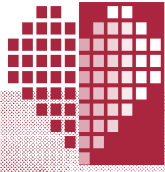


CardiacCareNetwork of Ontario



Optimizing Access to Advanced Cardiac Care **A 10 Point Plan for Action**

March 2005

Optimizing Access to Advanced Cardiac Care

A 10 Point Plan for Action

Submitted to: Dr. Alan Hudson,
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March 18, 2005

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1. Executive Summary

1.1 Background

Despite a substantial investment by the Ontario government in recent years in advanced cardiac services, significant regional disparities in access currently exist. The Cardiac Care Network of Ontario (CCN) and the Wait Times Strategy, Health Results Team, MoHLTC have identified regional disparities as a priority for intervention, with the goal of enhancing equitable and timely access to high quality care for all Ontarians, regardless of where in the province they reside.

Toward this end, CCN has developed an action plan to achieve a measurable impact on regional disparities in access within the relatively short time frame (by December 2006) of the Wait Times Strategy. Short-term actions are closely linked to longer term strategies to help ensure that access disparities do not recur in the future. This report details the background and presents the first phase of this action plan.

1.2 Access Disparities in Perspective

Waiting an excessive length of time for any medical procedure imposes physical, emotional, and financial burdens on patients and their families. Those waiting for advanced cardiac procedures also face the more specific and serious risks of death and myocardial infarction (MI, i.e., heart attack, or irreversible heart damage). The likelihood of such an event depends on the length of time spent waiting and the particular clinical features of each patient (i.e., the patient-specific degree of urgency). There is also very likely a random component to the occurrence of wait list events.

To fully characterize the burden of waiting, a variety of measures is needed, including measures of process (e.g., the median wait time), measures of system performance (e.g., percent of procedures completed within the recommended maximum wait time), and measures of outcome (e.g., mortality or MI rate on the wait list). While wait list mortality is undoubtedly the ultimate measure of wait time burden, it is relatively insensitive to changes in system performance because of its rarity. There may be a minimum size (or duration) of a wait list needed to ensure full utilization of the resource in question.

In general, though access to advanced cardiac care on a provincial basis has improved over the past several years, regional disparities in access are currently evident. The disparities, and the overall waiting burden, are greatest for diagnostic catheterization (a 3-fold variation in wait time across the province for urgent patients and nearly a 10-fold variation for semi-urgent and elective patients). Wait times for angioplasty (PCI) are relatively shorter and are influenced by the increasing use of "ad hoc" PCI (i.e., at the same time as diagnostic catheterization). Wait times for cardiac surgery have declined across the province but also exhibit wide proportional disparity (a 3- to 11-fold variation).

1.3 Action Plan

The ultimate solution to regional disparities in access is to ensure, to the extent feasible, that regional capacity is appropriately sized for regional needs. Despite this overarching goal, perfect matching

will never occur for various reasons, including population density and the need for a critical mass of providers and procedure volume. Even in areas with sufficient density and volume, capital expansion or replacement cycles may not fully align with phases of growth in service needs. Therefore, robust mechanisms are required to better match patient need to service availability across the entire cardiac care system, in order to deal with existing disparities, and also to help cope with transient capacity-need mismatches that may arise over time.

In practical terms, better matching of patients to available resources involves having in place processes to refer patients outside their local region or at least outside the usual pattern of referral typically used by their providers. However, the right of patients to choose where and from whom they obtain care must be adhered to. Patients face a variety of barriers attempting to access care in a more distant setting. It is not known with certainty, but strongly suspected, that many cardiac patients will choose to remain closer to home despite a potentially longer wait for care. (This will be quantified in an upcoming patient survey. Data from cancer radiation therapy suggests that about one-third of patients were prepared to travel for earlier treatment). Therefore, it is important that expectations be realistic as to the immediate impact of altered referral patterns on wait time disparities.

Although expectations must be realistic, we believe that by addressing some of the barriers, many patients will take advantage of the opportunity to obtain more timely care through an alteration of usual referral pattern. The specific approach that will be adopted by CCN and its member hospitals is based on the following **10 Point Plan for Action**:

1. Ensure that all patients are informed about potential options for more timely service at an alternate centre.
2. Provide Regional Cardiac Care Coordinators (RCCCs) with more timely and readily accessible information on service availability at other cardiac centres.
3. Provide all stakeholders, including the public, with more timely information on wait times for cardiac services.
4. Report additional wait time and access parameters to more fully characterize disparities in wait time burden.
5. Facilitate non-traditional patterns of referral when this contributes to more timely access to care.
6. Assist patients who already travel long distances in obtaining more timely access to care.
7. Implement specific scheduling processes (e.g., preferential same sitting [ad hoc] PCI) to minimize disruption and avoid repeated travel for patients obtaining care outside their local region.
8. Develop and implement a provincial best-practice guideline for early repatriation of patients to referring hospitals, in order to ease bed pressures in the cardiac centres that may block new referrals. The guideline will also address best-practices for patient preparation prior to transfer in for a procedure, in order to minimize postponements
9. Facilitate the transfer of digital angiographic images between cardiac centres to speed up the referral process and allow simultaneous review of diagnostic cath images at multiple other centres.
10. Address centre-specific wait time “hot spots” on a centre-specific basis.

Some of the shorter term deliverables can be accomplished largely with extant CCN Provincial Office and member institution resources; some will require incremental central resources. However,

the long term success of this strategy will require that the CCN Provincial Office, in conjunction with its member hospitals, be sufficiently resourced beyond the current human, technological and fiscal constraints. This includes funding to continue the CCN Medical Officer position, which is currently an interim position only. In addition, the CCN Provincial Office requires the flexibility and authority to disseminate information, in accordance with privacy legislation, related to access issues to all relevant stakeholders, including referring physicians and institutions.

External Factors

There are factors outside the direct control of CCN member hospitals or providers elsewhere that impact on the efficiency of the cardiac system and its ability to deliver on wait time reductions. Most prominently this includes the emergency medical service (EMS) / ambulance transport system that is very relevant to urgent and emergent inter-hospital transfers, which are a fundamental reality within a system that is based on the concept of regionalized high volume cardiac centres. The Government of Ontario must continue its efforts to address the current challenges in the EMS system overall, and inter-hospital transfers in particular.

1.4 Next Steps

CCN will monitor compliance with the initiatives outlined and evaluate their impact on access to advanced cardiac services. Regular monitoring and reporting of wait times will be enhanced as feasible given current IT and staffing limitations, and CCN will provide basic wait time data to the provincial web site as required and agreed upon. With enhancement of CCN's IT infrastructure, more robust analysis and reporting of access parameters will be feasible and will become a feature of CCN's regular (i.e. monthly) reports.

CCN has received funding under the Ministry's Wait Time Strategy Innovation Fund to conduct a formal patient survey related to more distant travel to obtain more timely cardiac services. The results of this survey will be reported in late spring 2005 and will attempt to quantify the proportion of patients willing and able to travel for care, and the barriers they face. This in turn will allow a more precise estimate of the potential impact on wait times of the short-term actions in the current report, and also will identify priorities for support measures to facilitate movement of patients to more distant centres.

This report outlines at a high level two initiatives related to efficiency in the use of existing (and future) resources, including the establishment of operational benchmarks for cath labs and cardiac ORs, and development of a best practice guideline for repatriation of patients from tertiary to community hospitals. As these initiatives come to fruition they will be implemented, monitored, and reported on.

Future increases in regional and centre-specific capacity (stemming from CCN Target Setting recommendations*) should be allocated in such a way as to address existing access limitations in the short term while working toward the regionally adjusted targets in the longer term. To assist the planning in this regard, the next component of CCN's action plan on access to advanced cardiac services will comprise a review of regional utilization and capacity in relation to regionally adjusted targets. This report will be available in late spring or early summer, 2005.

*CCN Consensus Panel on Target Setting – Final Report and Recommendations, March 2004.

The facilitation of access to advanced cardiac services is a core function of CCN. Many of the Network's past, current, and planned activities are related, either directly or indirectly, to this goal. The spectrum of CCN activities is illustrated in matrix form in Appendix 4, demonstrating additional future steps for the Network.



2. Introduction

2.1 Background

The Government of Ontario has made a substantial investment in advanced cardiac services over the past six years. Several new cardiac programs have been established, and existing programs have been expanded. This has resulted in improved access for many Ontarians needing advanced cardiac care.

Unfortunately, the improvements in access to care have not been uniform in all regions of the province; in fact, substantial regional disparities currently exist in the wait times for cardiac procedures. The Cardiac Care Network of Ontario (CCN) and the Wait Times Strategy, Health Results Team, MoHLTC have identified such regional disparities as a priority target for intervention, with the goal of enhancing equitable and timely access to high quality care for all Ontarians, regardless of where in the province they reside.

Toward this end CCN has committed to develop an action plan that will address the existing regional disparities, and also address longer term planning strategies that will help ensure that access disparities do not recur after a short-term intervention. This report details the background and presents the first phase of this action plan.

2.2 Project Scope and Principles

This action plan aligns with the provincial wait list strategy, and therefore, will address revascularization procedures only (diagnostic catheterization (cath), angioplasty (PCI) and coronary artery bypass surgery (CABG)). This plan is designed to produce measurable results within the wait list strategy time frame (by December 2006). However, these short term solutions will only be successful within the context of a longer-term solution that addresses regional needs and capacity.

*Physical capacity can be calculated from the number of cath labs and OR suites along with estimates of procedure duration and working hours. Actual or "realized" capacity, on the other hand, is more complex and is related to not only physical resources but also to human resources, MoHLTC funded volumes, competing resource demands within the hospital and region, case mix (patient characteristics), teaching or research considerations, and external factors such as transportation.

To guide the development of this plan, the following Guiding Principles were agreed upon by the CCN Board (see Appendix 1 for a list of CCN Board members) and all CCN member hospitals.

1. The overriding goal is to facilitate patient-centered, equitable, and timely access to high-quality advanced cardiac services by matching, to the greatest extent possible, regional capacity to regional need. This long-term goal is linked to a short-term initiative aimed at reducing existing access disparities by December, 2006.
2. Any plan to improve access must adhere to the right of patients to:
 - a) be informed of the available options regarding timing and location of treatment, and the potential risks and benefits associated with these options;
 - b) seek and obtain care from the institution and provider of their choice.
3. Opportunity will be provided for broad input and consensus sought throughout the decision-making. The plan development will be guided by the existing CCN governance structure, with the Clinical Services Committee, in conjunction with the Provincial Office staff, developing the implementation plan for submission to the Board. The Board will provide oversight and final approval of the plan to be submitted to Dr. Alan Hudson, Lead for Wait Times, Health Results Team.
4. Consideration will be given to particular local and regional needs related to clinical services, teaching and research, travel constraints, human resources, and so on. The potential impact of measures to address regional disparities on specific patient populations, regions, provider groups, and/or institutions will be evaluated and duly considered.

3. Action Plan Development Process

3.1 Consultation Process

It was considered essential from the outset that patients be consulted on their views in regard to wait time and access disparities. A proposal for a formal patient survey was submitted Ontario Wait Time Innovation Fund, with approval confirmed on March 2, 2005. Further details on the planned survey are provided in section 3.2.4 below.

Broad consultation has taken the form of facilitated teleconferences which have drawn over 100 stakeholders from across the regions and representing all CCN member hospitals and cardiac clinical/administrative disciplines. Regional Cardiac Care Coordinators, hospital administrators, and Clinical Services Committee members have all had the opportunity to engage in face-to-face discussions and teleconferences to provide input. See Appendix 2 for a list of individuals and organizations that participated in the consultation process.

Although it has been challenging to formally engage referring physicians in the community in the short time frame available, important perspectives from this constituency were provided via two facilitated teleconference calls made available to approximately 50 community physicians. Physician views will continue to be canvassed in a survey of all Ontario cardiologists (approximately 500) as part of the funded research noted above.

A teleconference with the member hospital CEOs/delegates was conducted in late February to discuss the draft plan. In addition, the MoHLTC team (see Appendix 2) has been kept informed and has had opportunity for input prior to the completion of the plan.

3.2 Data Gathering

3.2.1 Identifying Regional Disparities through CCN data

CCN's own rich data sources (via the Cardiac-access data registry) have been used to document and track access issues and to inform planning and decision making. To identify specific access "hot spots" for focused action, data has been presented at both the local (hospital) and regional (MoHLTC planning regions) level and will eventually be presented at the Local Health Integration Network (LHIN) level as detailed postal code data at the LHIN level become available. This will enable the CCN **10 Point Plan for Action** to better align with the emerging health transformation agenda.

3.2.2 Gathering information on anticipated capital expansion plans of hospitals

CCN has obtained information from MoHLTC and from the cardiac centres themselves on approved capital expansion, either under construction or awaiting construction. In addition, recent MoHLTC announcements of replacement cardiac cath labs and their anticipated increased throughput (resulting from greater operating efficiency) will inform calculations of projected procedural capacity.

3.2.3 Best Practices Surveying

Cardiac program administrators at the University of Ottawa Heart Institute and Sunnybrook & Women's Health Sciences Centre, in conjunction with other cardiac centres, have collected information on best practice in relation to throughput and efficiency measures. This is part of an initiative to develop benchmarks for operational efficiency (cath lab, operating room, etc.) and also best processes and benchmarks for the flow of cardiac patients through the institutions in general and the cardiac facilities in particular.

3.2.4 Patient Preference Survey

This survey is designed to look at patient attitudes and to test patient receptivity to the concept of traveling further from home to obtain treatment sooner at a more distant hospital with a shorter wait time. The survey will canvas opinion from non-urgent patients currently waiting in the system, from physicians referring into the system and from members of the public.

The information obtained from this survey will help determine the number of patients willing to accept care at an alternate treatment centre and the conditions under which they would be willing to travel. This data will help a) focus the action plan on the most receptive regions and patient populations; b) establish reasonable expectations with respect to the magnitude of impact the strategy could potentially have on improving regional access disparities; and c) identify the needs and attitudes of the three target groups to help inform communication/information campaigns.

3.3 Communications

CCN stakeholders have been kept informed of the principles, process and activities and have been provided the opportunity for input into the development and refinement of the **10 Point Plan for Action**. Following each round of the consultation process communiqués have been issued by e-mail. Consultation will continue as results from the Patient Preference Survey become available and are used to inform and augment the action plan. One aspect of the **10 Point Plan for Action** outlined in section 5 details enhanced communication tools to support the role of the RCCC's.

The need for better communication with referring physicians, particularly those outside the CCN member hospitals, is clearly recognized as a priority for CCN. The physician who makes the initial decision regarding the need for cardiac catheterization and submits the referral form represents the initial point of entry into the advanced

cardiac care system. For the most part these are specialists – cardiologists and internists – though some family physicians may submit the cath referral, particularly in smaller communities. In order to effect practical changes in the referral process, effective two-way communication with the referring community is essential. At present, most communications with referring physicians flow through specific member hospitals – the central CCN office does not have a formal province-wide contact list of referring doctors. This is an impediment to efforts to develop a more coherent system-wide approach to access.

