September 2007

HQCA
Health Quality Council of Alberta

REVIEW
of Emergency and Urgent Care Services in the Calgary Health Region

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FOREWORD

On behalf of the Health Quality Council of Alberta (HQCA), I am pleased to introduce the findings and recommendations from the comprehensive review of Calgary Health Region's (CHR) emergency department and urgent care services.

This review was undertaken at the request of the Calgary Health Region under Section 14 of the *Health Quality Council of Alberta Regulation*, which states that the HQCA may assess, inquire into or study matters respecting patient safety and the quality of patient care that are referred to it at the request of a health authority. The Calgary Health Region's request to conduct the review, as well as its support throughout the process, actively demonstrates the organization's commitment to providing safe, quality health care services for its citizens. It underscores the Region's willingness to be open to exploring new ideas and opportunities for improving the quality of the emergency and urgent care services that it offers. Indeed, the review process itself stimulated positive change over the past year.

The thorough process that the HQCA review team followed included interviews with key region executive, management, staff and physicians, as well as focus groups with front-line staff. The patient perspective was captured by extracting Calgary findings from a larger, standardized survey of emergency departments and urgent care centres that the HQCA conducted in early 2007. It will be publicly released later in the year. An extensive national and international literature review was conducted and an expert panel reviewed findings from the literature regarding leading processes and practices and assessed them in terms of effectiveness. Based on this assessment, the HQCA determined the most effective processes and practices, which are identified in the review. A second group of expert advisors reviewed the draft report and provided additional feedback.

The Health Quality Council of Alberta's legislated mandate charges us with helping to create a higher-quality and safer health care system for all Albertans. There is no doubt that Alberta's rapid population growth has had implications for emergency departments and urgent care centres in Calgary. Indeed, many of the issues facing the Calgary Health Region are shared by the other health regions across the province and across the country. It is our hope that the findings and recommendations from this independent quality review will highlight opportunities for potential system changes and improvements not only for the Calgary Health Region, but for other health regions across the province.

In conclusion, we acknowledge the collaborative spirit and openness to learning that the Calgary Health Region has displayed over the past year. Through initiatives such as this review, the HQCA is able to gather knowledge and ultimately provide health care providers and policymakers with information to enable them to focus on and make quality and safety improvements in health care services.

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EXECUTIVE SUMMARY

The review of emergency and urgent care services in the Calgary Health Region (CHR) conducted in partnership with the Health Quality Council of Alberta (HQCA) outlines 11 key recommendations to improve the quality of these services for citizens.

The review was undertaken at the request of the Calgary Health Region under Section 14 of the *Health Quality Council of Alberta Regulation*, which states that the HQCA may assess, inquire into or study matters respecting patient safety and the quality of patient care referred to it.

The approach was thorough and interactive focusing on a rigorous review of Calgary Health Region practices and processes as well as an examination of leading national and international emergency and urgent care practices. The patient perspective was captured by extracting Calgary findings from a larger, standardized survey of emergency departments and urgent care centres that the HQCA conducted in early 2007 and that will be publicly released later in the year. The HQCA used recognized frames of reference and an input-throughput-output model to compare and contrast current and planned Calgary Health Region processes and practices.

The recommendations focused on two levels: organizational performance affecting emergency and urgent care services including improved strategic planning, leadership, measurement and workforce engagement; and department and service-level performance.

The recommendations are:

1. Develop a service strategy specific to emergency and urgent care improvement as part of the over arching Strategic Service Plan 2006-2010.
2. Develop a cadre of change agents.
3. Use a structured change process and systematically measure, monitor, learn and refine.
4. Make everyone with decision-making authority accountable.
5. Reduce avoidable emergency department and hospital admissions.
6. Increase availability of primary and urgent care alternatives to emergency departments.
7. Segment and stream emergency and urgent care patients.
8. Overcome interface bottlenecks.
9. Trigger early capacity building action, build and sustain ‘surge’capacity.
10. Optimize utilization of inpatient care resources.
11. Continue to build community care capacity and coordinate discharges.

The HQCA also included the following additional concluding observations:

- From an overarching perspective, emergency and urgent care, inpatient care and community care are critical organization-wide service processes that interface with each other. To optimize emergency and urgent care service performance gains, the CHR needs to ensure that other services with which emergency and urgent care interface are also managed as integrated processes and those services are effectively interfaced with emergency and urgent care.

- The CHR needs to standardize the change process it uses to implement major performance improvement initiatives as much as possible and ensure that all those involved understand their roles, responsibilities and accountabilities in the change process.

- The CHR has an opportunity to improve emergency and urgent care services for its citizens by strategically following through on its improvement initiatives and not settling for anything less than significant and sustained improvements.

BACKGROUND

In August 2006, the chair and CEO of the Calgary Health Region (CHR) requested the Health Quality Council of Alberta (HQCA) to work in partnership with the Region to undertake a comprehensive review of the Calgary Health Region emergency and urgent care services. The review focused on urban adult emergency departments and urgent care centres, namely: Foothills Medical Centre, Peter Lougheed Centre, Rockyview General Hospital, 8th and 8th Health Centre, and the South Calgary Health Centre.

