

Improve **Quality and Economics** of Health Care

Standardize. Automate. Real-Time Feedback. Learning Culture.

Abstract: To simultaneously improve the quality and economics of healthcare, organizations must deploy a comprehensive **Quality System** and staff it with a motivated Workforce. The CM™ (Clinical Message) capability is the result of a joint venture between the University Health Network (UHN), a network of teaching hospitals in Toronto, Canada and QRS, a global continuous-improvement and systems engineering firm, that provides both a comprehensive Quality System and model to engage all staff to improve care.

The CM™ capability standardizes and integrates selected care processes, provides an ability to measure process and clinical outcome performance in real-time, a system to manage continuous improvement programs and process by which improved process knowledge is captured and diffused among departments and across hospital/organization practitioners.

This capability has been deployed in selected services at UHN and the clinical outcomes so far have been remarkable.

- *Interprofessional Communication*
- *Patient Handoff*
- *Electronic Kardex*
- *Flexible Patient Care Teams*
- *Most Responsible Clinician*
- *Closed Loop Communication*
- *Interprofessional Collaboration*
- *ED Consult Time*
- *Real-Time Performance Communication and Analytics*
- *Learning Organization*
- *Knowledge Diffusion*
- *Global Community of Patient Safety Professionals*



<http://qrs3E.com/cm>

Clinical Message capability is a joint venture between:



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The Opportunity

In Ontario Canada, the government's health care expenditure has doubled from \$21.6B in 1999 to a forecasted \$45.2B in 2009. This measure has increased from approximately \$1,900 to \$3,500 per person (84%). In comparison, over the same time period, Ontario's GDP grew at a rate of 39% (from \$409 billion to \$570 billion). [1]

While some will argue about the focus on cost, non-financial outcomes — such as lives saved, improved health and quality of life, greater safety and shorter waits — are the results that truly matter.

This cost increase pattern is not limited to Ontario Canada; other jurisdictions have experienced similar cost increases.

The challenge the Health Care industry is facing is how do we shift this cost curve trend downwards and improve the quality of care at the same time.

Root Cause

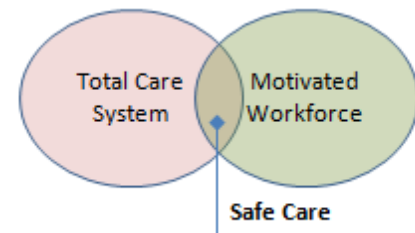
What prevents health care organizations from addressing the health care quality and cost challenges? The following is not meant to be a comprehensive list; however the list does provide sufficient guidance to experiment with solution approaches.

- Current Quality Systems are not comprehensive, useful, easy to use and do not address the concerns of all stakeholders
- Hospitals lack the ability to build and sustain shared commitment from all stakeholders involved in care delivery and care management
- There is no common understanding of all cost drivers (such as the cost to the hospital, patient, society and tax payer) among practitioners
- In hospitals, the culture of accountability and transparency is very strong when it comes to care delivery, however, the same cannot be stated when it comes to the management of care
- There are too many narrowly defined priorities that consistently prevent focus on comprehensive solutions
- Unlike other industries, experimentation in health care is very expensive with dire consequences; therefore lessons from other industries need to be applied with caution. This promotes a culture of "not invented here".

The CM™ Solution Approach

A team of quality business performance improvement engineers partnered with clinical staff from a leading teaching hospital (CM™ Team) have developed a comprehensive solution that incorporates fundamental principles of Safe Care delivery.

The Safe Care principle asserts that an organization will need a total Care System executed by motivated and aligned workforce.



The Clinical Message Capability is built on the following principles:

1. Total Care System

- Standardize and automate common care delivery processes backed by enhanced inter-professional communication.
- Provide real-time feedback on the performance of the care process and resulting clinical outcome to ensure constant focus on care goals

2. Motivated Workforce

- Provide a platform to nurture and exploit innovative ideas of team and of individuals
- Simplify the management and diffusion of clinical practice knowledge.