Cardiac patients and the public in general have had access to wait time information on CCN's website for the past several years. As part of the redesign of the website, more detailed information about CCN's **10 Point Plan for Action** on access disparities will be provided. A broader communication strategy aimed, in part, at raising public awareness of the potential options in terms of timeliness vs. location of care is outlined in CCN's 2005/06 Operating Plan submission.

4. Access Issues In Perspective

4.1 Measuring and Reporting Wait Times – An Evolving Science

The Cardiac registry (the CCN wait time and access database) calculates an urgency rating score (URS) for each patient referred for diagnostic cath and bypass surgery based on clinical data provided on the procedure referral form. The URS is linked to a recommended maximum waiting time (RMWT) for each patient and is used to guide prioritization and scheduling decisions.

CCN uses three broad categories for grouping and defining the URS and the corresponding ranges of RMWT: elective, semi-urgent and urgent. However, within each category there are finer divisions of urgency and RMWT based on the clinical profile of each patient.

A very relevant issue is how best to characterize wait times. The full answer to this question (if it exists) is part of a broader study of the “science of wait times” that is beyond the scope of this report. However, certain key points deserve attention:

1. *Wait times should be measured and reported using a metric that is easily defined and implemented, statistically robust, clinically meaningful, and readily understood by consumers as well as providers.* A single median wait time for cardiac procedures would not be clinically meaningful, but median wait times by urgency category (as used by CCN) is more relevant. Mean (average) wait times can be seriously skewed by outliers and would thus fail the test of being statistically robust.

2. *Wait times as reported should reflect system management of access to care.* CCN has employed an urgency score, with an associated

recommended maximum waiting time (RMWT), for patients awaiting cath and CABG. This allows access to care to be evaluated according to the percentage of patients in each urgency category who undergo their procedure within the RMWT. Allocation of resources according to urgency is a complex matter that requires clinical judgment and sound operational principles. Simply scheduling urgent patients first will cause indefinite delay for elective patients, as there are always urgent patients in the queue. Prior research has shown that the urgency score as currently used, apportions the mortality burden of patients awaiting diagnostic catheterization roughly equally across the urgency categories. Therefore, it appears desirable that centres adjust their scheduling policies to ensure that an equal proportion of patients within each category receive their care within the RMWT. Ideally, the proportion should be 100% but even in the face of insufficient capacity, each centre must strive to achieve a reasonable balance between urgency and wait time across all categories. Each month CCN reports the percentage of patients in each category at each centre (and for the province as a whole) that undergo their procedure within the RMWT.

3. *Not only wait times but also the burden of waiting on patients should be reported.* Emotional and economic burden can perhaps be estimated with knowledge of the anticipated wait time in effect at the time of referral. However, irreversible clinical events that occur while waiting (and thus may have been preventable) must also be reported in order to quantify the burden of waiting. Therefore, CCN routinely tracks and reports deaths that occur while waiting for cath, PCI or CABG. Myocardial infarction represents irreversible loss of cardiac muscle and impacts significantly on future prognosis and should also be tracked. However, continuous surveillance of up to 80,000 patients per year for the occurrence of myocardial infarction requires more resources than are currently available to CCN. The current tracking

of myocardial infarction on the wait list is not sufficiently rigorous to permit meaningful analysis or public release.

4. The median wait time as known at the time of referral does not necessarily reflect the actual wait time for a given patient. A key function of the Regional Cardiac Care Coordinators (RCCCs) and the cardiologists and cardiac surgeons they work with is their ability (and responsibility) to dynamically alter patient priority and scheduling in response to changes in clinical status. Therefore, the system may be able to successfully respond to and meet the needs of individual patients to a degree that is not apparent from aggregated data such as median wait time. However, although this role of RCCCs and provider physicians is essential and they are to be applauded for the tremendous effort involved, it must be realized that in a resource constrained situation, any increase in priority for one patient implies a reduction in priority for another patient. This inevitability highlights the interaction between individual patient and system aspects of wait list management, and the need for meaningful measures to take account of both.

5. There is likely a minimum wait time below which system utilization becomes less efficient. In some ways a wait list serves a useful role as a buffer or reservoir of patients ready to fill the next available cath lab or OR slot. For all but the most emergent patients, some preparation time is needed between referral and procedure – for communication of details about the booking, for logistics such as transportation, to obtain additional pre-procedure lab data, for further discussion with the patient, and so on. When a wait list is very short, centres may find that there is no patient “ready to go” and a slot goes unused – more so for surgery than for cath lab procedures, as the preparation tends to be more elaborate for surgery. Very recent anecdotal reports suggest that this may be happening at present in at least

one hospital where the number of patients waiting is only about a third of the monthly surgical throughput.

4.2 Current Disparities in Access to Advanced Cardiac Care

Provincially, access to cardiac services has been significantly enhanced over the past several years due to large investments in additional procedure volumes, expanded existing facilities and the opening of new centres. Since the beginning of the MoHLTC six-year cardiac expansion plan in 1998/99, 11 new cath laboratories have become operational in Ontario (see Table 1) and 5 additional laboratories are scheduled to be opened by 2007/08. Surgical capacity has also been increased with the addition of the new full-service centres at St. Mary’s General Hospital, Southlake Regional Health Centre and Trillium Health Centre and the additional surgical suite at Hamilton Health Sciences (see Table 2).

These new centres have improved access in two ways. They have added to the overall capacity to perform these procedures in Ontario, and have provided local access to these services in areas where they were not previously performed.

Table 1: Summary of Ontario Cath Lab Capital Expansions pre- and post-6 year Cardiac Expansion Plan (1998/99)

Hospital	Region	No. of Labs as of 98/99	No. of Additional Labs since 98/99	Date of Scheduled completion
Peterborough Regional Health Centre	Central East		1 ¹	
Southlake Regional	Central East		3	
Hamilton Health Sciences	Central South	3	1	2005
Trillium Health Centre	Central West		2	
Trillium Health Centre	Central West		1	pending
St. Mary's General Hospital	Central West		2	
William Osler Health Centre	Central West		1	2007
Ottawa Heart Institute	East	3		
Kingston General Hospital	East	1	1	
Sudbury Regional Hospital	East	1	1	2005
Thunder Bay Regional HSC	North	1		
Sault Area	North	1		
London Health Sciences Centre	South West	3	1	2005
Hôtel-Dieu Grace, Windsor ²	South West	1		
Sunnybrook & Women's College HSC	Toronto	2	1	
Rouge Valley Health System	Toronto	1	1	
Toronto East General Hospital	Toronto		1	
St. Michael's Hospital	Toronto	3		
University Health Network	Toronto	6		
Total labs (prior to 1998/99)		26		
Total new labs (1998/99 to March 2005) currently operational			12	
Approved new labs to become operational during time frame of provincial wait times strategy (to December 2006)			3	
Approved new labs to become operational after time frame of provincial wait times strategy (> December 2006)			2	

Source: CCN Hospital Survey (2003) and MoHLTC (2005)

¹ Peterborough has a "swing lab" - two procedure tables separated by folding doors with a common X-ray stand that "swings" between the tables. Such a suite has a capacity intermediate between one and two rooms.

² The cath lab in Windsor was relocated from Windsor Regional Hospital - Western Campus to Hôtel-Dieu Grace Hospital.

Table 2: Summary of Ontario Surgical Capital Expansions pre- and post-6 year Cardiac Expansion Plan (1998/99)

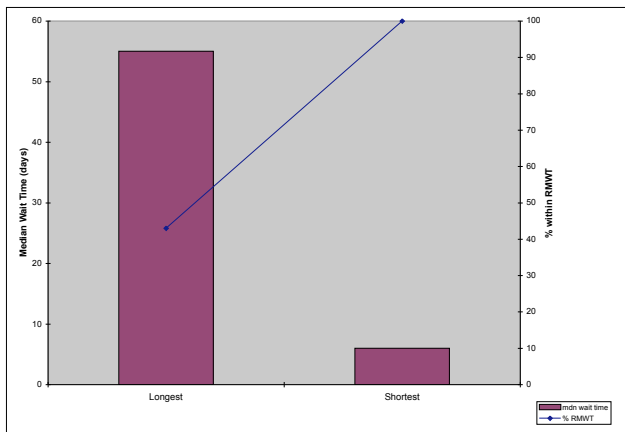
Hospital	Region	No. of Suites as of 98/99	No. of Additional Suites since 98/99	Date of Scheduled completion
Southlake Regional Health Centre	Central East		2	
Hamilton Health Sciences	Central South	3	1	2005
St. Mary's General	Central West		1	
St. Mary's General	Central West		1	2005
Trillium Health Centre	Central West		2	
Trillium Health Centre	Central West		1	pending
Kingston General	East	2		
University of Ottawa Heart Institute	East	4		
Sudbury Regional	North	2		
London Health Sciences Centre	South West	4		
Sunnybrook & Women's College HSC	Toronto	3		
University Health Network	Toronto	5		
St. Michael's Hospital	Toronto	3		
Total suites (prior to 1998/99)		26		
Total new suites (1998/99 to March 2005) currently operational			5	
Approved new suites to become operational during time frame of provincial wait times strategy (to December 2006)			2	
Approved new suites to become operational after time frame of provincial wait times strategy (> December 2006)			1	

Source: CCN Hospital Survey (2003) and MoHLTC (2005)

4.2.1 Catheterization Services

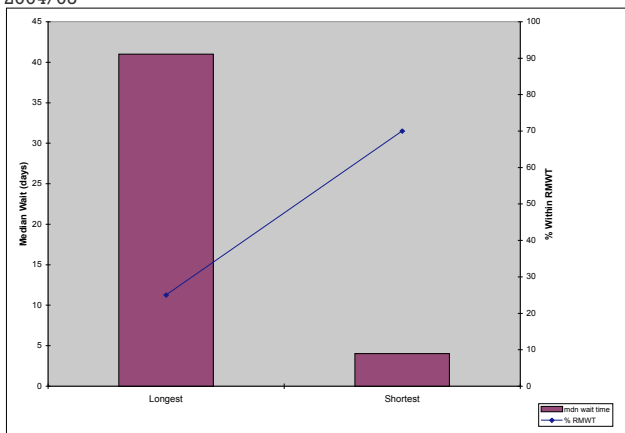
Although provincial capacity has increased, regional disparities in access still exist. Figures 1a, 1b and 1c illustrate the extent of this disparity for catheterization services. During the third quarter of fiscal year 2004/05, the range in median wait time in Ontario for elective cath was 6 to 55 days (approximately a nine-fold variation), for semi-urgent cath was 4 to 41 days (a ten-fold variation) and for urgent cath was 1 to 3 days. Consequently, the percentage of patients undergoing their catheterization procedure within the recommended maximum wait time also varied, from 43 to 100% for elective cath, from 25 to 70% for semi-urgent cath and from 55 to 93% for urgent cath.

Figure 1a: Elective Cath Patients – Comparison of the Longest & Shortest Median Wait Times and % Cases Completed with RMWT, Q3 2004/05



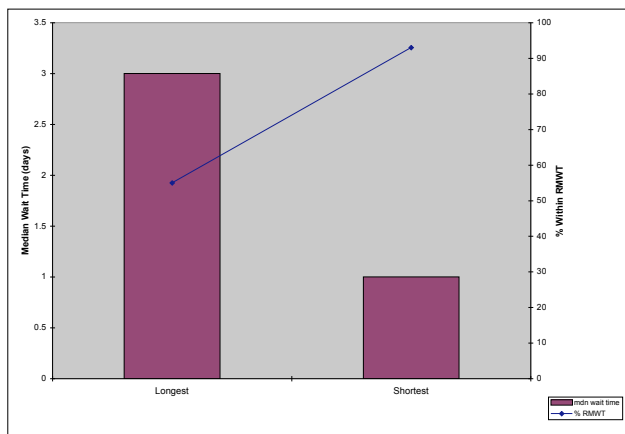
Source: CCN Cardiaccess Database

Figure 1b: Semi-urgent Cath Patients – Comparison of the Longest & Shortest Median Wait Times and % Cases Completed within RMWT, Q3 2004/05



Source: CCN Cardiaccess Database

Figure 1c: Urgent Cath Patients – Comparison of the Longest and Shortest Median Wait Times and % Cases Completed within RMWT, Q3 2004/05



Source: CCN Cardiaccess Database

These marked centre-specific variations in wait time are not driven by isolated outliers. The comparison of second longest to second shortest median wait time demonstrated five-fold variations for both elective and semi-urgent patients. Nor is the impact limited to a small number of patients. The four centres* with median wait times above the 75th percentile in the elective category accounted for 20% percent of total provincial cath volume in 2003/04. (See Appendix 3 for detailed wait time data by hospital.)

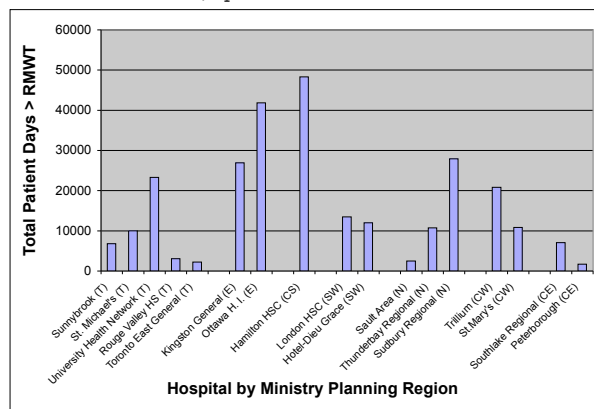
The cardiac system in Ontario has the “luxury” of benchmarks for recommended maximum waiting times for CABG and cath.** These were developed based on consideration of the medical risks of waiting – primarily the risks of the irreversible clinical events of death and myocardial infarction. They do not incorporate social and economic factors.

Therefore, they reflect only a portion of the total burden of waiting, but that portion for which there should be little if any disagreement as to significance. Any time a patient spends waiting beyond his/her specific RMWT represents time that they are exposed to risks that may be considered unacceptable. We therefore calculated the distribution of total patient wait days beyond RMWT as another means of quantifying the distribution of wait time burden across centres.

This data was expressed as total wait days beyond RMWT for each centre (Figure 2) and the average wait time beyond RMWT per patient for each centre (Figure 3), derived as total patient days beyond RMWT divided by total cases completed during the nine month interval.

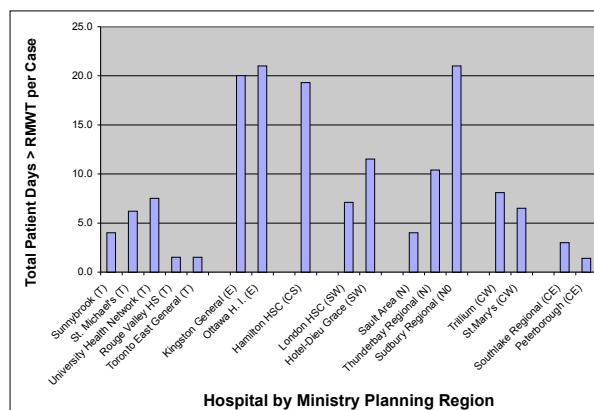
*University of Ottawa Heart Institute, Thunder Bay Regional HSC, Hôpital Régional Sudbury Regional Hospital and Hôtel-Dieu, Windsor.
 **URS and RMWT benchmark development for PCI and cardiovascular procedures await MoHLTC funding.