The review reflected the HQCA's mandate under Section 14, *Health Quality Council of Alberta Regulation* of the *Regional Health Authorities Act*, which provides that the HQCA may investigate matters respecting patient care and safety as referred to it at the request of a health authority.

The role of emergency departments has changed significantly in the past decade. New ways of delivering care, new technologies and new approaches to assessing and treating patients in an increasingly complex and sophisticated system are challenging traditional approaches. Added to this are the particular challenges the Calgary Health Region is facing such as unprecedented growth in the urban population, increases in chronic and complex illnesses associated with an aging population, healthcare workforce shortages, reductions in access to primary care physicians and shortages in community care capacity and in the availability of informal caregivers. While many of these factors are beyond the control of the Calgary Health Region, nonetheless, the Region must deal with their social and demographic impacts on the demand for health services.

To put the emergency and urgent care situation into perspective, it is important to review population trends over recent years and acknowledge the stress that growth has put on the regional health system.

The Calgary Health Region serves 36 percent of Alberta's population. Eighty-two percent of the population served by the Region is urban with most living in Calgary. Calgary has experienced very rapid population growth in recent years. In 2006, Calgary's population increased by 35,000. By March 2007, the city had grown by an additional 28,000, and by the second quarter of 2007, Calgary's total population surpassed 1 million. Many small cities in Canada have a population equal to this combined growth of 53,000 people and are served by one hospital emergency department.

Compounding this issue, Calgary has experienced pronounced demographic growth in the 50+ segment of its population where the average annual growth rate was a 4.37 percent compared to only 1.44 percent in the under 50 age segment. By 2013, the 50+ year old cohort is estimated to reach 30.6 percent of Calgary's population compared to 25.5 percent today.

In light of these trends, it is important to take into account future demands on categories of service such as emergency and urgent care, acute care and community care that change as specific population cohorts age. It follows that emergency and urgent care service problems will intensify due to co-morbidities and the need for complex diagnostic testing, multiple consults, and increased use of inpatient beds and community resources.

During the year between calling for the HQCA review and publication of the review report, the Calgary Health Region began several new initiatives designed to improve performance in the Region's emergency and urgent care services. Indeed, the Region and the HQCA believe that the HQCA review process itself provided stimulus to the Region's efforts to improve emergency and urgent care system performance, even before delivery of the report. These recent initiatives included creation of a new Emergency and Unscheduled Visits Portfolio in February 2007, various planning and policy-creation initiatives focused directly on emergency and urgent care services, additional contracted beds for post-surgical care, enhanced medical supports to community services, increases in porters and transportation resources, and continuous attention to remedying situations which impede patient flow.

PURPOSE

The purpose of the HQCA review was to make practical and timely recommendations regarding processes and practices which would help the Calgary Health Region optimize current and potential resources, in order to provide citizens with the highest quality emergency and urgent care services.

The HQCA review did not investigate specific cases within the Calgary Health Region emergency department and urgent care services, nor did it address service quality issues related to clinical practice.

In order to achieve its purpose, the review compared the Calgary Health Region approaches to leading processes and practices, rather than to peer Canadian organizations. The HQCA recognized early in the review process that valid direct comparisons to emergency and urgent care services in other health systems would be difficult due to such factors as demographic differences in populations served, differences in clinical workforces and treatment capacity, and lack of standardized outcome measures. The HQCA concluded, therefore, that there was little value in attempting to benchmark one hospital against another.

In its year-long review, the HQCA compared and contrasted current and planned Calgary Health Region processes and practices with leading and best processes and practices, in the context of a patient-centred and family-centred focus. The figure below captures the essence of the review.

Overview of the Review

APPROACH

The approach followed by the review team was thorough and interactive. It involved a rigorous review of Calgary Health Region practices and processes as well as an examination of leading processes and practices nationally and internationally.

As a backdrop for comparison, two frames of reference were used as the basis for selecting and organizing the review information.

First, processes and practices were reviewed at the organizational level, that is, pertaining to the management of the Calgary Health Region, according to the 2007 Baldrige Health Care Criteria for Performance Excellence, adapted for the Canadian public health system[1]. The seven Baldrige criteria, widely recognized as a comprehensive frame of reference for assessing and improving organizational performance are: leadership, strategic planning, patient focus, measurement and knowledge management, workforce, process management, and key results.

Second, a framework was selected for categorizing processes and practices at the service level, that is, pertaining directly to operations of the Calgary Health Region emergency and urgent care services. For this purpose, the HQCA chose to use a conceptual model of emergency department crowding developed by Asplin et al.[2] The three components of the emergency process, adapted from Asplin's model, are:

- Input – processes and practices that influence the demand for emergency and urgent care services prior to their use by patients;
- Throughput – processes and practices that influence the capacity of emergency and urgent care departments to care for patients when they are in emergency and urgent care departments; and
- Output – processes and practices that influence the capacity of inpatient departments and community resources to care for patients discharged from emergency or urgent care departments and either admitted to inpatient departments or discharged to home or to the community.

Process and practice findings based on the input-throughput-output model were further categorized within a demand-capacity management model adapted from the work of Jack and Powers[3]. The model has four quadrants, namely,

- Improved management of demand for emergency and urgent care services, achieved through,
  - the creation of various kinds of buffers to absorb existing demand, and by
  - various means used to mitigate and manage potential demand.
- Improved emergency and urgent care capacity management, achieved through,
  - improvements in the utilization of existing resources to increase capacity, and by
  - adding new resources to increase capacity.