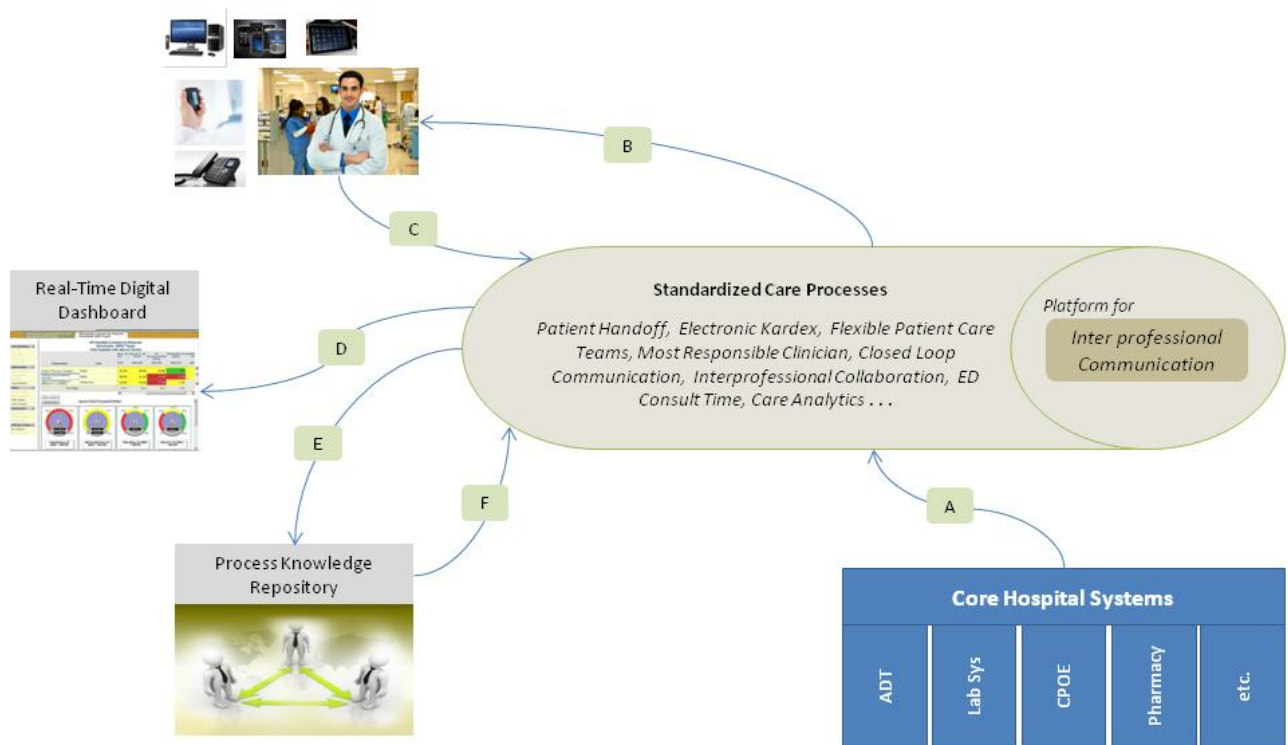
Architecture of the CM™ Capability

The following architecture principles have been used to build the CM™ Capability.

Architecture Principles

- The solution shall not increase the net cost of care and/or staff workload
- The solution shall support the most effective way the care is delivered
- The solution shall allow local adaption without excess overhead
- The solution shall support inter-organizational learning while respecting the privacy of patient information

The System Architecture



Process Map

- **Activity A:** The CM™ capability extracts Patient demographic and location information in real-time from the hospital ADT system. Additional clinical information can be extracted only if required by a financially and clinically viable business case.
- **Activity B:** clinician can access information using their own mobile device, Smartphone, BlackBerry, desktop, voipPhone or Pager.

- **Activity C:** through secure web access, clinicians update the patient specific information in the CM. Note, the CM™ is not treated as a clinical document management system.
- **Activity D:** The CM™ integrates with Digital Dashboards and is able to send real-time information to a current display.
- **Activity E:** As content is developed for capabilities within your organization, use the repository to share this information within your own organization. The CM™ maintained content is available to all member organizations.
- **Activity F:** Extract information from a global repository on best practices and learn from others. Use repository information to identify, prioritize and manage your continuous improvement programs and projects.

Performance Measures

The following is brief list of outcomes the CM™ capability is able to positively influence:

Staff Satisfaction

- Number of inter-professional messages that expect clinicians to respond immediately as a percentage of total messages. This indicator measures the number of interruptions and their affect on individual performance.
- Proactive alerts that are based on best practices.