Figure 2: Cath - Total Patient Wait Days Beyond Recommended Maximum Wait Times, April to December 2004.



Source: CCN Cardiaccess Database

Figure 3: Cath - Total Patient Wait Days Beyond Recommended Maximum Wait Times Per Case, April to December 2004.



Source: CCN Cardiaccess Database

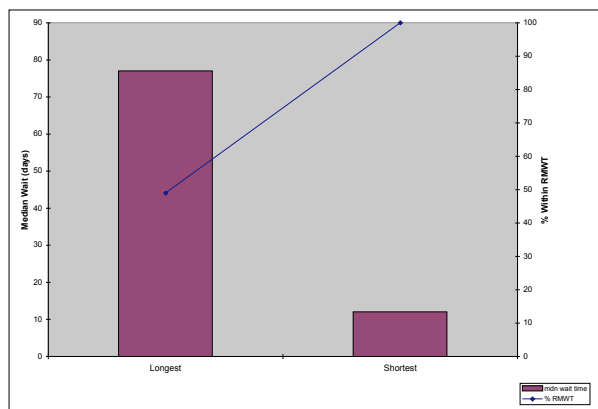
Appendix 3 provides detailed cath wait time information by centre. The graphs illustrate the variations in median wait times and the percentage completed with RMWT by centre, aligned by geographic region. Median wait times are the lowest for catheterization services by all urgency levels in the Toronto region (average median wait time of 13, 8 and 1 days respectively for elective, semi-urgent and urgent). Comparatively, the longest median wait times are seen in the East (most notably the University of Ottawa Heart Institute), and the Central South regions (average median wait time of 39 and 33 days respectively for elective cath).

4.2.2 Cardiac Surgery

There is less absolute variability in the median wait times for surgery in Ontario than for cath as seen in Figures 4a, 4b and 4c; however, there is still a 6.5-fold variation from the shortest to longest wait time for elective CABG (12 to 77 days), a 3-fold variation in semi-urgent CABG (3 to 10 days) and a 11.5-fold variation in urgent CABG (1 to 11.5 days). Provincially, most patients are being treated within their RMWT. However, there are outliers which generally correspond to the longer wait times seen at certain centres.

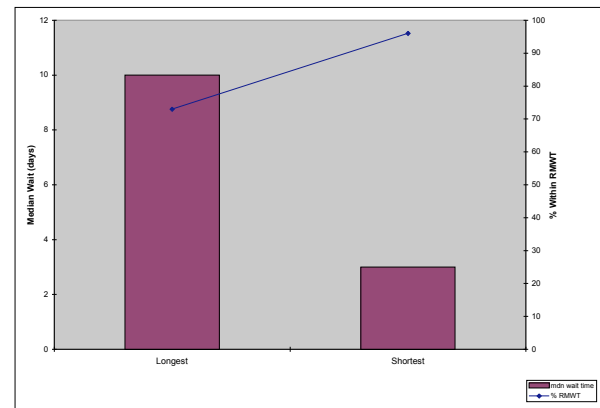
Regionally, the longest wait times for elective and semi-urgent patients are seen in the Central West region (average median wait time of 58 and 7 days respectively) and Central South region (average median wait time of 36 and 7 days respectively). To a greater extent than for cath, however, the variability is driven by a few specific centres, as can be seen from the Figures in Appendix 3.

Figure 4a: Elective CABG Patients – Comparison of the Longest and Shortest Median Wait Times and % Cases Completed within RMWT, Q3 2004/05.



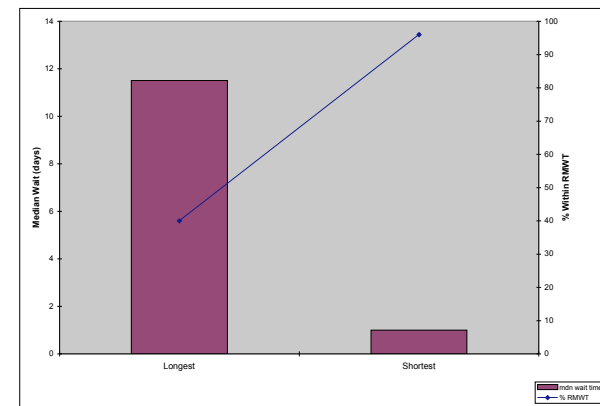
Source: CCN Cardiaccess Database.

Figure 4b: Semi-urgent CABG Patients – Comparison of the Longest and Shortest Median Wait Times and % Cases Completed within RMWT, Q3 2004/05.



Source: CCN Cardiaccess Database

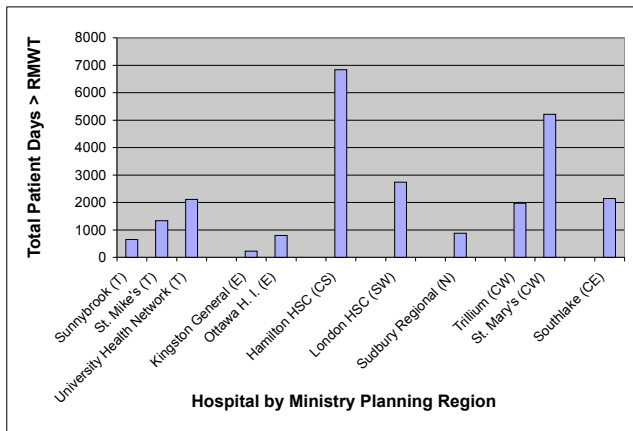
Figure 4c: Urgent CABG Patients – Comparison of the Longest and Shortest Median Wait Times and % Cases Completed within RMWT, Q3 2004/05.



Source: CCN Cardiaccess Database.

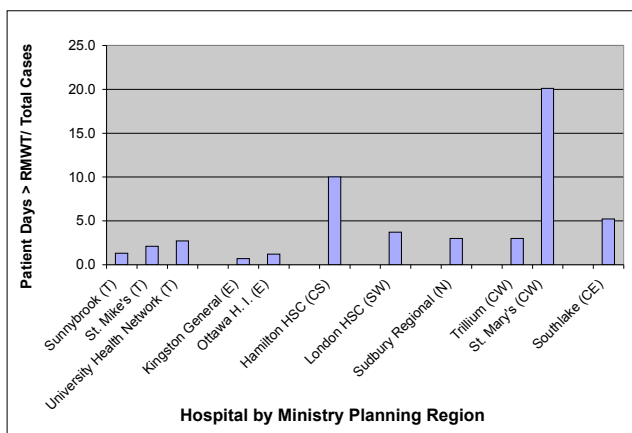
Similar to cath, the burden of waiting beyond the RMWT is highly uneven. Figure 5 shows the total patient wait days beyond RMWT for each centre. When normalized for the centres' total case volume (Figure 6), it can be seen that the average patient referred for cardiac surgery in Hamilton (Central South region) waited 10 days beyond RMWT and at St. Mary's Hospital 20 days (Central West region).

Figure 5: CABG - Total Patient Wait Days Beyond Recommended Maximum Wait Times, April to December 2004.



Source: CCN Cardiaccess Database

Figure 6: CABG - Total Patient Wait Days Beyond Recommended Maximum Wait Time per Case, April to December 2004.



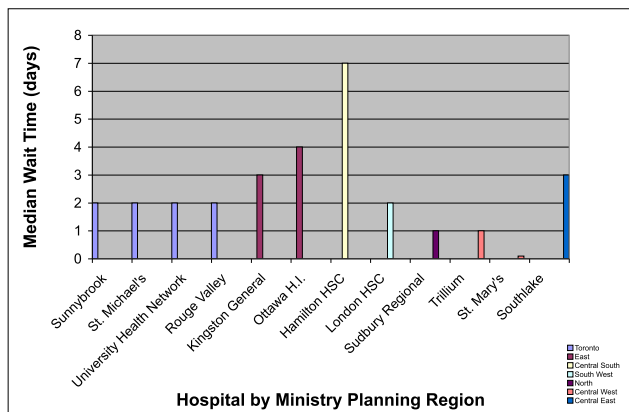
Source: CCN Cardiaccess Database

4.2.3 Percutaneous Coronary Intervention (PCI; Angioplasty)

Currently, there is no objective URS for PCI in the CCN Cardiaccess system. However, a surrogate for urgency is the location of the patient prior to PCI (in-patient versus out-patient). Figures 7a and 7b below illustrate the median wait times for scheduled PCI (i.e., non-ad hoc) by hospital for both in-patient and out-patients in Q3 2004/05. In-patients wait times are generally between 1 to 4 days, with the exception of Hamilton (median wait time of 6 days for inpatients). Outpatients wait significantly longer, with the longest median waits in Hamilton and Sudbury (36 and 37 days

respectively). The shortest median out-patient wait times are in the Toronto region.

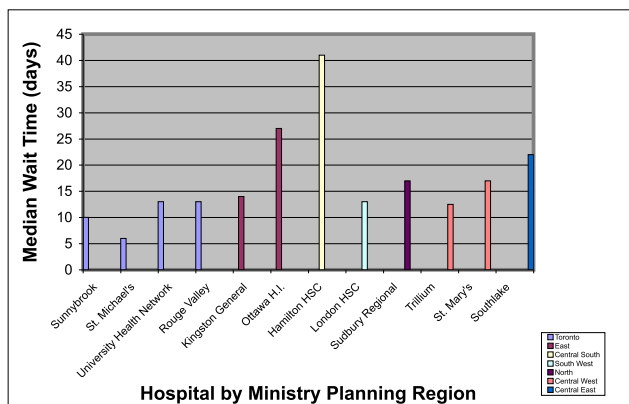
Figure 7a: Scheduled PCI (Inpatients) – Median Wait Times, Q3 2004/05.



Source: CCN Cardiaccess database.

“Ad hoc PCI” refers to a PCI procedure done at the same time as the diagnostic cath. In other words, the coronary anatomy is not known in advance of the PCI, as it would be when the diagnostic cath and PCI are done as separate procedures. There are significant variations in the proportion of PCI cases done on an ad hoc basis across Ontario. Cath only centres (Peterborough, Sault Ste. Marie, Thunder Bay, Toronto East General, Windsor, and the Toronto Western site of UHN) must by necessity refer patients requiring PCI to a different hospital (or site).

Figure 7b: Scheduled PCI (Outpatients) – Median Wait Times, Q3 2004/05.



Source: CCN Cardiaccess database.

All other centres have the theoretic capability of performing PCI at the same session as the diagnostic cath, and generally employ the ad hoc approach for the majority of urgent patients. For non-urgent patients, practice varies according to local policies and resources. The presence or absence of physicians who are trained to do diagnostic cath but not PCI is but one of several relevant local factors. Centres that draw a substantial number of PCI referrals from one or more of the stand-alone diagnostic cath labs will, by definition, have a lower rate of ad hoc PCI.

The impact of ad hoc scheduling on access and wait times is complex. Cath and PCI procedures generally share the same cath lab resources, and thus greater use of ad hoc procedures reduces the average wait time between cath and PCI but may increase the wait time for cath. Patients who turn out to require PCI usually prefer the “one stop” ad hoc approach, but it is not clear what the impact is on those patients who are ultimately found to require CABG. CCN hopes to stimulate research into the wait time and outcome implications of ad hoc PCI in order to determine optimal scheduling practices (see Next Steps, Chapter 6).

When PCI is done on an ad hoc basis, there is no wait time between cath and PCI. Rather, wait time can be expressed as the wait time for the cath procedure. In doing so, the urgency rating associated with the cath referral is used to classify the PCI urgency. Accordingly, median wait times and % of patients done within RMWT for PCI based on elective, semi-urgent and urgent cath parallel the patterns seen for cath ratings, as seen in Appendix 3. The highest wait times for “elective” ad hoc PCI are seen in the East (University of Ottawa Heart Institute 65 days), a 4.5-fold increase over the median wait times seen in Toronto (15 days) and a 10-fold increase over median wait times seen in the Central East (Southlake).

It is noteworthy that the median wait time for urgent cath patients who go on to ad hoc PCI is uniformly one day (or less), which is shorter than the median wait times for the entire cohort of urgent cath patients (i.e. including those that do not go on to ad hoc PCI) – noteworthy because the triage decisions that lead to the shorter wait time are made before knowledge of the coronary anatomy. This suggests that either the patients who ultimately require PCI are among the “more urgent” of the urgent cath referrals (plausible in part because they include acute MI patients undergoing primary PCI), or that cardiologists “advance” the timing of patients with clinical characteristics typical of those who ultimately undergo PCI (such as younger age). This observation warrants further exploration.

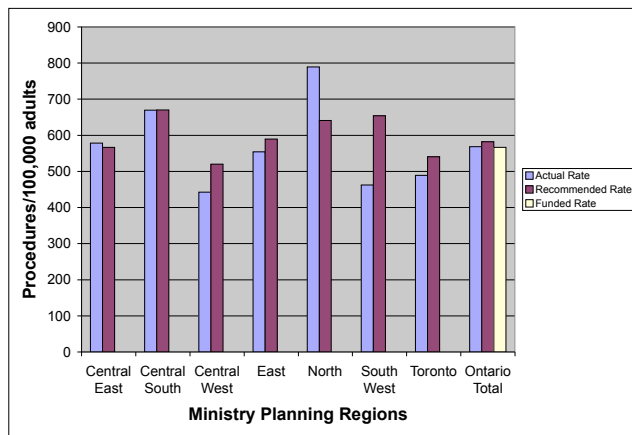
4.3 Targets, Utilization, and Capacity

Between 1994 and 2004, at the request of the MoHLTC, CCN conducted three consensus panels to recommend provincial target rates for diagnostic cath and revascularization procedures (PCI and CABG). The Ministry has used these targets in its planning for the delivery of these services. The 2004 CCN Target Setting Consensus Panel utilized a multi-faceted approach in establishing new population-based targets for Ontario that included a “needs-based” model based on estimation of local needs and indications for these procedures. Although this is an inexact science, to the extent possible regional capacity should be linked to estimated regional need in order to provide optimal access to advanced cardiac services.