In these ways, the HQCA compared and contrasted the Calgary Health Region processes and practices against national and international leading processes and practices which applied at both organizational and emergency and urgent care services performance levels.

[1] Accessed at http://www.quality.nist.gov/HealthCare_Criteria.htm, September 2007
[2] Asplin, B.R., Magid, D.J., Rhodes, K.V., Solberg, L.I., Lurie, N., & Camargo, C.A. (2003). A Conceptual Model of Emergency Department Crowding. *Annals of Emergency Medicine,* 42, 173-180.
[3] Adapted from: Jack, E.P., & Powers, T.L. (2004). Volume Flexible Strategies in Health Services: A Research Framework. *Production and Operations Management*, 13(3), 230-244.

Identification of Calgary Health Region Processes and Practices

The Calgary Health Region processes and practices were examined through the following means.

Interviews with Calgary Health Region Executives, Management, Staff and Physicians

Knowledge and insight concerning the operations and management of Calgary Health Region emergency and urgent care services were captured through twenty-eight face-to-face semi-structured interviews with people at various operational levels and representing various departments and portfolios within the organization. The lengthy interviews were conducted from December 2006 – May 2007, with subsequent thematic analysis of transcripts. In addition, focus groups with front-line staff at three emergency departments, conducted by the Calgary Health Region in conjunction with an ongoing Workplace Assessment project, provided valuable insight.

Provincial Emergency Patient Experience Survey

The patient experience was explored by extracting Calgary findings from a larger, standardized survey conducted by the HQCA with patients seen at Alberta emergency or urgent care facilities during a four-week period in February 2007. For the purposes of this review, only the results from the three Calgary adult emergency departments and the two Calgary urgent care centres were included. The full survey results will be released later in 2007.

Other Information Sources

Numerous information sources were reviewed and analyzed to inform the Calgary Health Region findings. The Region uses the Canadian E. D. Triage and Acuity Scale (CTAS) as its primary triage tool for emergency and urgent care, and the review team used CTAS as a standard for the analysis and grouping of some Calgary Health Region data.

Operational Research Tools

The HQCA commissioned the University of Calgary to apply two operational research tools to the emergency and urgent care issues facing the Calgary Health Region. Towards this end, the University of Calgary Healthcare Operational Excellence (HOPE) laboratory developed a discrete event simulation model of the emergency department at the Foothills Medical Centre and a qualitative system dynamics model of the Calgary Health Region's overall emergency and urgent care services. The Calgary Health Region is undertaking further work with the discrete event simulation model. This report references the initial findings of the qualitative system dynamics model to highlight the system-wide scope and complexity of the Calgary Health Region emergency and urgent care services, the great number of individual healthcare professionals whose decisions impact its performance, and the many interfaces with primary, secondary and tertiary care services, and with both hospital-based and community-based healthcare services. When the major variables in the system dynamics model are measured and the model is quantified, it should prove to be a powerful tool for understanding and managing emergency and urgent care services. (See Appendix for a diagram of the model).

Identification of Leading Processes and Practices

The HQCA explored leading processes and practices primarily through literature review and contact with other Canadian emergency departments.

Literature Review

The literature review involved a three-step process.

In the first step, the HQCA prepared preliminary findings. A systematic examination of the literature identified processes and practices said to be effective in the areas of input demand management, throughput capacity management, output capacity management, change management, process management and performance management. Where feasible, emphasis was given to processes and practices used by high performing organizations inside and outside of healthcare. Literature sources included peer-reviewed journals, systematic reviews, gray literature and unpublished information (including selected current and recent initiatives, benchmarking comparisons and simulation findings).

In the second step, the HQCA sought the opinions of experts. A set of tables summarizing processes and practices and documenting related literature references was prepared. The tables, along with scoring templates, were sent to members of a panel. The panel consisted of 12 experts from Canada, Australia and Britain representing different provider groups as well as both clinical and administrative personnel related to the field of emergency medicine. The expert panel reviewed the HQCA's findings from the literature and scored the processes and practices for effectiveness.

In the third step, the HQCA analyzed the scores of the expert advisory panelists to determine the most effective processes and practices. These were then used as the primary basis of comparison to Calgary Health Region processes and practices.

Additional Studies

Attempts were made to obtain information on the performance of other large urban emergency departments across Canada, through a survey conducted by the HQCA. Response rates to the survey were low and while the findings did assist in the understanding of issues, no definitive conclusions could be drawn from these results. A Canadian Institute for Health Information (CIHI) study provided some additional information[4].

[4] Understanding Emergency Department Wait Times: Who Is Using Emergency Departments and How Long Are They Waiting? (2005). First in a series of three reports to add to the understanding of emergency department wait times in Canada. Prepared by the Canadian Institute for Health Information. Accessed through www.cihi.ca, September 2007.

