropriate resourcing, including clinicians, are not available for project duration or supported with dedicated time to participate in planning, workflow redesign and ongoing education
- Technical complexity from integration with other downstream clinical and business systems, data conversions from multiple legacy systems and module implementation challenges
- Vendor is unable to execute on requirements and ineffective dispute resolution

Mitigation Strategies Identified:

- Manage competing expectations through governance processes and a dedicated project phase for strategy and planning
- Robust governance and project management structure to review and prioritize changes to scope, and ensure clear decision-making structures
- Establish clear and visible executive and clinical leadership by having visible executive support throughout the implementation, setting expectations and establishing physician and clinical advisory groups to provide leadership and make appropriate decisions
- Early engagement of end-users and stakeholders
- Develop and model a culture of collaboration at the Health Organizations leadership level, and ensure consistent messaging through a communication plan
- Acquire executive support and allocate funding to secure commitment for key resources
- Develop and monitor accurate long-term funding forecast to meet realistic project costs
- Ensure adequate on-site support for system implementation and sustainment, and establish long-term support model including training, education and support resources
- Leverage vendor and Health Organization's tools and resources to standardize workflow processes before and during the design and build of the enterprise solution, maintaining a focus on best practices
- Include best practice protections including performance incentives and penalties in the service agreement



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JUL 23 2014

Ms. Judy Darcy
M.L.A., New Westminster
737 Sixth St.
New Westminster BC V3L 3C6

Dear Ms. Darcy:

Thank you for your request for information during the 2014/15 Ministry of Health Estimates Debates in regards to Clinical and Systems Transformation (CST) Risk Management.

Risk management is an important aspect of the CST project. Risk management is a function performed by the Joint Project Management Office (JPMO), which monitors and controls the project to ensure key outcomes are achieved on time and within budget. The JPMO is responsible for actively monitoring, managing, communicating and escalating project risks.

While the risks identified in the CST Risk Register report are still relevant, much progress has been made since then to actively manage and mitigate the risks associated with this large and complex transformational project. Please see the attached table for specific actions that have been undertaken to mitigate each risk.

Executive oversight of the program-level risks is actively managed through a robust project governance structure. This structure includes a Project Board, which is chaired by the Associate Deputy Minister, and includes the Chief Executive Officers from each partnered Health Organization. An Executive Steering Committee also exists that includes senior clinical and executive leaders, and is chaired by the Chief Transformation Officer for the project.

In addition to the risk management processes managed by the JPMO, and the existing governance structure, the vendor (Team IBM) also conducts regular Project Management Reviews on the project. The Project Management Reviews are regularly scheduled, and are focused on assessing risk and monitoring progress throughout the lifecycle of the project. The first review was undertaken in August 2013 and the second was completed in May 2014. The reviews provide the CST team with a joint plan of action for addressing the risks identified.

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The Project Board has also recently initiated an independent project risk review, currently being conducted by a third party with completion targeted for August 2014. This is an example of the project's strong risk management culture. This review involves an objective third party conducting a series of interviews with executives and senior project leaders to identify findings/key themes, and put forward recommendations to mitigate key risks. Early and periodic external assessments of projects of this magnitude improve the probability of success.

Through robust governance, the existing risk management processes, and regularly scheduled risk reviews/audits, the government and partnered health organizations are actively monitoring and controlling the risks associated with the CST project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Terry Lake".

Terry Lake
Minister

Attachment

Attachment:

Risks	Mitigation Completed	Previous Rating	Current Rating
Finances	<ul style="list-style-type: none"> • A Memorandum of Understanding (MOU) was formed between the Health Organizations to clearly identify cost sharing principles, and financial oversight. • Robust, comprehensive financial planning (forecasting, tracking and reporting) is in place. The Project Board, with Ministry of Health and the CEOs of the Health Organizations, governs the financial control for the project. 	High	Moderate
Governance	<ul style="list-style-type: none"> • Established governance bodies made up of multi-disciplinary leaders from across the Health Organizations and Team IBM. • All key decisions required to facilitate the design of the system have been made on time; governance is functioning very well. 	High	Moderate
Culture	<ul style="list-style-type: none"> • The JPMO conducted a Shared Vision and Goal Alignment (SVGA) organizational assessment in the planning stage of the project to understand cultural differences and organizational readiness for change. • Established Change Management, Communications and Transformational Learning teams to address cultural resistance to change and to foster adoption. 	High	Moderate
Technical complexity	<ul style="list-style-type: none"> • Through the implementation of CST we are reducing technical complexity across the Health Organizations, moving from several old, legacy information systems to Cerner, a modern, robust, integrated clinical information system. 	High	Moderate
Shared Vision	<ul style="list-style-type: none"> • Clinical visioning session held with representatives from each organization and Team IBM. Developed a mission statement, shared vision, tagline and guiding principles to ensure alignment towards a common goal. 	High	Moderate
Resourcing	<ul style="list-style-type: none"> • Robust resource planning conducted with the service provider (Team IBM). • The design process mobilized and engaged hundreds of practicing clinicians to participate in the design and development of future state clinical workflows. 	High	Moderate
Clinical standardization	<ul style="list-style-type: none"> • Through 13 design teams, brought hundreds of multi-disciplinary practicing clinicians together, from across the Health Organizations and Team IBM, to standardize clinical processes, protocols, care pathways and order sets. This is the largest clinical standardization initiative ever undertaken in BC. The clinical standardization design work will complete by Spring 2015. 	High	Moderate