A comparison of the actual procedural rates for cath, PCI and CABG to the recommended rates for 2004/05 is provided in Figures 8, 9 and 10. On a provincial basis, there is reasonable alignment between the MoHLTC funded procedural rates, the CCN recommended rates and the actual rates

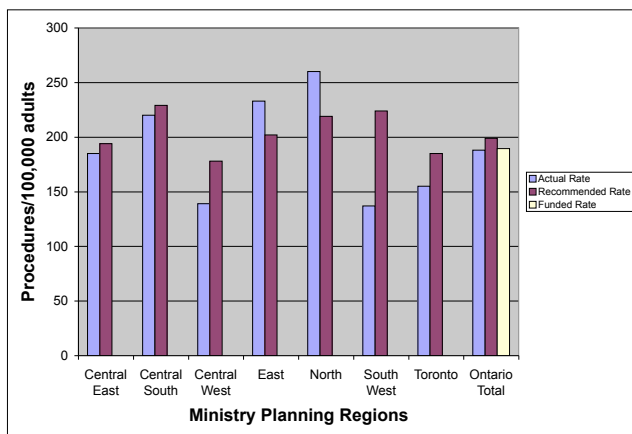
for cath and PCI. However, at a regional level, it can be seen that gaps exist between regional utilization and estimated regional need – and importantly, the direction of discordance is not consistent across all regions. For example, the population based cath rate in the North exceeds the recommended rate, whereas the rate in South West falls short of the recommended rate. Accordingly, some proportional realignment of capacity relative to regional need may be required.

Figure 8: Cath Procedural Rates by Ministry Planning Region – Comparison of Actual, Recommended and Funded Rates, Q2 2004/05.



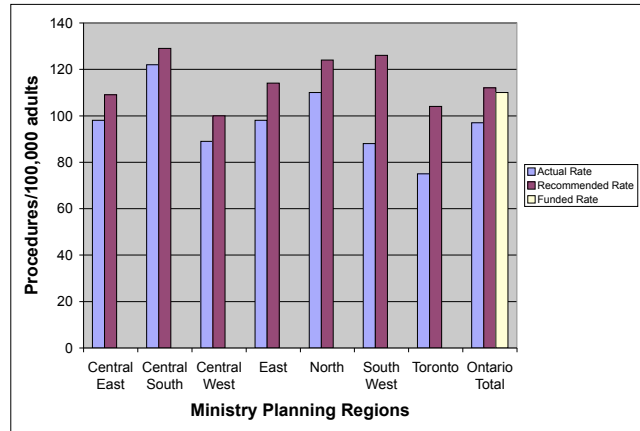
Source: CCN Cardiaccess Database and MOHLTC (Funded Volumes)

Figure 9: PCI Procedural Rates by Ministry Planning Region – Comparison of Actual, Recommended and Funded Rates, Q2 2004/05.



Source: CCN Cardiaccess Database and MOHLTC (Funded Volumes)

Figure 10: CABG Procedural Rates by Ministry Planning Region – Comparison of Actual, Recommended and Funded Rates, Q2 2004/05.



Source: CCN Cardiaccess Database and MOHLTC (Funded Volumes)

CABG is the only procedure where actual rates seem to be falling short of existing capacity. Further investigation is required, the essential question being whether this represents a true and permanent (and potentially ever greater) reduction in demand for bypass surgery as the scope and capability of PCI expands, or whether it represents infrastructure bottlenecks that inhibit surgical throughput.

To assist MoHLTC in planning for the recommended growth in the procedure volumes, the Target Setting Panel conducted a capacity analysis to assess the incremental needs to current and known future capacity. Since that time, additional capacity (cath labs and surgical suites) has been added to the system (see Tables 1 and 2). A follow-up report will include a revised capacity analysis that will address the additional physical and operational capacity added to the system, the operational efficiencies being introduced with the new cath lab equipment, as well as the additional funded volumes. This capacity analysis, as well as the recommended rates, current utilization, wait times and market share analysis, will be recalculated at the LHIN level.

4.4 Access Disparities - Contributing Causes and Barriers

The factors contributing to access disparities are complex and exist at the local, regional and provincial level.

Locally, practice and referral patterns can vary by centre and by physician. Travel and transfer distances to cardiac tertiary centres vary between centres and across regions, as well as the availability of emergency transportation services, which can contribute to unnecessary delays. The disease burden can vary at the local and regional level, and is complicated by population growth and demographic shifts that can be difficult to anticipate years in advance as costly resources are being planned. Consequently, regional capacity and infrastructure can often lag behind evolving need and it is difficult to shift or change costly resources “mid-stream”.

Provincial policy requires that centres meet minimum operator and facility volumes. However, there are difficulties recruiting and retaining specialist care in some regions, which can affect availability of care and the ability to retain a critical mass of expert staff at each centre and to provide 24/7 coverage for advanced services. Lack of coverage for illness, vacation and other adverse unanticipated events at smaller centres can impact a centres' ability to meet minimum planned volumes and can create local access issues. Current examples of this include the uncoordinated shut down of cath labs during vacation periods due to insufficient staff coverage.

Planning regional capacity to meet regional needs must also be balanced against the need to sustain academic centres and research, as well as the need to support highly specialized low volume procedures requiring a concentration of expertise.

With the above considerations in mind, planning necessarily involves a long time horizon while

balancing the need to be flexible to changing trends. As stated in the 2004 Target Setting Report “Capacity should ideally be expanded or adjusted in a proactive manner, without waiting for a sustained system-wide increase in waiting list burden (a “wait-list crisis”) as the indicator of insufficient capacity.” To this end, CCN in partnership with ICES, developed a systems model for procedural target setting, and will be implementing a regular process to conduct reviews of target rates and make adjustments and recommendations as required. (see Appendix 4)

4.5 Quantifying the Impact of Altered Referral Patterns

It is important to quantify, to the extent possible, the anticipated impact of various measures aimed at reducing wait time disparities. This will allow realistic expectations to be established, and the success of these interventions evaluated against these expectations.

There is no doubt that active management of wait lists can achieve benefits in terms of timely access to care and optimization of patient outcome for any given level of service capacity. One obvious response to regional disparities in access is to improve the matching, on a province-wide basis, between patient need and service availability. In the short term, this might involve having patients referred, or “re-referred”, to a cardiac centre with a relatively short wait time rather than the closest centre or the centre to which patients would typically be referred.

Any plan to address regional disparities in wait times must adhere to the right of patients to choose where and from whom they wish to obtain care. It has been suggested that wait times should be expressed in two categories: for patients willing to travel elsewhere for care, and for patients unwilling to travel. Those in the latter category would then be classified as “waiting by choice”. Unfortunately, this may be an oversimplification that does

not fully address the complex needs of patients requiring advanced cardiac care.

Patients' willingness to travel away from their region or their usual tertiary hospital is influenced by various factors including a previous encounter with a specific hospital or provider elsewhere; the relative distances involved; the referring physician's familiarity with a specific tertiary specialist or hospital; pre-existing shared care arrangements with a specific centre (e.g., Thunder Bay – Hamilton, Peterborough – UHN); social support in the form of friends or relatives in a particular city; patient preference or reluctance (e.g., traffic concerns); and clinical issues or complexities specific to the particular procedure required including clinical readiness for the intervention?.

The ability to schedule pre-procedure assessments, and also "linked" procedures (e.g., cath leading to subsequent PCI or surgery) in such a way as to minimize the need for repeated travel is crucial for patients referred outside their region. Continuity of care after the procedure and the proximity of specialized follow-up care are also highly relevant concerns for many patients. There may be financial barriers. Currently, there is travel support to obtain care in certain regions of the province (such as the Northwest). However, there is no process in place to compensate patients who can receive the care in their own communities, but who choose to travel to receive more timely care elsewhere in the province.

Despite these potential barriers, it should be given that timeliness of service be one of the factors taken into account when deciding where a patient is referred. The weight given to consideration of timeliness should depend on the relative importance of the other factors listed. For some patients, timeliness of service will be the predominant concern, whereas for others, the presence of relatives, for example, in a distant city to provide support through something as emotionally and

physically trying as bypass surgery will be the predominant concern.

The tradeoff between waiting time and distance (or other barriers to care) is therefore not a simple yes-no equation. We have quantitative tools (e.g., the urgency rating score) for clinical urgency, whereas the burden of traveling for care is described more qualitatively. We intend to carry out a formal patient survey in an effort to quantify the tradeoff, in the minds of patients, regarding timeliness versus proximity or convenience of care, so that in future, both system impact and individual patient decision making, can be approached in a more informed way.

Data from the cancer experience in Ontario indicates that only 35% of patients referred for radiation therapy and told that the wait time would be longer than considered desirable by their physician, were willing to be "re-referred" elsewhere. We do not have comparable data for cardiac patients, but subjective experience from Ottawa, and informal recent data from Windsor, suggests that a similar situation exists for cardiac care. UOHI has faced long wait times and has routinely sent a letter to all referred patients indicating that earlier care may be available at other centres (all of which would require more distant travel). While many patients call after receiving this letter to learn more about the options, very few pursue a "re-referral".

Except in very specific cases, it is unrealistic, and probably undesirable from a continuity point of view, to expect that a provider within a tertiary cardiac centre caring for a patient at that centre would initiate a referral to a different cardiac institution for more timely service. A more appropriate, and realistic expectation is that providers not directly affiliated with a tertiary cardiac centre will consider referring outside their region or customary referral pattern if the opportunity for more timely care exists.

5. Action Plan / Solutions

CCN and its member hospitals are committed to the action items outlined below as a means of reducing regional disparity and enhancing access to advanced cardiac care. This commitment was affirmed by the CEO's (or senior delegates) of member hospitals after review of a draft of this plan, and by the CCN Board in endorsing the plan in its final version. CCN views the development and implementation of this plan as an important step in its transition from primarily a monitoring function to a more active role in managing access within the cardiac care system.

There are some short term deliverables that can be accomplished largely with extant CCN Provincial Office and member institution resources. There are other deliverables that are contingent on the CCN Provincial Office, in conjunction with CCN member hospitals, being resourced beyond today's human, technological and fiscal resources. The CCN Board of Directors has recently submitted a three year operating plan to the MoHLTC which is intended to adequately resource the central CCN infrastructure to deliver on this action plan and better serve patients, providers, hospitals and the MoHLTC. CCN has also provided the Health Results Team (MoHLTC) with the requirements for a web-based, real-time, centralized wait time monitoring and management system.

5.1 Managing access to care: doing a better job of matching patient need to service availability

The ultimate solution to regional disparities in access is to ensure, to the extent feasible, that regional capacity is appropriately sized for regional needs. Despite this overarching goal, perfect matching will never occur for various reasons including population density and the need for a critical mass of providers and procedure volume. Even in areas with sufficient density and volume, capital expansion or replacement cycles may not fully align with phases of growth in service needs. Therefore, there need to be robust mechanisms to better match patient need to service availability across the entire cardiac care system, in order to deal with existing disparities in the short-term, and also to help cope with transient capacity-need mismatches that will inevitably arise over time in various places and for various reasons.

Wait lists have been described as a symptom of inadequately managed access to care. While the actual capacity to provide care is clearly a key factor in itself, there is no doubt that rational, informed management of access plays a fundamental role in enhancing the quality of patient outcomes while making the most efficient use possible of costly resources. Ontario spends more than \$300 million annually on direct cardiac procedure costs and \$5.5 billion on overall cardiac disease management. However, the cost of the total network infrastructure to facilitate and monitor access to cardiac procedures represents only approximately 0.4% and 0.02% of these total costs*. Additional (though modest) investment in the CCN infrastructure, particularly for information technology, is urgently needed to allow the Network to more effectively manage and monitor access.

The measures outlined in this report represent initial limited steps that can be accomplished quickly with little or no investment in the Network infrastructure. We believe that taken together, they will result in a measurable reduction in regional access disparities by December 2006. However, the expectations need to be realistic: not all patients are willing or able to travel for earlier care elsewhere, and even to the extent they are so willing, the current CCN IT infrastructure limits the ability to effectively match patients to available capacity.

* The CCN Provincial Office operating budget was approximately \$1.3 million for fiscal 2003/2004. RCCCs & data clerks/analysts are employed by the member institutions.

ACTION 1

Ensure that all patients are informed about potential options for more timely service at an alternate centre and have the opportunity to discuss the risks and benefits.

MECHANISM

In order to ensure that all patients are provided with sufficient information, CCN member hospitals and referring physicians will adopt the following practices:

a. Every referred patient who is not an inpatient will receive a standardized letter via mail, fax, or e-mail within two working days of receipt of the referral explaining that options may exist for more timely care elsewhere. The letter will carry the CCN logo and the member hospital logo. Sending of the letter will be documented in a (new) specific field within the Cardiaccess registry. Copies of the letter will go to the referring physician and the patient's family physician, in order that these physicians may assist the patient in accessing and evaluating the options. For centres with very short waiting times, a simpler variant of this letter can be used serving only to introduce the coordinator and provide contact information.

Implementation date: June 30, 2005

Monitoring: Quarterly reporting of compliance rate by centre, augmented by Provincial Office audits

b. Physicians will be encouraged, via an education campaign, to mention potential options for service location as a regular part of the discussion with patients at the time of referral for a cardiac procedure. The level of detail with which the options are addressed will depend on the patient's perceived urgency and the anticipated wait time at the closest (or the usual) referral centre. The standard CCN Cardiaccess referral form (which is signed by the referring physician) will be supplemented with an additional check box to indicate that this information was discussed with the patient. Member hospitals will play an active role in educating and evaluating compliance among their referring physicians.

Implementation date: June 30, 2005

Monitoring: Quarterly reporting of compliance by centre, augmented by Provincial Office audits

c. Best practice guidelines were developed in 1999 for "Managing Patients on the Wait List" and "Patients Exceeding RMWT". These guidelines, which are not uniformly practiced in all centres, will be reviewed and updated with the support of the RCCC Committee. These guidelines will be adopted and practiced at all sites, which will require centralized communication, education and the support of hospital administrators and physicians.

Implementation date: June 30, 2005

Monitoring: The RCCC Committee will be the oversight committee monitoring compliance to the guidelines with the CCN Director of Clinical Practice taking a leadership role.

RATIONALE

When disparities in wait time exist between centres, patients referred to (or about to be referred to) a centre with a longer wait time may choose to have their referral re-directed to an alternate centre that can provide more timely care. In most cases this would involve more extensive travel by the patient.

In order to make an informed choice, patients must be provided with: 1) information on their perceived degree of urgency; 2) the maximum wait time considered acceptable for that degree or urgency; 3) the wait time they are likely to experience at various cardiac centres; and 4) the opportunity to have their concerns and needs regarding traveling outside their region addressed.

At present, all patients referred for a cardiac procedure in Ontario receive a brochure describing the role of CCN and the fact that access to care is based on medical priority rather than first-come first-served. However, patients may not be sufficiently informed at the time of referral as to their own urgency status, or the recommended maximum wait time associated with their perceived level of urgency. CCN is aware of some variability in brochure dissemination. Therefore, CCN has recently implemented a tracking mechanism in the Cardiaccess database to monitor brochure distribution. CCN is working with RCCCs and their managers to increase the percentage of patients actually receiving the patient brochure. Under the provisions of new Ontario privacy legislation, consistent brochure dissemination for patient information purposes has assumed much greater importance.

Many cardiac centres currently inform referred patients (via letter) that there may be options for more timely care elsewhere, and invite the patient to consult with his/her referring physician, if desired, to further explore such options. However, the distribution of such letters is not universal, the timing of distribution is not consistent, and the information provided not entirely uniform. (These letters also serve, in most cases, to introduce the coordinator and to provide the patient with contact information should they have questions or a change in clinical status.)