FINDINGS AND RECOMMENDATIONS

Patient Perspective

Selected Calgary-based findings from the *Provincial Emergency Department and Urgent Care Patient Experience Survey* (conducted by the HQCA, with full report to be released later in 2007) include:

Calgary Health Region Urban Emergency Departments

- Ninety-one percent (91%) of respondents who attended a Calgary adult urban emergency department felt that the main reason for going to the emergency department was dealt with to their satisfaction.
- Eighty-six percent (86%) rated the care they received as good, very good or excellent.
- Respondents reporting that they were not always treated with respect and dignity ranged from twenty-three percent (23%) to twenty-six percent (26%) among the three facilities.

Calgary Health Region Urgent Care Centres

- Ninety percent (90%) of respondents who attended a Calgary urgent care centre felt that the main reason for going to the facility was dealt with to their satisfaction.
- Eighty-six percent (86%) rated the care they received as good, very good or excellent.
- Twenty-four percent (24%) of respondents said they were not always treated with respect and dignity.

Regional Perspective

While direct valid comparisons of the Calgary Health Region's emergency and urgent care services and other similar services elsewhere in Canada could not be drawn, some comparative comments can be made.

- Reference to a Canadian Institute for Health Information (CIHI) 2005 survey[5] suggested that the Calgary Health Region's emergency department wait time problems are similar to those faced by other emergency departments elsewhere in Canada.

- The limited findings from HQCA's survey of selected large Canadian urban adult acute care hospitals suggested that compared to the few that responded to the survey,
  - Calgary hospitals appear to be placing more balanced emphasis on process and practice changes that impact not just throughput but also input and output.
  - Calgary hospitals have more favourable cycle times than others for emergency department patients admitted to an inpatient bed in terms of time from first emergency department physician contact to first consult request, from first consult request to inpatient bed request and from inpatient bed request to discharge from the emergency department.
  - Calgary hospitals have less favourable cycle times from triage to emergency department physician.

[5] Understanding Emergency Department Wait Times: Who Is Using Emergency Departments and How Long Are They Waiting? (2005). First in a series of three reports to add to the understanding of emergency department wait times in Canada. Prepared by the Canadian Institute for Health Information. Accessed through www.cihi.ca, September 2007.

Recommendations for Organizational Performance Improvement Impacting Emergency and Urgent Care Services

1 Develop a Service Strategy specific to Emergency and Urgent Care as part of the over arching Strategic Service Plan 2006-2010

The Calgary Health Region's Strategic Service Plan has seven key service strategies. Currently, emergency and urgent care is noted within the Acute Care/Subacute Care plan. While the over arching Strategic Service Plan is very comprehensive and covers the key areas the HQCA believes are critical to ensure that the emergency and urgent care services achieve top performance, it is clear from the review process that emergency and urgent care services stand out in their complexity, profile and impact on both hospital and community based operations. Virtually all service areas, both hospital and community based, are directly connected to current emergency and urgent care services processes and practices.

Recommendation
In light of the unique and complex nature and impact of emergency and urgent care services on both hospital and community based operations, emergency and urgent care services requires its own separate service strategy effectively linked to the current seven key strategies. Further, emergency and urgent care services requires its own specific service/program plan linked to its service strategy. The formation of the Emergency and Unscheduled Visits Portfolio and the GRIDLOCC project are clearly steps in the right direction.

2 Develop a Larger Cadre of Change Agents

The Calgary Health Region has some truly remarkable and innovative leaders, in our terms change agents, on whom the Region is heavily dependent to improve its overall performance and that of the emergency and urgent care system. These change agent leaders comprise a critically important yet relatively small and scarce resource of medical, administrative and staff professionals.

Recommendation
The Calgary Health Region needs to pay special attention to the identification and development of a larger cadre of change agents with the skills needed to lead the Region's performance improvement drive.

3 Use a Structured Change Process and Systematically Measure, Monitor, Learn, and Refine

Over the years, the Calgary Health Region has undertaken many initiatives aimed at improving the performance of emergency and urgent care services. Different change processes have tended to be used for various initiatives depending on the individual preferences, experience and knowledge of the teams involved. Further, the results of these initiatives, both in terms of process effectiveness and in terms of healthcare outcomes, have tended not to be systematically measured, monitored and documented. As a result, the Calgary Health Region's ability to refine and learn from each successive initiative and to test change management approaches in terms of their effectiveness in its particular organizational context has been limited.

The outcomes of change initiatives are as much influenced by how change is implemented as by what is changed. Thus problematic results from initiatives can be caused by the use of faulty change processes or inconsistently applied approaches that do not achieve the widespread buy-in, and work-practice and behavioural change required for success.

Recommendation
The Calgary Health Region should refine and consistently apply a standardized and structured change process to its performance improvement projects. This would support those responsible for leading change by ensuring they have the tools and organizational support needed to develop strong constituencies of support and to overcome barriers which can develop

due to the conflicting interests and actions of powerful stakeholders. An excellent positive example is the change management processes used to successfully implement the Patient Care Information System.

Recommendation
The Calgary Health Region should routinely track the progress and outcomes of performance improvement initiatives, and use this information to inform decisions on changes in action plans and targets for further improvement interventions. The Region could learn valuable lessons from its efforts if it created a registry of performance improvement initiatives. This registry would document each project's objectives, before and after process effectiveness and healthcare outcomes, what and how change was accomplished, and lessons learned.