Achievable expectations and timelines	<ul style="list-style-type: none"> • Robust project management office processes to monitor scope, schedule, budget. • Regular communications to thousands of stakeholders, to explain the goals of the CST project, progress and to answer questions. 	High	High
Clinical engagement and accountability	<ul style="list-style-type: none"> • Alignment of Change Management and Communications plans and priorities including: a physician engagement strategy, lunch and learn series, a website, regular all-staff meetings and bulletins, and more. • Many forums established for engagement, including a Clinical Decision Group and multiple clinical advisory task groups. A new Provider Advisory Group is being developed. 	High	High
Leadership	<ul style="list-style-type: none"> • Chief Executive Officers and the Associate Deputy Minister formed a Project Board; actively meeting to control the project and provide executive leadership. • Vice President Executive Sponsors have been established in each Health Organization and meet weekly to guide and control the project and provide leadership. • Chief Medical Information Officers have been appointed in each organization to provide medical leadership. • A Chief Transformation Officer has been appointed to oversee the project. • Executive Awareness Sessions were held with each of the three Health Organizations. • The Joint Executive Committee manages the Health Organizations' relationship with Team IBM and reviews overall service provider performance, project status and progress against the contract. 	High	Moderate
End-user adoption	<ul style="list-style-type: none"> • Alignment of Change Management and Communications plans and priorities including a physician engagement strategy lunch and learn series and more. • A dashboard of metrics will be developed to track and monitor usage and uptake of the new clinical processes and information system. 	High	High
Vendor relationship	<ul style="list-style-type: none"> • Joint governance of the project in place through the Joint Project Management Office. • Management of vendor relationship through a Joint Executive Committee. 	High	High
Political	<ul style="list-style-type: none"> • The government is committed and supportive of the project, with the Associate Deputy Minister chairing Project Board, which is responsible for providing overall executive direction and key decision making for the project regarding scope, budget, schedule, communications and dispute resolution. 	Moderate	Moderate



Memorandum

Ministry of Health
Office of the Minister

To: Clinical and Systems Transformation (CST) Project Board

Date: December 19, 2014

Earlier this week, accompanied by my Deputy Minister and Associate Deputy Minister (as the Chair of the CST Project Board), I met with the responsible Health Authority Board Chairs (VCH, PHC, PHSA) and their respective CEOs to discuss the status of the CST Project. The Project Director of the CST Project and the former Chair of the CST Project Board joined us as invited guests.

The CST Project is one of the largest healthcare projects embarked upon in the history of British Columbia and will be transformational in its impact on clinical practice and systems when it is completed. The complexity and size of this undertaking naturally means the CST Project does not come without risks and challenges - some of which have been raised over the last month. While I am confident the right teams are in place to find solutions within the existing framework, given the recent issues, the following direction is provided:

- 1) The Project Board is to review the concerns raised in VCH's November 3 email and determine what additional mitigation strategies may be required to manage risk. These could include reviewing the training requirements, pace of implementation, and physician engagement strategies.
- 2) The Project Management Office, CST Project is to arrange for a senior member of the North York General Hospital (NYGH) consulting team that undertook a week long review of the CST Project to provide a verbal briefing on NYGH consulting team findings to the Project Board.
- 3) Notwithstanding current discussions with the vendor, the PMO with the full support of the Project Board is to concentrate their efforts and energy on delivering the project in scope and on budget. The PMO and Project Board are to engage as frequently as required.
- 4) Update on progress to be provided in mid-February.

Thank you and I look forward to hearing of your progress in the New Year.

Sincerely,

A handwritten signature in cursive script that reads "T. Lake".

Honourable Terry Lake, Minister of Health

Brown, Stephen R HLTH:EX

From: Ackenhusen, Mary [CORP] <Mary.Ackenhusen@vch.ca>
Sent: Wednesday, February 4, 2015 7:47 AM
To: Brown, Stephen R HLTH:EX; Feulgen, Sabine HLTH:EX
Subject: followup from yesterday
Attachments: Review_large Health IT_CST_FINAL Nov 7 2014.pdf

Hi Stephen and Sabine,

I am reflecting on the learnings from the meeting with John, and how we can meet his expectations.

The largest area of concern for VCH, because of the high risk it entails, is the big bang strategy for the VCH and PHC sites. [s.13](#)



We are all in a learning mode on this complex project, and I hope you will welcome some additional information to give you more background on this debate. With your permission, I am sending you a review of learnings from other large IT projects (pulled from a literature review) as they apply to our CST project. The paper, written in November 2014 by the 3 VCH executive leads including Dr Bruce Long, presents the history of the project to date (as background) and then reviews a number of published articles on specific large complex IT EHR projects so that we can understand the challenges that other projects have faced and learn from these. It is worth reviewing so that we don't unknowingly make the same mistakes.

I thought this could be useful as we move forward to discuss next steps.

Thanks
Mary

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Review of Large Health IT Projects in the CST Context

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Vancouver Coastal Health

Date: November 3rd 2014

Version: FINAL 1.0