Patients' willingness to consider receiving care at an alternate centre may depend on whether they were informed of this option before or after the referral to the closest or usual centre had been initiated. For this reason, it is important for referring physicians, especially those not affiliated with a cardiac centre, to inform patients of this option at the time the referral is first discussed but before it has been directed to a specific centre.

ACTION 2

Provide Regional Cardiac Care Coordinators with more timely and readily accessible information on service availability at other cardiac centres.

MECHANISM

In the interim, until CCN is able to implement an enhanced IT structure, member hospitals will adopt the following practices:

- a. On at least a weekly basis, the member hospital will post data to an online form on the

CCN web site indicating the current typical wait time in each urgency category and for each procedure. This form will be accessible to providers (especially RCCC's) at all other member hospitals. Because this data is based on prospective estimates rather than retrospective calculation (as are median wait times), it will not be accessible to the public or to referring physicians outside member hospitals. However, the median wait times for procedures recently completed (sub-classified by urgency category) will still be available to anyone via the CCN web site.

Implementation date: June 30, 2005

Monitoring: Quarterly report by CCN Director of Clinical Practice

RATIONALE

In order for RCCC's to play an effective "system-oriented" role in facilitating timely access for patients, they must have access to information on service availability and wait times at other centres. At present, CCN lacks a centralized real-time information system to provide such data. Coordinators typically rely on phone calls to their counterparts in other centres to determine service availability for patients. This is highly inefficient as the information can only be gathered one centre at a time.

ACTION 3

Provide all stakeholders, including the public, with more timely information on wait times for cardiac services.

MECHANISM

In the absence of a centralized database that can track wait list removals (as procedures are completed), wait time data must be collected by the CCN Provincial Office via manual batch submission each month. This is a time consuming process for personnel at member hospitals. Province-wide data cannot be analyzed or reported until all hospitals have submitted their data. An enhanced IT structure is essential to facilitate this process.

In the interim, CCN and its member hospitals will adopt the following practice:

- a. Monthly data will be reported to the CCN Provincial Office by the member hospitals within 5 working days of each month end.
- b. The CCN Provincial Office will collate, analyze, and report, on the CCN web site, centre-specific and province-wide wait time and utilization data within 5 weeks of each month end. Monthly (rather than quarterly) median wait times will be posted in the publicly accessible section of the web site.

Implementation date: August 31, 2005

Monitoring: CCN Informatics Committee and Director of I & IT

- c. Accountability Agreements for 2005/06 and beyond between CCN, member hospitals, and the MoHLTC should reflect the commitment of all parties to the timely and accurate submission of wait time and utilization data to CCN, followed by timely dissemination by CCN (in accordance with privacy legislation) of appropriate information to all relevant stakeholders.

Implementation date: September 30, 2005

Monitoring: CEOs of CCN and member hospitals along with MoHLTC officials

RATIONALE

At present the CCN web site displays median wait times for each cardiac procedure at the various cardiac centres, sub-classified by urgency category. For public display, monthly wait time data is typically aggregated into fiscal year quarters. This helps to ensure statistical robustness and minimize large fluctuations related to small samples, but interferes with the timeliness and relevance of the data available to referring physicians and patients. Most centres currently perform sufficient procedure volume that single month's data can be reasonably interpreted.

ACTION 4

Report additional wait time and access parameters to more fully characterize disparities in wait time burden

MECHANISM

Monthly statistical reports issued by the CCN office will include the average number of days waited beyond RMWT for each centre, for both cath and CABG.

Implementation date: July 1, 2005

Monitoring: CCN Informatics Committee

RATIONALE

As discussed in Chapter 4 of this report, there is little if any disagreement that waiting beyond the RMWT is undesirable. Because the RMWT is calculated specifically for each patient, measuring only days beyond RMWT serves to adjust or "normalize" the undesirable waiting burden for each patient's particular degree of urgency. Therefore, on a centre-specific basis, the total number of patient days beyond RMWT in a given time period can simply be summed, and then divided by the number of patients on the list during that time, to provide a measure of the average time waited, per patient, beyond RMWT. This provides a more cogent measure of the additional risk to which the average patient at each centre is exposed, and highlights the patient level impact of disparities that are otherwise expressed on a hospital or region-specific basis.

ACTION 5

Facilitate non-traditional patterns of referral when this contributes to more timely care

MECHANISM

In the interest of making patterns of referral less dependent on personal relationships between physicians, and more dependent on service availability, CCN member hospitals will work to improve the communication of procedure results and recommendations from cardiac centres to referring physicians regardless of where they practice or where they typically refer patients to. This will be accomplished via adoption of the following practice:

- a. A preliminary report of both diagnostic (cath) and revascularization (PCI and CABG) procedures will be transmitted on the day of the procedure to the referring physician and/or the patient's "home" unit (if the patient is an in-patient from a sending hospital and will be returning to that hospital). For in-patients returning to a sending hospital, a copy of the preliminary report should also accompany the patient.
- b. At a minimum, the report should indicate:
- i. Name and contact information of the physician who performed the procedure (and alternate coverage information as applicable).
 - ii. For diagnostic catheterization, preliminary findings (as applicable) with regard to coronary anatomy, left ventricular function, and hemodynamics, along with the angiographer's initial recommendation in terms of further management (i.e., medical therapy, PCI, or CABG).
 - iii. For PCI, the vessel(s) intervened on and type of stent used (i.e., DES vs. non-DES).
 - iv. For CABG, the vessel(s) bypassed and the conduits used.
 - v. For all patients, any complications that occurred peri-procedurally
 - vi. For all patients, specific information on any essential ongoing therapy (e.g., anti-platelet therapy for patients who will be referred for urgent CABG or for those who have just undergone stent implantation).

Implementation date: Sept. 30, 2005

Monitoring: Cath / PCI Working Group of Clinical Service Committee

CCN has begun exploring linkages with Ontario MD, the OMA subsidiary funded by MoHLTC to improve electronic interconnectivity between the Province's physicians. These linkages will ultimately foster improvements in referral patterns and timely dissemination of wait list information. Simultaneously, CCN will meet with Dr. Jim McLean (Primary Care Reform) of the Health Results Team in order to better address communication and coordination issues with physicians who refer patients directly or indirectly for cardiac procedures.

RATIONALE

A barrier that emerged from consultation with referring physicians was the difficulty sometimes faced when a physician refers a patient to a centre that they are not familiar with, or to a physician they do not know personally. There is no doubt that personal relationships are helpful, but cannot be viewed as essential within an effective systematic approach to access management with optimum patient care as the driving factor. In order to facilitate interaction between providers who may not typically work together, greater standardization of processes is important. Consider the analogy of pilots with a large commercial airline – their ability to safely operate an aircraft together does not depend on knowing each other personally, but does depend on having in place (and following) numerous standardized procedures.

The CCN referral process is already well standardized. This is one of the key accomplishments of the Network. On the other hand, there is less standardization of reporting and communication back to the referring physician after the procedure. While many cardiac hospitals already provide prompt reports (e.g., preliminary diagram faxed back immediately), this service is not universal and the for-

mat of such reports varies considerably. Standardizing communication of procedural results should enhance referring physicians' confidence that they will receive the information needed to properly guide their patient's care, even when this information comes from a physician or hospital they may not be familiar with.

ACTION 6

Assist patients who already travel long distances in obtaining more timely access to care

MECHANISM

Because of the individualized complexity that must be brought to bear on decision making around referrals to a distant centre, it is not feasible to apply blanket policies. However, CCN has targeted these patients (and their communities and health care providers) for a specific educational intervention related to timeliness of access to care. In addition, CCN will assist local referring physicians and coordinators to obtain more detailed information from patients on those factors relevant in their decision as to where to travel for care. (This will be supported by the data obtained from the patient preference survey)

Implementation date: December 31, 2005

Monitoring: TBD

RATIONALE

When advanced cardiac services are available nearby, patients might understandably be reluctant to travel long distances to receive the same care, even if this would reduce the waiting time. However, there are many patients in Ontario who already travel a long distance for diagnostic or therapeutic services, because the type of care needed is simply not available within their own region. Examples include patients from smaller communities without diagnostic cath facilities, as well as patients who have undergone diagnostic cath in Windsor, Sault Ste. Marie, Peterborough or Thunder Bay and require subsequent revascularization. The centre that such patients are referred to may be influenced by various factors including a previous encounter with a specific hospital or provider elsewhere; the relative distances involved; the referring physician's familiarity with a specific tertiary specialist or hospital; pre-existing shared care arrangements with a specific centre (e.g., Thunder Bay – Hamilton or Thunder Bay - Ottawa, Peterborough – UHN); social support in the form of friends or relatives in a particular city; patient preference or reluctance (e.g., traffic concerns); and clinical issues or complexities specific to the particular procedure required.

ACTION 7

Implement specific scheduling processes (e.g., preferential same sitting [ad hoc] PCI) to minimize disruption and avoid repeated travel for patients obtaining care outside their local region

MECHANISM

In the interest of facilitating access to care at more distant centres, CCN member hospitals will undertake to schedule diagnostic cath procedures in such a way that, whenever clinically appropriate, same-sitting or same-day PCI can be performed for patients who have been referred from a more distant centre.

Implementation date: Immediate

Monitoring: To be determined. Theoretically the Cardiaccess database can be used to report ad hoc PCI rate as a function of distance between patient residence and PCI centre. In reality, this needs to await implementation of an updated IT system. As an alternative, manual tracking of the care pattern of out-of-region referrals can be considered (but labour intensive)

RATIONALE

When a patient is referred to a more distant centre for diagnostic catheterization and is found to warrant subsequent PCI, performing the PCI at the same-sitting (i.e., "ad hoc") or at least on the same-day will avoid the need for the patient (and accompanying person(s)) to stay over in the distant city or return on a separate trip. Although some centres in Ontario perform ad hoc PCI on the majority of PCI patients, many centres currently limit this practice to those patients with greater clinical urgency. CCN is advising its member hospitals to now consider travel and distance as well as clinical factors in the decision to proceed with same-day PCI.

Scheduling of cardiac surgery to occur on the same trip is more challenging, because there are fewer procedure slots to schedule into, and there may be a more complex and time consuming pre-assessment process. Nonetheless, advance planning between cath and surgical coordinators may help to anticipate the needs of such patients and facilitate, at least for some patients, surgical revascularization on the same trip as the diagnostic cath.

ACTION 8

Develop and implement a provincial best-practice guideline for early repatriation of patients to referring hospitals, in order to ease bed pressures in the cardiac centres that may block new referrals. The guideline will also address best-practices for patient preparation prior to transfer in for a procedure, in order to minimize postponements

MECHANISM

CCN member hospitals, in consultation with non-member hospitals, will undertake to develop a best-practice guideline for repatriation with the goal of improving availability of cardiac ward or intensive care beds at the advanced procedure hospitals, without compromising the quality or continuity of post-procedure care. CCN should coordinate this process, but will require modest dedicated resources within a short time frame.

Implementation date: Protocol developed and implemented by January 2006 (contingent on funding the project) Project budget by April 15, 2005

Monitoring: To be discussed with CIHI, ICES to consider pre-post comparison of length of stay and transfer data

RATIONALE

Many providers from outside the cardiac centres pointed out that the rate-limiting-step in referral of urgent (in-hospital) patients is often not the lack of cath lab availability but rather the lack of an appropriate care-level bed at the receiving institution. This observation was validated by both providers

and administrators at the receiving centres. While expansion of in-patient capacity in concert with cath lab and OR procedural capacity is part of the solution, it is clear that more efficient use of existing in-patient beds is essential. All parties agreed that repatriation of referred-in patients back to their originating hospital could be more efficient. The role of ambulance services in this task is crucial, as noted elsewhere in this report. However, development of a standardized protocol for repatriation is also very important. Such a protocol would specify which patients can safely be repatriated, and when. It would also spell out the obligations of both sending and receiving sites in terms of bed availability, information exchange, and continuing clinical care after the transfer back to the originating hospital. Because non-cardiac hospitals would be asked to actively participate at an earlier phase of post-procedure care, there will be an essential educational component as well. Post-procedure care also includes coordination of referrals to cardiac rehab and/or to CCAC as appropriate, arrangement of follow-up visits, documentation of discharge medications, and so on. A standardized approach needs to be developed to ensure that the providers at the original referring hospital address these priorities in a manner consistent with the expectations of the cardiac centre.

St. Michael's has a well developed protocol for transfer of post-surgical patients, and Southlake has implemented a similar system following PCI. These institutions have offered to share their protocols and collective experience with other member hospitals.

It is important to recognize that inefficiencies can occur at various points along the patient flow continuum – not only after the procedure, but prior to transfer as well. By way of example, poor communication between cardiac centre and referring hospital can result in essential pre-procedure lab data being unavailable, or the failure to discontinue certain medications, all of which could lead to postponement of a procedure. The proposed guideline for repatriation will therefore also address pre-transfer issues. CCN coordination of this task is vitally important because these issues cross multiple hospital boundaries, and in the future will cross LHIN boundaries as well.

ACTION 9

Facilitate the transfer of electronic digital angiographic images between cardiac centres to speed up the referral process and allow simultaneous review of diagnostic cath images at multiple other centres.

MECHANISM

The Ontario Children's Health Network, through the Specialized Pediatric Coordinating Council, has recently received approval for additional digital imaging technology (Picture Archiving and Communications Systems or PACS). A similar system-wide approach should be adopted for the adult cardiac care system. CCN will compile an inventory of member hospitals' existing capability in this regard, and then will consider approaching commercial vendor(s) on behalf of member hospitals. In the interim, a pilot project will be initiated with at least one stand-alone diagnostic cath lab.

Implementation date: April 30, 2006

Monitoring: TBD

RATIONALE

Commercial software products exist that allow DICOM angiographic images (the industry standard format) to be uploaded to a web server and then accessed, with password or other security protection, from any web browser. The clear advantage of such a system is that a diagnostic cath done at any one cardiac centre can be quickly reviewed by an interventional cardiologist or cardiac surgeon at any other centre. This is of particular importance to diagnostic-only cath labs (e.g., Windsor). At present, the images are recorded to a CD which is then couriered to one specific referral hospital. If that hospital is unable or unwilling to perform PCI or CABG in a reasonable time frame, the CD must be couriered again to another centre to enable further review of the images. This process is inherently inefficient, especially for urgent in-hospital patients.

This transmission of image data is a very specific subset of a comprehensive portable electronic patient record, notable because the technology is readily available at present and because the image data would be useful even in isolation from the other components of the full electronic record.

The commercial products are offered by the X-ray equipment manufacturers (e.g., Philips, GE) but are usually options at added cost. Stand-alone third party products also exist (e.g., CardioView™). Some products upload selected runs in compressed format, while others provide the entire image set – with a corresponding performance tradeoff. Highest quality images may not be essential in many cases for a preliminary review.