4 Everyone with Decision-Making Authority Must be Accountable

Efforts to improve the performance of the emergency and urgent care system cannot succeed unless all groups and individuals whose decisions and actions impact its performance are fully committed and effectively held accountable for the system's performance. As with other health regions, physicians in the Calgary Health Region effectively control key decisions related to patients' care and thus to key control points in patient flow through the emergency and urgent care system. The vast majority of physicians working as emergency physicians or consultants do not work directly for and are not compensated directly by the Calgary Health Region.

Recommendation
It will be impossible for the Calgary Health Region to achieve high levels of emergency and urgent care system performance unless all physicians, including independent physician contractors, are actively engaged and are effectively held accountable for their efforts and actions impacting the system's performance. There needs to be an effective alignment of incentives, performance and accountability.

Recommendations for Department and Service-Level Performance Improvement Impacting Emergency and Urgent Care Services

Reduce and Manage 'Input' Demand

5 Reduce Avoidable Emergency Department and Hospital Admissions

The Calgary Health Region has a variety of health care programs through the care continuum that aim to improve the health conditions of various populations thereby mitigating their use of tertiary care health services. These would include wellness programs such as tobacco reduction, community programs such as chronic disease management and home care, and acute care programs such as mental health. As well, the Region works in partnerships with other organizations that address the non-medical determinants of health among specific population groups.

Two specific programs are bringing great benefit to the Calgary Health Region by streaming patients to appropriate care providers. Health Link, the province-wide call center, provides callers with information on how their situation can best be managed, which may or may not include a visit to an emergency or urgent care facility. The Southern Alberta Regional Coordination Centre (SARCC), operated by the Calgary Health Region, coordinates physician referrals for urgent care services, which again may or may not include emergency or urgent care centres.

The State of Victoria in Australia, when faced with similar circumstances to that of the Calgary Health Region (i.e., reduction in access to general practitioners within the community, workforce shortages, a rise in chronic and complex illnesses associated with an ageing population, a shortfall in the number of residential aged care beds, a reduction in the availability of informal caregivers within the community, and an increase in the range of new treatment options through advances in medical technology), developed a Hospital Demand Management Strategy. One initiative under this strategy focused on developing new approaches to patient management through a Hospital Admission Risk Program (HARP). The goal was to

reduce emergency department demand and develop strategies to prevent avoidable hospital use by providing more appropriate care outside of the hospital. During the initial four year evaluation period, HARP patients experienced:

- thirty-five percent (35%) fewer emergency departments visits;
- fifty-two percent (52%) fewer emergency admissions; and
- forty-one percent (41%) fewer days in hospital.

HARP has now been rolled out through the state of Victoria[6].

Recommendation
The Calgary Health Region's efforts to manage demand for emergency department and hospital services would be strengthened if it consolidated and refined all programs found to be effective in reducing the likelihood of and need for emergency department and hospital admission under an integrated emergency and hospital admission reduction program.

6 Increase Availability of Primary and Urgent Care Alternatives to Emergency Departments

Reductions in access to alternatives to emergency department services, including reductions in the number and office hours of general practitioners within the community and the limited availability of urgent care services, contribute to increases in the use of emergency departments. As a result, the Calgary Health Region has launched a number of initiatives to address the primary care and urgent care capacity problem. These include expansion of the urgent care centre network, fostering the establishment of primary care networks and their provision of after-hours clinics, investing in alternate care providers such as nurse practitioners, and maintaining initiatives such as Office Plus to make careers in primary care more attractive.

Recommendation
These critically important initiatives need to be refined, sustained and strengthened.

Integrate, Improve and Refine 'Throughput' Capacity Management Initiatives

7 Segment and Stream Emergency and Urgent Care Patients

The Calgary Health Region's urgent care centres provide primary care and urgent care. Emergency departments are virtual 'hospitals within a hospital' providing primary care, urgent care, and tertiary care. The Region's emergency departments continue to provide services to large volumes of patients whose conditions are less acute and less complex even though emergency department resources are scarce and subject to considerable demand pressure by patients with acute and complex conditions. (In 2005/06, 28 percent of emergency department patients at the Region's three Calgary adult emergency departments were designated as CTAS 4 (semi urgent) or 5 (non urgent) of which 89 percent and 91 percent respectively were discharged home).

High performing service organizations segment the populations they serve, design and differentiate their services according to the needs of various segments, and develop best practices and processes to address those needs. CTAS-based triaging provides guidelines regarding time periods within which patients assigned various CTAS levels should be seen by a physician and subsequently reassessed. CTAS-based triaging alone is not a fully effective tool to segment high volume patient populations by service and process demands, and to simplify patient streams within emergency departments and urgent care centers.

With the opening of more urgent care centres and with planning underway for the new South Calgary hospital, the Calgary Health Region's emergency and urgent care system needs to more fully apply patient segmenting and streaming approaches in the following interrelated ways to avoid mismatches between the level of patient care needed and the level of clinical resources provided as well as to expedite the provision of appropriate care.

[6] Accessed at http://www.health.vic.gov.au/harp, September 2007.