Patient Satisfaction

- Know the Care Team in real-time
- Improved Patient Satisfaction in real-time
- Accessible Transparent Care Plan

Clinical Performance

- Reduced elapsed time to resolve underlying (the reason why inter professional communication was required) clinical issues to all parties to achieve stakeholders satisfaction
- Reduced Re-admission Rate
- Lessened Discharge Rate and Flow through
- Protect privacy and sensitive information
- Increase Clinical staff effectiveness and Efficiency (direct care time)
- Use inter-professional communication to define and improve care pathways
- Reduce Time and effort to build care team

How to Exploit the CM™ Capability

Participate and Get Involved

- Hospitals that would like to deploy the CM™ Capability and conduct formal research to study the impact of standardized process on clinical outcomes.
- Hospitals that don't have capabilities to carry out formal research but would like to exploit the CM™ Capability and contribute to industry learning.

Deployment Options

The CM™ Capability consists of two major systems – the Patient Centric System and the Process Improvement System. For most effective deployment we recommend:

- Deploy a Patient Centric System in the cloud (which is managed by the CM™ Team and meets all security and privacy policy guidelines) or within your own Infrastructure.
- Exploit a Process Improvement System in the cloud without having to incur additional costs to deploy and manage.

Role of the CM™ Team

The CM™ Team can help you with all or any of the tasks below:

- Define the transition plan and business case for creating a Safe Care environment
- Industrialize the Quality Processes
- Real-Time Performance measures and continuous improvement plans
- Industrialize the knowledge capture and diffusion program

About the CM™ Team

The CM™ (Clinical Message) capability is the result of a joint venture between the University Health Network, a network of teaching hospitals in Toronto, Canada and QRS, a global continuous-improvement and systems engineering firm, that provides both a comprehensive Quality System and model to engage all staff to improve care.

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About QRS

QRS provides thought leadership and best practices in how to define, develop and exploit information management capabilities to achieve the organization's strategic intent. The company employs over fifty enterprise architects, program management and software engineering professionals in offices across North America, Europe, Asia and South America.

About the University Health Network

The University Health Network (UHN) is an academic teaching hospital fully affiliated with the University of Toronto. It comprises of the Toronto General, Toronto Western, and Princess Margaret hospitals.

Specifically, UHN is represented by the Centre for Innovation in [Complex Care \(CICC\)](#) and the [SIMS Partnership](#). CICC is dedicated to studying how to improve the entire process of care for patients with multiple problems. Its purpose is to engage its patients and clinicians to identify problems with current healthcare practices and develop solutions for addressing them. Innovative research and evaluation in a real clinical environment allows its clinicians to utilize the latest technology to improve patient care. The SIMS Partnership provides leadership in streamlining and standardizing information technology practices in the healthcare sector.

About the Process Knowledge Repository

The Process Knowledge Repository is built and maintained by the CM™ Team and deployed in the cloud. Participating organizations are able to exploit the knowledgebase free of charge and can exploit its Program and Project Management module to manage all innovative ideas and projects throughout the full life cycle.

The following table provides a brief overview of three modules – Education and Learning, Leading Practices and Innovative Ideas and Projects Management.

Services for the Health Care Community		
Education and Training – Health Care Practitioners Deliver online education programs and enable collaborative learning across the industry		
Education Area	Fundamentals Courses	Detail
Continuous Improvement	Lean Sigma in Health care	
Informatics	Critical Thinking	
Business Case	Cost, Risk and Value Assessment	
Implementation Preparedness	Are you Ready to Go Live – Yes, we are.	
Leading Practices Provide step by step instructions on how to execute a specific program such as Define Scope of Program and Manage a Program		
Best Practices for how to define, manage and exploit the current CM™ Capabilities These are 30 minute courses that describe how the best practices are defined and industrialized using CM™ cloud capability.	Patient Signout	
	Nursing Hand off and Kardex	
	Disposition Management	
	Inter-professional Communication	
	Patient Care Team	
	Team Collaboration	
Portfolio of Improvement Projects		
Can use the Investment Portfolio Management module of the EC/p to define and manage improvement projects	Define, Prioritize and manage innovative ideas throughout their life cycle. Use predefined templates, guides and resource plans to manage innovation projects.	

References

1. [http://www.ccac-ont.ca/Upload/on/General/Bending%20the%20Health%20Care%20Cost%20Curve%20\(Final%20Report%20-%20April%2013,%202010\).pdf](http://www.ccac-ont.ca/Upload/on/General/Bending%20the%20Health%20Care%20Cost%20Curve%20(Final%20Report%20-%20April%2013,%202010).pdf)