ACTION 10

Address specific access and wait time “hot spots” on a centre-specific basis

MECHANISM

Certain advanced cardiac centres and certain regions of the province are known to have longer wait times for specific cardiac procedures. CCN is initiating consultations to address these particular problems. Specifically:

a. Hamilton

Wait time pressures have existed in Hamilton for some time. Capital expansion is underway, with an additional cath lab (the fourth at HHS) due to come on stream in May, 2005 and a fourth OR in December 2005. The additional cath lab should lead to improvement in cath wait times at HHS. Surgical wait times may not change appreciably because the increase in capacity afforded by the additional OR suite may be offset by an increase in surgical referrals arising from greater cath capacity. In fact, over the short term, with the new cath lab open but the OR not yet completed (between May and December 2005), there may be worsening of surgical wait times if existing referral patterns are not altered.

The demand for surgical and PCI services at HHS is intensified by the relationship with Thunder Bay (see below). This has created challenges for HHS to meet the needs of Hamilton-Niagara residents in a timely manner. The degree to which the additional capacity soon to come on stream will reduce access disparities in and of itself needs to be clarified based in relation to current and future referral patterns.

b. Northwest

A long-standing relationship exists between the cardiac surgery program in Hamilton and the community in Thunder Bay. This encompasses, among other things, frequent visits to Thunder Bay by Hamilton surgeons, to conduct both pre-operative assessment and post-operative follow-up. There is no doubt that this formalized relationship has enhanced the quality and continuity of care for residents in the Northwest. Unfortunately, the addition of much of the surgical demand from the Northwest to that of the Hamilton-Niagara region itself has likely contributed to wait times for cardiac surgery at Hamilton Health Sciences being considerably longer than the provincial average, and especially longer than current wait times in several GTA surgical centres.

The challenge in responding to this disparity is to achieve the appropriate balance between the very real clinical benefits that flow from the existing formal relationship, and the risks related to the additional waiting time. Although additional surgical capacity will come on line in Hamilton at the end of 2005, this will be consumed, at least in part, by increased local referrals that will likely flow from the addition of diagnostic cath capacity as of May 2005. Wait time reductions could potentially be achieved by preferentially directing new surgical referrals from Thunder Bay to other surgical centres, but with a potential loss of continuity of care unless other centres can quickly establish a visiting relationship similar to that which Hamilton currently provides. The implications of such a change in referral pattern on residents of the Northwest and on the Hamilton surgery program would need to be carefully evaluated – but the obvious current availability of surgical capacity in the Toronto centres, coupled with the similarity in travel implications, demands that this alternative be explored.

TBRHSC also has a long standing relationship with the Ottawa Heart Institute, particularly for patients requiring cardiac surgery. Extensive telehealth investments and other communications strategies have been made to ensure that patients from the Northwest can access these services within recommended wait times.

Cardiac surgery volume in Sudbury is among the lowest in the province and has fallen by about 5% compared to the previous year. Given the relative proximity to the Northwest, and the alignment of Thunder Bay and Sudbury with the new Northern Ontario Medical School, this would seem, on first glance, to be a reasonable route of referral for patients from the northwest needing cardiac surgery. However, despite the relative proximity (compared to Southern Ontario centres), air travel between Thunder Bay and Sudbury, until recently, has been less flexible due to hub arrangements based in the south. With the recent introduction of scheduled direct flights between these two cities, Thunder Bay to Sudbury referral options will be further explored.

These centre-specific considerations are raised here to illustrate the complexity of access issues for patients in the Northwest, and their impact across the system. Despite the inherent challenges, CCN intends to take a lead role in facilitating the efforts of individual centres (or groups of centres) to deal with this issue. As a first step, CCN will convene a meeting (prior to May 15, 2005) to involve representatives from CCN, HHS, and TBRHSC, and a follow-up meeting to also include representatives from UOHI, Sudbury, and one or more GTA cardiac centres. Priority Programs and the Wait Time Strategy Team will also participate. The general goal of these meetings is to develop a focused action plan to address the existing wait time disparity as it exists in Hamilton and the Northwest. More specifically, these meetings will determine:

1. Can patients from the Northwest receive more timely care by referral for surgery to a GTA centre or to Sudbury? If yes, is the potential difference in wait time clinically relevant?
2. What is the anticipated impact on surgical wait times for residents of Hamilton Niagara region if referrals from Northwest are directed elsewhere?
3. Could a GTA centre (or centres) or Sudbury promptly establish a visiting relationship whereby surgeons visit Thunder Bay regularly?
4. Will there be a net reduction in surgical volume in Hamilton if some (or most) referrals from the Northwest are directed to GTA or to Sudbury (taking into account the additional cath lab capacity in Hamilton)? If yes, what is the implication?

c. Kitchener

Patients referred for cardiac surgery at St. Mary's and classified as elective, face a much longer wait than at any other centre in Ontario. For the three month period Nov/04 to Jan/05 (inclusive), the median wait time for the 33 such patients operated on at St. Mary's was 139 days, as compared to the provincial elective median wait during this time period of 45 days. Although the trend has been in a favourable direction over the past three months (median waits of 145, 128, 119 days respectively), even the most recent month remains well above any other centre.

Providers in Kitchener have actively referred patients to other surgical centres in an effort to enhance access. The second cardiac OR suite at St. Mary's will be operational in May 2005 the resulting increase in throughput should have a significant impact on surgical wait times. In the interim, CCN will work with the cardiologists, cardiac surgeons, and cardiac program administrators in Kitchener to facilitate efforts to refer patients (especially electives) to other surgical centres for more timely care.

d. University of Ottawa Heart Institute – diagnostic cath

Median wait times for both semi-urgent and elective cath patients referred to UOHI are more than double the provincial Figures in these categories, and show no clear evidence of improvement in recent months. Across all three urgency categories, the proportion of patients undergoing their procedure within the RMWT is below the provincial average (60%, 30%, and 40% for urgent, semi-urgent, and elective respectively in Jan/05).

UOHI's primary catchment area (the East region) has a high prevalence of coronary disease (based on the acute MI admission rate as a proxy for disease prevalence). Ottawa has an advanced program for primary PCI (i.e., initial emergency treatment for acute ST elevation myocardial infarction), and a ratio of PCI to CABG that is higher than the provincial average. Thus, the demands on the catheterization laboratory, and the throughput (>600 total cases per month) are high. All patients referred to UOHI receive a letter from the RCCC that mentions the potential to be referred to another centre with shorter wait times, although only a minority of patients actually pursues this option.

CCN will meet with representatives of UOHI, Priority Programs, and the Wait Time Strategy, to explore short and longer term solutions to the current excessive wait time for diagnostic catheterization. In the short term this will involve, to the extent feasible, further extension of operating hours within the existing labs. Over the longer term the additional physical capacity that has been proposed by UOHI needs to be addressed – including issues of location and other linked construction.

e. Other “cath-only” centres (Windsor, Peterborough, Sault Ste. Marie, Toronto East General) face particular challenges because all patients needing subsequent revascularization must be referred to a different centre. On the other hand, the fact that patients will be traveling to a more distant centre anyway raises opportunities to factor in the timeliness of available care into the referral process. CCN will review the particular needs and concerns of cath-only sites in a series of meetings with the individual sites, and possibly collectively, depending on the degree of overlap.

f. Other hotspots

There may be other well defined hotspots that warrant specific local attention. These will be addressed as they are identified.

5.2 Efficiency

Existing resources must be used as efficiently as possible. In this regard, the CCN Cardiac Administrators/Managers group [led by Heather Sherrard (UOHI) and Jane Delacy (SWCHSC)] is developing operational benchmarks for cardiac surgery and for cath labs. A survey of member hospitals has recently been completed, the findings of which will identify operational variances and will inform the development of best practices and bench marks.

CCN is looking forward to reviewing and adopting the best practice recommendations which the Surgical Process Analysis and Improvement Work Group (Chair, Valerie Zellermeier) are making to identify efficiencies in the surgical process and in the use of valuable human and technology resources in the hospital.

Funding to replace aging cath lab equipment has recently been announced (ref MoHLTC Media Release, February 3, 2005). Replacement cath labs will be installed in five hospitals, and the resulting gain in efficiency (e.g., from reduced “down-time”) is anticipated to increase throughput by 1,016 cases per year. These procedures do not represent new (i.e., incremental) volume but rather the hospital’s enhanced ability to meet existing volume targets, and thereby reduce wait list pressures. The breakdown of the 1,016 cases is as follows:

Hamilton	426
UOHI	150
Thunder Bay	140
Hôtel-Dieu Grace, Windsor	300

CCN will monitor diagnostic cath volumes and wait time parameters at these hospitals as the new equipment becomes operational over the coming year to ensure that the anticipated impact on throughput and wait time actually occurs.

Addressing repatriation and patient flow issues is another efficiency initiative (as described in Section 5.1). For example, patients not ready for transfer to or from a procedure centre (e.g. blood work, tests not complete) can create bottlenecks and increased wait times that can affect multiple hospitals and caregivers.

5.3 Capacity

Capacity encompasses the physical, human, and financial resources available to carry out advanced cardiac procedures. Ideally this capacity should closely match the need for these procedures. The need is determined by the size and demographic features of the population, the prevalence of cardiac disease within the population, and the evidence in support of the efficacy of the various procedures.

It is not only total capacity but the regional distribution of such capacity that is vitally important in ensuring that population needs are met in a timely and equitable way, both now and into the future. CCN endorses the principle that, wherever feasible, regional capacity should match regional need. Obviously, not all services can be provided in every community or region, for reasons that include minimum procedure volumes and critical mass of providers essential for quality outcomes. Decisions on distribution of procedure capacity are further influenced by the desire to make optimal use of existing resources (both physical and human). The special roles of academic centres, and the procedure volumes and case mix needed to support these roles, are also relevant considerations in the distribution of capacity. All of these factors contribute to the complexity of policy decisions related to capacity for advanced cardiac procedures.

The short term initiatives outlined in this report do not assume additional capacity beyond that already planned on the basis of population growth, population aging, and changes in practice pattern (as addressed in the Target Setting report, 2004). However, a key capacity issue is the distribution of incremental cases in the 2005/06 (and future) fiscal years. This capacity should be invested in such a way as to address, and improve upon, existing regional disparities in wait time and access generally. We have begun to frame this discussion and outline some (though certainly not all) of the centre-specific issues in the current document, but more detailed analysis will be provided in the next report.

5.4 Appropriateness

Appropriateness is a challenging concept to define and measure but is clearly important in determining that available resources are utilized so as to yield the greatest benefit. As applied to cardiac procedures, appropriateness encompasses the threshold for recommending a cath or revascularization procedure, the type of revascularization procedure (PCI or CABG), and certain details of the procedure (e.g., number of vessels stented or bypassed, type of stents or bypass graft used, etc.). Irrespective of the difficulty in defining what is appropriate or inappropriate, the presence of marked variations in the rate and type of procedures across Ontario centres warrants further exploration - the goal of which should be to determine whether such variation stems from local differences in disease prevalence and/or service availability, or whether it stems from the use of markedly different thresholds for procedure use.

The ratio of PCI to CABG is one example of an indicator that varies substantially, from a low of 1.51 in London to a high of 3.54 in Sudbury (through the first ten months of 2004/05). Several explanations for this variation have been suggested, including relative cath lab and operating room availability, surgeon and cardiologist training and practice experience, community preference, and patient anatomy. However, no attempt has been made to formally study either the factors accounting for the variation or the implications thereof.

Similarly, the ad hoc PCI rate varies considerably between centres, from a low of 29% at University Health Network (Toronto) to a high of 82% in Kingston, and also warrants review due to its potential impact on wait times for other scheduled PCI and CABG procedures. Understanding the factors, including case selection, has implications for both operational efficiencies at centres and the appropriateness of patient care.

Addressing appropriateness is an important direction for CCN but given the complexity of the scientific issues and the current resources of CCN, it must be done in collaboration with partner organizations. Possible partners include ICES, CCS, CIHI, and others.

5.5 System Factors External to CCN Member Hospitals

5.5.1 Emergency medical services and ambulance transportation

An efficient regionalized system for advanced cardiac care depends – crucially – on the ready availability of transport vehicles staffed by appropriately skilled paramedics. The current status of emergency medical services and ambulance transportation in Ontario has been identified in many quarters as a significant barrier to timely access (the patient's perspective) and efficient resource utilization (the system perspective). The most pressing concern relates to the limited capacity to provide urgent inter-hospital transfers of unstable, or potentially unstable patients. In some communities very highly trained paramedics staff Critical Care Transport Units; these crews are clearly qualified to transfer cardiac patients but because of the skill level and cost involved are very few in number. (It has also been suggested that for many cardiac patients, CCTU crews are “over-qualified”). At the other end of the spectrum, some hospitals use private patient transport services that are not (formally) even considered to be ambulances and provide only a basic level of patient monitoring and support. Most respondents felt that transportation issues routinely add half to one day of additional waiting time for urgent patients – a significant burden given that this constitutes up to 50% of the recommended maximum waiting time for many unstable patients.

The requirements of the EMS/transport system are multiple but at a high level include (with approximate time scales and clinical examples) the capability to transport, on a predictable basis:

1. emergency patients from the field to either the nearest acute care hospital or, potentially in the future, to a designated regional MI centre (time scale of less than 60 minutes, e.g. acute ST elevation MI);
2. emergency patients from a community hospital to a cardiac centre (time scale 90 to 180 minutes, e.g. rescue PCI following failed fibrinolysis, acute coronary syndrome with refractory ischemia)
3. in-patients from a community hospital to a cardiac centre for an urgent but planned diagnostic or revascularization procedure (time scale 1-2 days, e.g. early invasive treatment for high risk but stabilized acute coronary syndrome)
4. stable patients within the first 6-24 hours post-intervention returning from a cardiac centre to their originating hospital (repatriation) (time scale 1 day)

The decentralized responsibility for ambulance services at the municipal level makes this issue a challenging one, but there was unanimous sentiment among cardiac providers and administrators that it must be addressed with the highest priority. A MoHLTC initiated review of ambulance services is currently underway. CCN intends to raise these cardiac-specific issues (and is prepared to assist in analysis or evaluation if requested), and will urge that they be addressed with the priority they deserve.

5.5.2 E-health considerations

The ability to transfer digital angiogram images and electronic clinical data between hospitals represents a tremendous opportunity to enhance patient care and efficiency, given the fact that care for so many patients in the system is distributed across more than one hospital (and almost always across more than one physician). However, this is a challenge that cannot be fully addressed by CCN and its member hospitals alone. Privacy and security considerations are not insurmountable but add to the complexity and cost of any solution. Action item #8 will initiate work on image transfer, but this is of only limited scope within the broader potential of e-health.