Recommendation
The Calgary Health Region should clearly distinguish between the roles of emergency departments and urgent care centres in the Region. Emergency departments should focus on meeting the needs of patients whose conditions are more acute and complex and likely to require inpatient admission, and minimize the volume of patients whose conditions are less acute and less complex. Urgent care centres should focus on meeting the needs of patients whose conditions are less acute and less complex and not likely to require inpatient admission, and minimize the volume of patients served whose conditions are more acute and more complex. Various public information and patient segmenting mechanisms such as Health Link can be used to ensure this distinction is established in the minds of the public. While emergency departments and urgent care centres can be co-located, it is important to avoid inefficient use of resources by separating the clinical resources, supporting technologies, and facilities provided in each and to ensure these resources are appropriate to the distinct patient segments served by emergency departments and urgent care centres. Where urgent care centres are not co-located and are distant from emergency departments, likely it will be necessary to increase the clinical scope of such urgent care centres to be able to provide services for patients whose conditions are moderately acute and complex.

Recommendation
The Calgary Health Region should consider using a combination of CTAS-based and outcome-based triaging. For example, the Flinders Medical Centre, Adelaide, Australia includes an outcome-based triage system in their approach. After immediately segmenting patients with life threatening conditions, it then segments all the remaining patients into two streams, those likely to be admitted and those likely to be discharged home. At Flinders, in the absence of the need for time sensitive intervention, patients in the likely-to-be-discharged stream are dealt with on a first come first served basis while the Australian Triage Scale score is taken into account in dealing with likely-to-be-admitted patients.

Recommendation
The Calgary Health Region should seek to more expeditiously address the needs of emergency department and urgent care centre patients with complex co-morbidities (e.g., the elderly, patients with mental health conditions, and patients with addiction problems) by segmenting patient populations into groups with similar service and process demands and then implementing clinical pathways tailored to meet the needs of these specific patient segments. For example, the Calgary Health Region could apply the clinical pathways notion underlying its Stroke program.

8 Overcome Interface Bottlenecks

For some time the Calgary Health Region has recognized that significant major delays in the flow of patients through and out of the emergency department occur because of long response times related to consults, decisions to admit, and actual movement of admitted emergency department patients into inpatient beds. Efforts to overcome these 'bottlenecks' have been made in the past; however, further significant progress could be made. Recently the Region launched a new round of performance improvement initiatives through GRIDLOCC with similar-cycle time reduction objectives. These are supported with an extensive cycle time monitoring regime.

Recommendation
These 'interface bottleneck' initiatives need to be vigorously pursued and sustained to ensure that optimal cycle times are achieved with respect to such steps as consultations and decisions to admit, the movement of admitted patients into inpatient beds, and the discharge of inpatients. Based on the limited success with such initiatives in the past, an improved alignment of responsibility, accountability and incentives specific to individuals involved needs to be implemented to ensure that performance requirements are clear including the consequences for not meeting those requirements.

Integrate, Improve and Refine 'Output' Capacity Management Initiatives

9 Trigger Early Capacity Building Action, Build and Sustain 'Surge' Capacity

Significant contributors to delays in the movement of patients through and out of the Calgary Health Region's emergency departments are very high levels of inpatient bed occupancy, the lack of inpatient bed staffing, and the lack of 'surge capacity' to accommodate variable demand from patients admitted from emergency departments. The Region has a major capital program underway that will add 611 new acute care beds by 2012/2013, increasing the Region's beds per 1,000 population from 1.80 to 2.02. As well, a significant number of emergency department treatment beds will be added: 45 new beds by 2009/10, another 15 by 2011/2012, and likely another 55 when the South Calgary Hospital is opened. The Region believes that once this additional bed capacity is operational and fully staffed, many of the current emergency department crowding problems will moderate significantly.

However, the new beds will not begin to come on stream for two years and may require up to five to six years to be fully operational. In the meantime, the Region will need to build capacity and manage demand relevant to its strategy. If strategies to increase capacity and manage demand are not developed and implemented on an ongoing basis, it is likely that the Calgary Health Region will experience periods in the future when there are significant demand/capacity imbalances that cannot be quickly corrected.

Recommendation
In order to avoid facing future critical imbalances between admitted patient demand and inpatient bed capacity, and taking into account the long lead time required for capital programs and to acquire the healthcare workforce required to support those increases, the Calgary Health Region needs to:

- Closely track key service demand and capacity variables. Significant changes in demand and/or capacity trends outside forecasting assumptions should trigger timely initiatives to increase capacity through improved utilization of existing resources and/or through the addition of new resources.
- Continue efforts to overcome physician and staffing shortages that result in sub-optimal use of existing inpatient bed resources.
- Continue efforts to optimize the utilization of current inpatient bed resources regardless of the level of demand from the emergency department.
- Work with Alberta Health and Wellness whenever necessary to build 'surge capacity' into the Calgary Health Region's capital plans. A common operational guideline is that eighty-five percent (85%) 'normal occupancy' provides inpatient departments with the acute care bed 'surge capacity' needed to accommodate unexpected fluctuations in demand.

10 Optimize Utilization of Inpatient Care Resources

Over the past year, inpatient departments have undertaken a number of initiatives to improve the movement of admitted emergency department patients into inpatient beds and to improve bed utilization and patient discharge practices. Examples include: bed steering committees, bed management coordinators, flow coordinators, and "bed huddles". Further, the Calgary Health Region is piloting a Clinical Utilization Management System in fall 2007 with roll out planned for late 2007/08. This system will provide real-time management information and protocols to help ensure that the admission, treatment duration, and discharge practices of individual services and clinicians are optimized. Use of this kind of system in other organizations has resulted in improved transparency in practice variations and significant improvements in bed utilization and patient discharge results.