5.5.3 Human resources

As noted above, capacity depends not only on physical but on human resources as well. Advanced cardiac procedures are particularly intensive in terms of the training and experience required of the physicians, nurses, technologists, and perfusionists involved. A full discussion of the human resource issue as it relates to cardiac catheterization, PCI, and CABG is beyond the scope of this report. However, some of the essential considerations include:

1. the need for a critical mass of providers at all cardiac centres in order to provide uninterrupted coverage (on-call, vacations, etc) while offering a reasonable lifestyle
2. the need for each practitioner (across all disciplines) to perform a minimum number of procedures per unit time to maintain competency
3. the long lead times for training, particularly for interventional cardiologists and cardiac surgeons
4. the lack of Ministry funding for interventional cardiology fellowship training beyond core cardiology residency
5. the shortage of general cardiologists that may arise as new graduates preferentially enter the interventional stream
6. the equally important but very distinct needs and challenges with respect to recruitment and retention faced by small vs. large communities, teaching vs. non-teaching hospitals, etc.

In our future more detailed report on regional waits, rates, and targets, we will address the human resource question more fully as it relates to capacity. CCN is also committed to supporting in any way possible the work of other groups (CCS, Royal College, CMA, CPSO, etc) in regard to physician human resources.

5.6 Communications

Stakeholder (referring physician and patient) communication and education is required to support the “balancing of wait lists” strategy, empower patient choice and effect positive changes in physician referral patterns. A communications campaign and tools are needed to raise patient and referring

physician awareness of choices for advanced cardiac care. CCN has included a request for funding of this initiative in the three year operating plan 2005/6 – 2007/2008 submission.

Elements of this plan will include;

- Providing up-to-date access to cardiac care data to providers and patients;
- Targeting communications to the provider groups (e.g., via medical societies and hospital medical committees) to create streamlined referral processes for cardiac procedures.
- Developing provider and community partnerships to address barriers to patient referrals and patient repatriation, and, by so doing, alleviating bed bottlenecks in the cardiac centres;
- Facilitating outreach sessions/focus groups in all 14 LHIN jurisdictions for community healthcare practitioners to 1) increase knowledge about cardiac referral processes and 2) reinforce the importance of accurate and timely data provision which supports referral and triage activities;
- Building awareness of public and provider resources regarding cardiac wait lists through the use of print, audio, and visual media;
- Developing enhanced educational materials in both official languages and additional languages identified by priority demographic target audiences -- for use in direct discussions with patients by providers;
- Enhancing the CCN website in both official languages;
- Implementing community-based educational campaigns in targeted geographic areas where longer wait times are experienced;
- Providing increased CCN response capacity to community and provider requests for information as a result of greater awareness and more proactive patient participation in care decisions; and
- Measuring the increase in the number of patients seeking cardiac service outside their local area if more timely care can be delivered elsewhere, as well as measuring the number of patients who understand they have the option for faster treatment but decide to wait for closer access.

Together these measures will have a significant impact on providing patients and their healthcare professionals with current information on their options for access to cardiac care.

6. Summary & Next Steps

The specific measures outlined in this report are seen as discrete steps in CCN's ongoing mission to continually optimize access to high-quality advanced cardiac services. We believe that these measures will impact favourably on access in general and on regional access disparities in particular. However, we also feel strongly that additional work needs to be done, and that with sufficient resources, CCN can and should take the lead.

Among the next steps listed below, resources are currently in place to implement 6.1 and 6.2. Additional resources need to be identified to enable CCN to fully develop the other items mentioned.

6.1 Monitoring and evaluation of action steps

CCN will monitor compliance with the initiatives outlined and evaluate their impact on access to advanced cardiac services. Ongoing consultation will be required to establish appropriate and reasonable indicators, including appropriate wait list measures. Stakeholder consultations will also contribute to the evaluation and feedback on the initiatives in terms of barriers identified and successes achieved. Report cards on progress will be presented to the CCN Board at upcoming Board meetings (June and September 2005) and as a follow up to the Wait List Results Team.

Regular monitoring and reporting of wait times will be enhanced as feasible given current IT and staffing limitations, and CCN will provide basic wait time data to the provincial web site as required and agreed upon. With enhancement of CCN's IT infrastructure, more robust analysis and reporting of access parameters will be feasible and will become a feature of CCN's regular (i.e., monthly) statistical reports.

6.2 Patient and provider survey

CCN has received funding under the Ministry's

Wait Time Strategy Innovation Fund to conduct a formal patient survey related to more distant travel to obtain more timely cardiac services. The results of this survey will be reported in late spring 2005 and will attempt to quantify the proportion of patients willing and able to travel for care, and the barriers they face. This in turn will allow a more precise estimate of the potential impact on wait times of the short-term actions in the current report, and also will identify priorities for support measures to facilitate movement of patients to more distant centres.

6.3 Efficiency initiatives

This report outlines at a high level two initiatives related to efficiency in the use of existing (and future) resources, including the establishment of operational benchmarks for cath labs and cardiac OR's, and development of a best practice guideline for repatriation of patients from tertiary to community hospitals. As these initiatives come to fruition they will be implemented, monitored, and reported on.

6.4 Appropriateness

As noted, in its full breadth this is a complex issue that cannot be fully addressed in the short term. However, CCN will encourage, and collaborate with, academic health services researchers who are interested in studying appropriateness of cardiac procedures.

More specifically, CCN will, with the support of the CCN Medical Officer, initiate an examination of the factors that account for the variation in PCI: CABG ratio across the province, and attempt to discern whether patient outcomes are affected by the widely divergent patterns of care. It is anticipated that this work will occur over the next twelve months.

6.5 Analysis of regional targets, utilization, and capacity

Future increases in regional and centre-specific

capacity (stemming from Target Setting recommendations) should be allocated in such a way as to address existing access limitations in the short term while working toward the regionally adjusted targets in the longer term. To assist the planning in this regard, the next component of CCN's **10 Point Plan for Action** on access to advanced cardiac services will comprise a review of regional utilization and capacity in relation to regionally adjusted targets. This report will be available in late spring, or early summer 2005.

The facilitation of access to advanced cardiac services is a core function of CCN. Many of the Network's past, current, and planned activities are related, either directly or indirectly, to this goal. The spectrum of CCN activities is illustrated in matrix form in Appendix 4, demonstrating additional future steps for the network.

APPENDIX 1 CCN Board of Directors

John Oliver, (Chair), *Halton Healthcare Service Corporation, Oakville*

Matt Anderson, *University Health Network, Toronto*

Adalsteinn Brown, *D.Phil, Dept. of Health Administration, University of Toronto, Toronto*

Patricia Daniels, *St. Michael's Hospital, Toronto*

Anthony Graham, MD, *St. Michael's Hospital, Toronto*

Lyall Higginson, MD, *University of Ottawa Heart Institute, Ottawa*

Andreas Laupacis, MD, *Institute for Clinical Evaluative Sciences, Toronto*

Lynne Lawrie, *Toronto District Health Council, Toronto (until March 2005)*

Charles Lazzam, MD, *Trillium Health Centre, Mississauga*

Mary Catherine Lindberg, *OCOTH, Toronto*

John McCans, MD, *Kingston General Hospital, Kingston*

Manish Maini, MD, *Credit Valley Hospital, Mississauga*

Patricia Norman, *Southlake Regional Health Centre, Newmarket*

Leo Steven, *Sunnybrook & Women's College Health Sciences Centre, Toronto*

Grace St. Jean, *Hôpital Régional de Sudbury Regional Hospital, Sudbury*

Neville Suskin, MD, *London Health Sciences Centre, London*

Anne Tattersall, *University Health Network, Toronto General Hospital, Toronto*

Kevin Teoh, MD, *Hamilton Health Sciences Corporation, Hamilton*

Corporate Secretary & CEO

Kevin Glasgow, MD, *Cardiac Care Network of Ontario*

APPENDIX 2 Individuals and Organizations Involved in Consultation Process

I. CCN Member Hospital Representatives

Invitee	Present	Regrets
Hamilton Health Sciences Centre Dr. David Crosby, <i>Cath Lab Director</i> Charlotte Daniels, <i>Program Director, Cardiac & Vascular Disease</i> Brenda Flaherty, <i>VP, Patient Services</i> Murray Martin, <i>President & CEO</i> Dr. Madhu Natarajan, <i>Cardiologist</i> Don Shilton, <i>Clinical Manager, Cardiac & Vascular Program</i> Dr. Kevin Teoh, <i>Cardiac Surgeon</i>	 * * * * *	* *
Hôpital Régional de Sudbury Regional Hospital Dr. S. Aul, <i>Chief of Cardiac Surgery</i> Dr. Grama Ravi, <i>Medical Director, Critical Care Program</i> Grace St. Jean, <i>Administrative Director, Clinical Care Program</i>	 * *	*
Hôtel-Dieu Grace Hospital, Windsor Pat Best, <i>Cath Lab Director</i> Dr. Rajen Chetty, <i>Director, Cardiac Cath Lab</i> Lora Piccinin, <i>Regional Cardiac Care Coordinator</i> Patricia Somers, <i>VP, Clinical Programs</i>	 * * *	*
Kingston General Hospital Dr. Hoshiar Abdollah, <i>Chief of Cardiology</i> Dr. Gerry Adams, <i>Cath Lab Director</i> Dr. Andrew Hamilton, <i>Chief, Cardiac Surgery</i> Mae Squires, <i>Program Director, Critical Care, Cardiac Care & Orthopedics</i>	 * * * *	
London Health Sciences Centre Dr. David Almond, <i>Director, Invasive Cardiac Services</i> Nancy Jutte, <i>Director of Cardiac Care</i> Dr. George Klein, <i>Chief of Cardiology</i> Bernadette MacDonald, <i>VP, Surgery Clinical Business Unit</i> Dr. Richard Novick, <i>Chief, Cardiac Surgery</i> Karen Palmer, <i>Regional Cardiac Care Coordinator</i> Dr. Neville Suskin, <i>Cardiologist</i>	 * * * * *	* *
University of Ottawa Heart Institute Dr. Jean-Francois Marquis, <i>Director, Interventional Cardiology</i> Dr. Thierry Mesana, <i>Chief of Cardiovascular Surgery</i> Heather Sherrard, <i>VP, Clinical Services</i> Dr. Anthony Tang, <i>Co-Director, Arrhythmia Device Clinic</i>	 * *	* *

Invitee	Present	Regrets
Peterborough Regional Health Centre Cindy Doris, <i>Cath Lab Manager</i> Beverly Hill, <i>Regional Cardiac Care Coordinator</i> Dr. Peter McLaughlin, <i>Medical Coordinator</i> Jayne White, <i>Director, Specialty Medicine</i>	* * * *	
Rouge Valley Health System Dr. Peter Gladstone, <i>Cath Lab Director</i> Debra Hunt, <i>Program General Manager, Surgery and Cardiac Care</i>	* *	
St. Mary's General Hospital, Kitchener Dr. Kassem Ashe, <i>Chief, Cardiac Surgery</i> Marion Bramwell, <i>Executive Vice President</i> Andrea Lemberg, <i>Program Manager, Cardiac Cath Lab</i> Dr. Claus Rinne, <i>Cath Lab Director</i>	* * * *	
St. Michael's Hospital, Toronto Patricia Daniels, <i>Regional Cardiac Care Coordinator</i> Dr. Lee Errett, <i>Chief, Cardiovascular & Thoracic Surgery</i> Ella Ferris, <i>Program Director, Heart & Vascular Program</i> Dr. Michael Freeman, <i>Director, Heart Program</i>	* * * *	
Sault Area Hospital Dr. David Gould, <i>Medical Director, Cardiology Services</i> Susan Grand, <i>Manager, Rehabilitation Services</i> Linda Harper-Porter, <i>Regional Cardiac Care Coordinator</i> Sharon Kirkpatrick, <i>VP, Clinical & Support Services</i>	* * *	*
Southlake Regional Health Centre Daniel Carriere, <i>President</i> Dr. David Fell, <i>Medical Director, Cath Lab</i> Pat Norman, <i>VP Areas of Focus</i> Janis Klein, <i>Director</i> Louis Balogh, <i>VP, Clinical Program</i>	* * * *	* *
Sunnybrook & Women's College HSC Jane deLacy, <i>Director of Schulich Heart Program</i> Dr. Stephen Fremes, <i>Chief, Cardiac Surgery</i> Dr. Brian Gilbert, <i>Chief of Cardiology</i> Dr. Bernie Gold, <i>Cardiovascular Surgeon</i>	* * * *	

Invitee	Present	Regrets
Toronto East General Hospital Barbara Adams, <i>Director, Medicine Health Services</i> Nancy French, <i>Director, Cardio Respiratory Health Service</i> Milton O'Brodovich, <i>VP, Patient Services</i>	* * *	
Thunder Bay Regional Health Sciences Centre Dr. Christopher Lai, <i>Director of Cardiology</i> Lori Marshall, <i>Senior VP, Patient Services</i> Arlene Thomson, <i>Regional Cardiac Care Coordinator</i>	* * *	
Trillium Health Centre Dr. Gopal Bhatnagar, <i>Cardiac Surgeon</i> Dr. Charles Lazzam, <i>Cath Lab Director</i> Lina Rinaldi, <i>Director, Cardiac Services</i>	* * *	
University Health Network Dr. Tirone David, <i>Cardiovascular Surgeon</i> Dr. Vlad Dzavik, <i>Director, Interventional Cardiology</i> Dr. Peter McLaughlin, <i>Cath Lab Director</i> Dr. John Parker, <i>Cath Lab Director</i> Anne Tattersall, <i>Director of Operations</i>	* *	* * *

II. Regional Cardiac Care Coordinators Committee

Jennifer Beamer, *St. Mary's Hospital, Kitchener*
 Lorna Bickerton, *University of Ottawa Heart Institute, Ottawa*
 Tracey Brown, *St. Mary's Hospital, Kitchener*
 Kathleen Brown, *Sunnybrook & Women's College HSC, Toronto*
 Beverly Carlyle, *Central East Regional Office, UHN, Toronto*
 Patricia Daniels, *St. Michael's Hospital, Toronto*
 Sheila Dee, *Kingston General Hospital, Kingston*
 Patricia Doucette, *University of Ottawa Heart Institute, Ottawa*
 Nancy Elford, *Toronto East General Hospital, Toronto*
 Mira Finley, *Rouge Valley Health System, Centenary Site, Scarborough*
 Linda Harper-Porter, *Sault Area Hospital, Sault Ste. Marie*
 Beverly Hill, *Peterborough Regional Health Centre, Peterborough*
 Karen Klymciw, *Trillium Health Centre, Mississauga*
 Sheri Mifsud, *Sunnybrook & Women's College HSC, Toronto*
 Colleen Murphy, *Kingston General Hospital, Kingston*
 Janet Murphy-Smith, *University Health Network, General Division, Toronto*
 Karon Orr, *London Health Sciences Centre, London*
 Karen Palmer, *London Health Sciences Centre, London*
 Lora Piccinin, *Hôtel-Dieu Grace Hospital, Windsor*

Collette Plourde, *Hôpital Régional de Sudbury Regional Hospital, Sudbury*
 Donna Riley, *St. Michael's Hospital, Toronto*
 Paula Roberts, *Southlake Regional Health Centre, Newmarket*
 Lynn Sammut, *Trillium Health Centre, Mississauga*
 Sue Sayewell, *Southlake Regional Health Centre, Newmarket*
 Corinne Tartaglia, *Hamilton Health Sciences Corporation*
 Arlene Thomson, *Thunder Bay Regional Health Sciences Centre, Thunder Bay*
 Jane Woods, *University Health Network, General Division, Toronto*
 Donna Wright, *Hamilton Health Sciences Corporation*