Recommendation
These initiatives to optimize utilization of inpatient care resources need to be pursued, monitored, refined, and strengthened to ensure actual gains are achieved and sustained. In particular, it is critical that individual physicians use the system and align their individual practices to Calgary Health Region protocols embedded in the Clinical Utilization Management System.

11 Continue to Build Community Care Capacity and Coordinate Discharges

The Calgary Health Region has undertaken a number of important initiatives to avoid creating a patient flow bottleneck for 'discharge ready' inpatients by helping to build community care capacity. These include support for the provision of a wide range of home care services, the establishment of primary care networks, and the provision of continuing care services (e.g., comprehensive community care, designated assisted living, designated enhanced lodges, and day hospitals). As well the Region actively coordinates patient discharges with outpatient services and community-based care providers through transition coordinators.

Recommendation
All these community care capacity building and discharge coordination efforts need to continue to be refined, strengthened, and sustained. Care needs to be exercised to ensure that these very important community service based initiatives, which moderate the demand for emergency and urgent care as well as inpatient care, are adequately funded and their contribution to improving the overall emergency and urgent care system is not undervalued.

CONCLUDING OBSERVATIONS

From an overarching perspective, emergency and urgent care, inpatient care and community care are critical organization-wide service processes. These service processes are enabled by organization-wide support processes such as information technology and diagnostic and laboratory testing. Each of these processes has inputs, throughputs and outputs and all have interfaces with each other.

The CHR will not be able to optimize emergency and urgent care services performance gains unless other services with which emergency and urgent care interfaces are also managed as integrated processes and those services are effectively interfaced with emergency and urgent care.

The Calgary Health Region needs to focus attention on how it implements planned changes. The change processes used need to be standardized as much as possible, and should focus on initiatives that align with improving processes and practices that have potential for system-wide improvement. All those involved must understand their role and responsibility in the change process. They must also be ultimately accountable for their actions to support and implement the changes.

The Calgary Health Region needs to be single minded and persistent in pursuing efforts to significantly improve services to citizens who use the emergency and urgent care system. The Region has a timely window of opportunity, created by the focus of senior leadership on the need for emergency and urgent care services performance improvement and the establishment of the new Emergency Services and Unscheduled Visits portfolio.

The Calgary Health Region has an opportunity to take advantage of this window by strategically following through on its initiatives and not settling for anything less than significant improvement.

ACKNOWLEDGEMENTS

Throughout the year-long review process, the HQCA was impressed by the support shown by so many individuals within the Calgary Health Region. We found the many Calgary Health Region employees, including senior management and executives, that we interviewed forthcoming and passionate in their responses. They did not hold back. The Region was also generous in sharing its data with us and we thank those people from diagnostic imaging, lab services, emergency and the Health System Analysis Unit who responded to our requests in a timely and professional manner. Likewise, we acknowledge the expertise and valuable feedback received from the external expert advisors who commented on the literature review and the final report.

The Calgary Health Region's application to conduct the review and its subsequent support of the process clearly demonstrate the Region's commitment to the provision of superior health care services. They also illustrate the Region's willingness to explore new ideas and opportunities for improving the quality of emergency and urgent care.

GLOSSARY

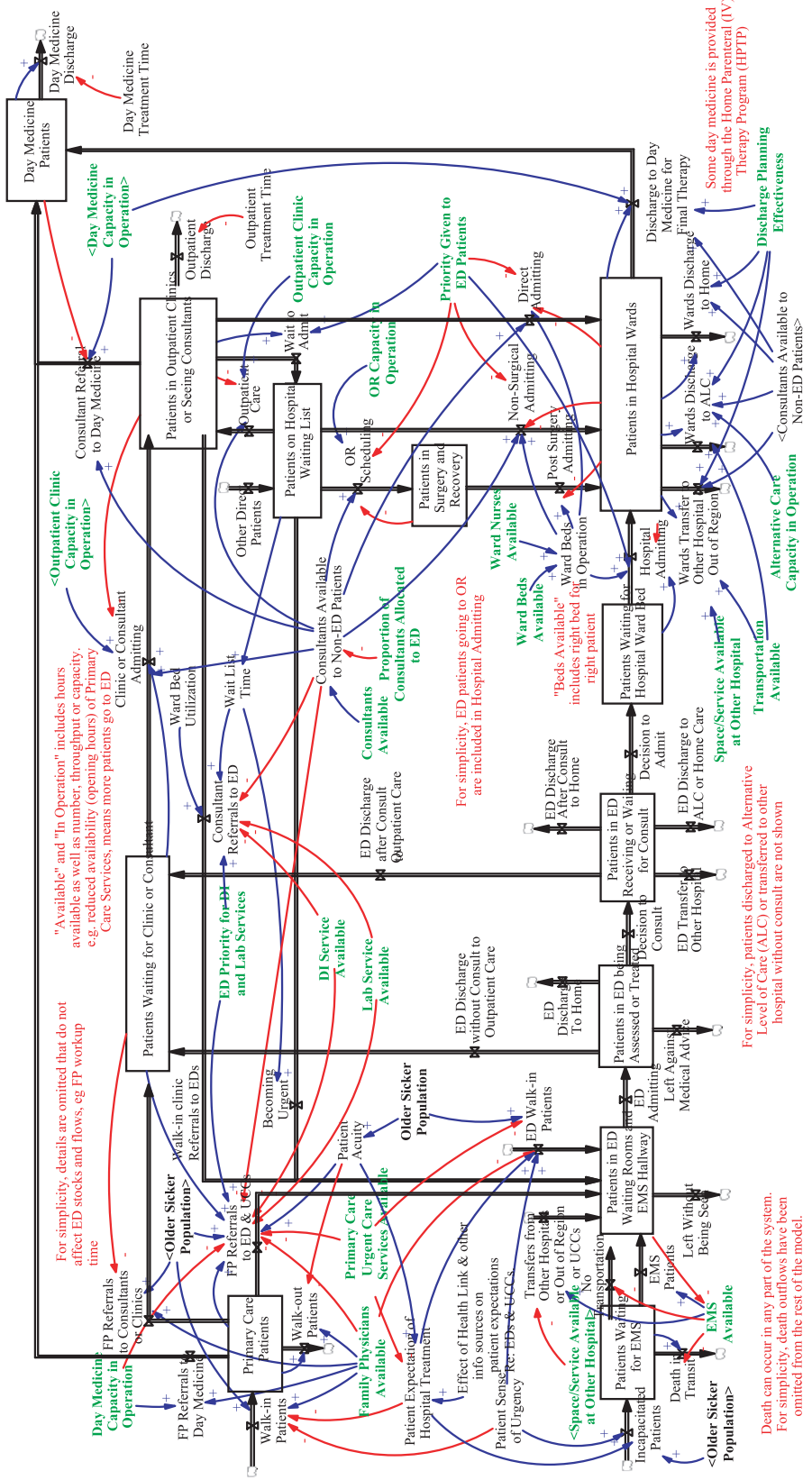
CIHI	Canadian Institute for Health Information, www.cihi.ca.
Clinical Utilization Management System	A software application that monitors patient stays in an area, highlights care delays, monitors discharge readiness, provides consistency in the care process and an understanding of when the patient should be discharged, thereby reinforcing optimum patient safety.
Co-morbidity	A concomitant but unrelated pathologic or disease process; usually used in epidemiology to indicate the coexistence of two or more disease processes.
CTAS	The rating scale for the Canadian E. D. Triage and Acuity Scale, www.caep.ca, a measure of type and severity of patient presenting signs and symptoms, used to triage and allow nurses and physicians to manage patient wait times. CTAS 1 = resuscitation; CTAS 2 = emergent; CTAS 3 = urgent; CTAS 4 = semi urgent; CTAS 5 = non urgent.
Cycle time	Total time from the beginning to the end of a specific service process. For example, the time from triage to discharge from the emergency department.
Emergency Care	Service provided for patients who have unexpected illness or injury requiring rapid diagnosis and treatment.
GRIDLOCC	Getting Rid of Inappropriate Delays That Limit Our Capacity to Care, a quality improvement program initiated by the Calgary Health Region focusing on improving quality of service to patients requiring unscheduled emergent and urgent services.
Office Plus	A program operated by the Calgary Health Region with the intent of maintaining community capacity while providing opportunities for varied practice so physicians can maintain and enhance a broad range of skills. Participating family physicians can combine their community practice with work in other areas of the health system such as acute care, urgent care, palliative care, obstetrics, seniors' health or rehabilitation.
PCIS	Patient Care Information System, Calgary Health Region's new electronic health record system in acute care hospitals.
PCN	Primary Care Network, a formal arrangement between two parties: a group of family doctors and the local health region. Family doctors and the health region work closely together to coordinate primary care services for patients.
Primary health care	Essential, basic health care. Usually the first point of medical consultation for patients (unless for emergency care), most often accessed in the community.
SARCC	Southern Alberta Regional Coordination Centre, a regional referral coordination service and single point of contact for urban and rural physicians who need urgent access to specialty medical services in the region for their patient.
Secondary health care	Specialist health care for more serious and infrequent situations. Normally reached by referral from a primary care physician, and normally provided in hospitals or inpatient facilities.

Tertiary health care	High speciality, technology and supportive health care for extraordinarily acute or infrequent medical conditions. Normally reached by referral from the secondary level or a primary care physician, and often provided in hospitals that have personnel and facilities for special investigation and treatment.
Urgent Care	Service provided for patients who have unexpected but not life threatening health concerns that require same day treatment.

APPENDIX

Qualitative System Dynamics Model of the Calgary Health Region Emergency and Urgent Care Services

The Figure on the following page is a model developed under the auspices of the Healthcare Operational Excellence (HOPE) Laboratory at the University of Calgary, by Dr. David Cooke, Dr. Tom Rohleder, and Dr. Paul Rogers. Adapted for use by the HQCA to describe the Calgary Health Region emergency and urgent care services.



Adapted from a model developed at the HOPE Lab at the University of Calgary by Drs. David Cooke, Tom Rohleder, and Paul Rogers