III. CCN Clinical Services Committee

Lorna Bickerton, *Regional Cardiac Care Coordinator, University of Ottawa Heart Institute*
 Rajen Chetty, MD, *Director Cardiac Cath Lab, Hôpital Hôtel-Dieu Grace Hospital*
 Eric Cohen, MD, *(Interim Chair), CCN Medical Officer*
 Raymond Yee, MD, *Director of Arrhythmia Services, London Health Sciences Centre*
 Joseph de Mora, *President & CEO, Kingston General Hospital*
 Vladimir Dzavik, MD, *Director, Interventional Cardiology, University Health Network*
 Michael Freeman, MD, *Director, Heart Program, St. Michael's*

Hospital, Toronto

Wendy Fucile, Vice-President, *Chief Nursing Officer,*

Peterborough Regional Health Centre

Anup Gupta, MD, *Director, Cardiac Catheterization, Toronto East General Hospital*

Lori Marshall, *Senior Vice-President, Patient Services,*

Thunder Bay Regional HSC

Thierry Mesana, MD, *Chief of Cardiovascular Surgery,*

University of Ottawa Heart Institute

Mackenzie Quantz, MD, *Cardiac Surgeon, London Health Sciences Centre*

Sven Pallie, MD, *Cardiologist, Niagara Health Systems*

Randal Watson, MD, *Cardiologist, Trillium Health Centre*

IV. CCN Member Hospital CEO/CEO Delegate Teleconference

Daniel Carriere, *Southlake Regional Health Centre,*

Newmarket

Janet Beed, *University Health Network, Toronto* representing

Tom Closson

Bernadette MacDonald, *London Health Sciences Centre,*

London representing Tony Dagnone

Paul Darby, *Peterborough Regional Health Centre,*

Peterborough

Peter O'Brien, *Kingston General Hospital, Kingston*

representing Joseph deMora

Milton O'Brodovich, *Toronto East General Hospital, Toronto*

representing Robert Devitt

Vicki Kaminski, *Hôpital Régional de Sudbury Regional*

Hospital, Sudbury

Robert Howard, *St. Michael's Hospital, Toronto* representing

Jeffrey Lozon

Debra Hunt, *Rouge Valley Health System, Scarborough*

representing Hume Martin

Brenda Flaherty, *Hamilton Health Sciences Corporation,*

Hamilton representing Murray Martin

Neil McEvoy, *Hôtel Dieu-Grace Hospital, Windsor*

(Jerome Quenneville, *Sault Area Hospital, Sault Ste. Marie*)

– Unavoidably absent

Ron Saddington, *Thunder Bay Regional Health Sciences*

Centre, Thunder Bay

Sue Coke, *Sunnybrook & Women's College Health Sciences*

Centre, Toronto representing Leo Steven

Marion Bramwell, *St. Mary's General Hospital, Kitchener*

representing Kevin Smith

Kenneth White, *Trillium Health Centre, Mississauga*

Robert Roberts, MD, *University of Ottawa Heart Institute*

John Oliver, *Halton Healthcare Services Corporation, Oakville*

Lyall Higginson, MD, *University of Ottawa Heart Institute*

V. Ministry of Health and Long-Term Care Teleconference

Peter Biasucci, *Manager, Priority Programs,*

Ministry of Health and Long-Term Care

Peter Finkle, *AI/Director, Hospitals Branch,*

Ministry of Health and Long-Term Care

Rachel Solomon, *Project Manager, Wait Times Strategy,*

Ministry of Health and Long-Term Care

Rosalind Tarrant, *Program Consultant, Priority Programs,*

Ministry of Health and Long-Term Care

VI. Referring Physicians/ Providers

Dr. Janet McLean, *Cardiologist, Ottawa*

Dr. Anthony Glanz, *Cardiologist, Windsor*

Caroline Ehrensberger, *Clinical Practice Leader, (alternate*

for Dr. Richard Schabas), York Central Hospital

Rosemary Johnson, *Clinical Practice Leader, (alternate for Dr.*

Richard Schabas), York Central Hospital

Dr. Milan Gupta, *Chief of Cardiology, William Osler*

Dr. Manish Maingi, *Medical Director, Cardiology Program,*

Credit Valley Hospital

Malcolm Wilson, *Internist, Algonquin Health Services*

APPENDIX 3 Data Tables/Figures*

Figure 1 – Elective Cath – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

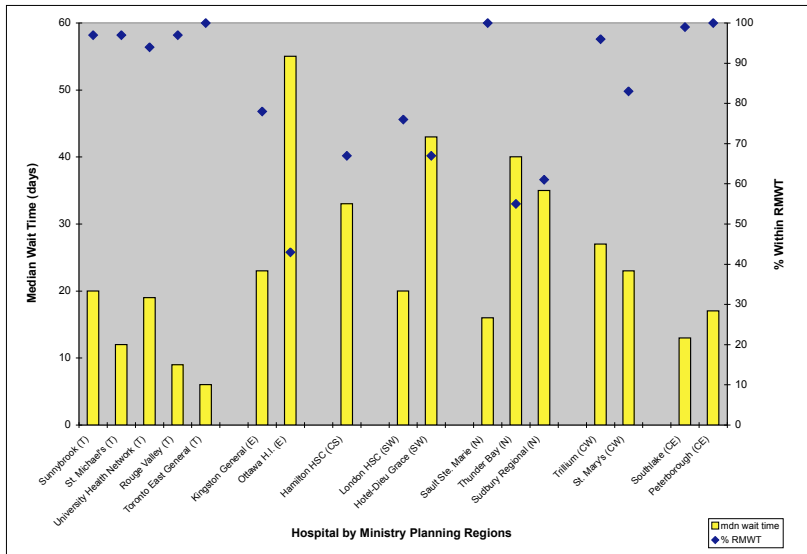
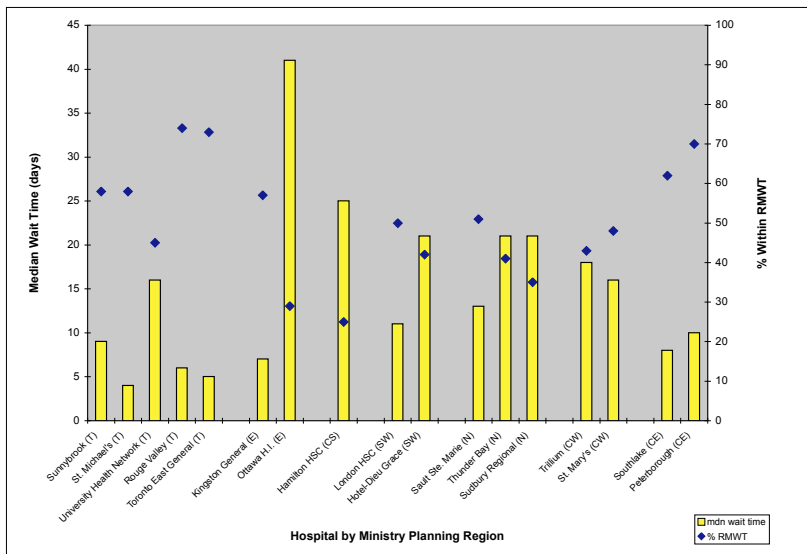


Figure 2 – Semi-urgent Cath – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05



*Source: CCN Cardiaccess Database, 2004/05

Figure 3 – Urgent Cath – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

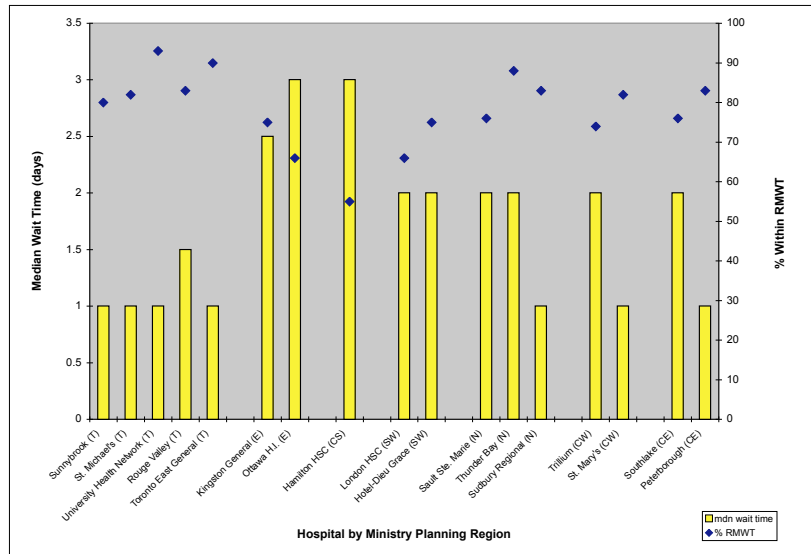


Figure 4 – Elective CABG – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

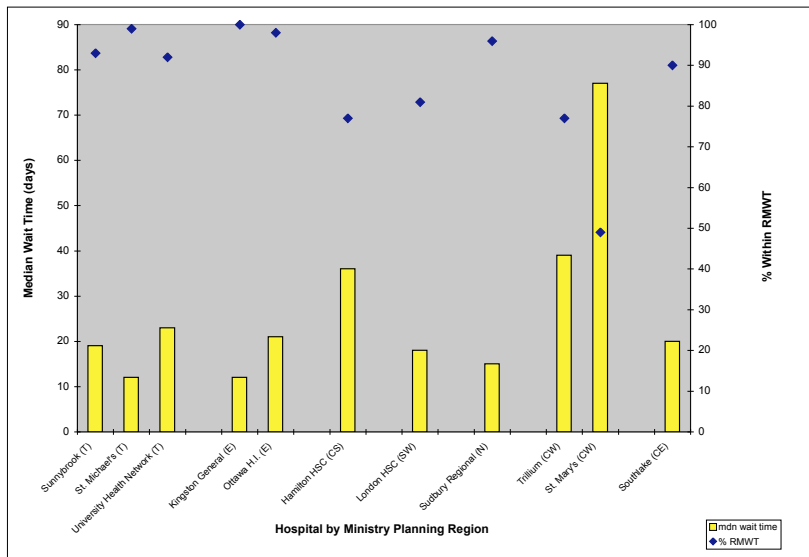


Figure 5 – Semi-urgent CABG – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

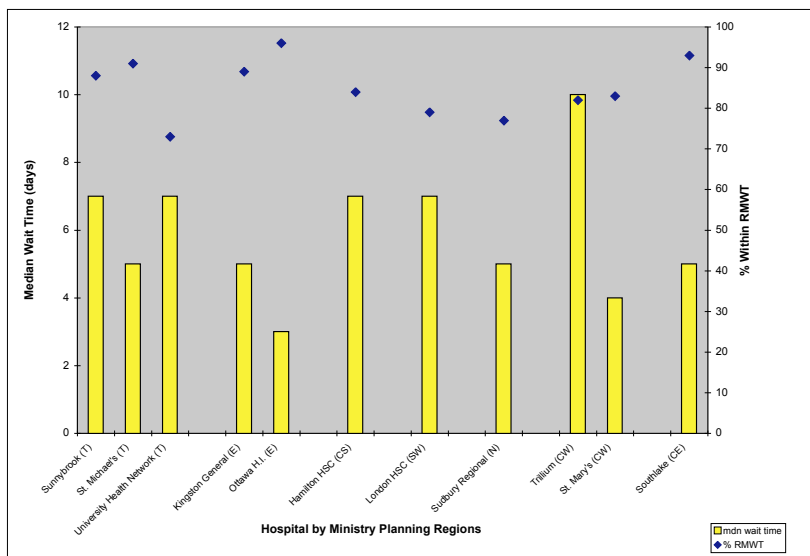


Figure 6 – Urgent CABG – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

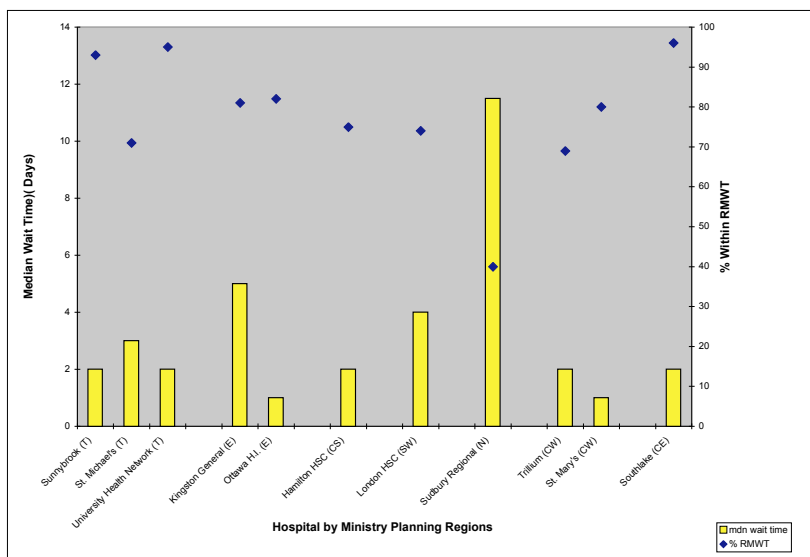


Figure 7 – Adhoc PCI (elective cath URS) – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

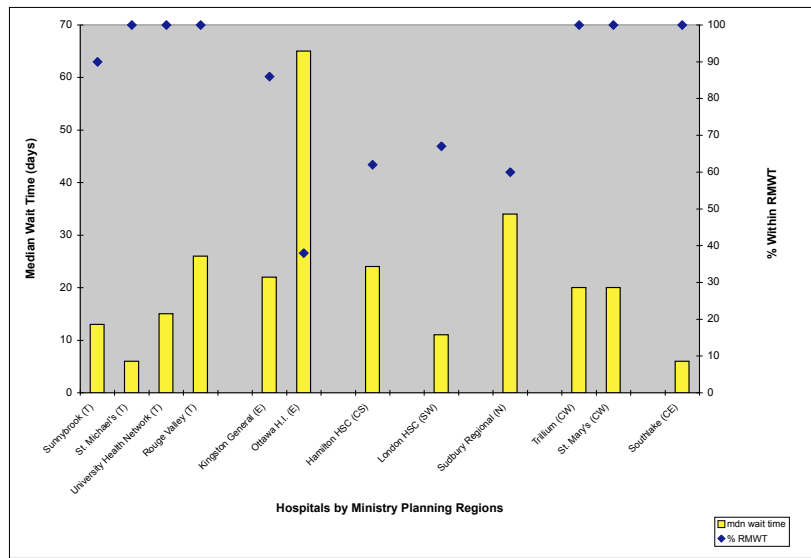


Figure 8 – Adhoc PCI (semi-urgent cath URS) – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05

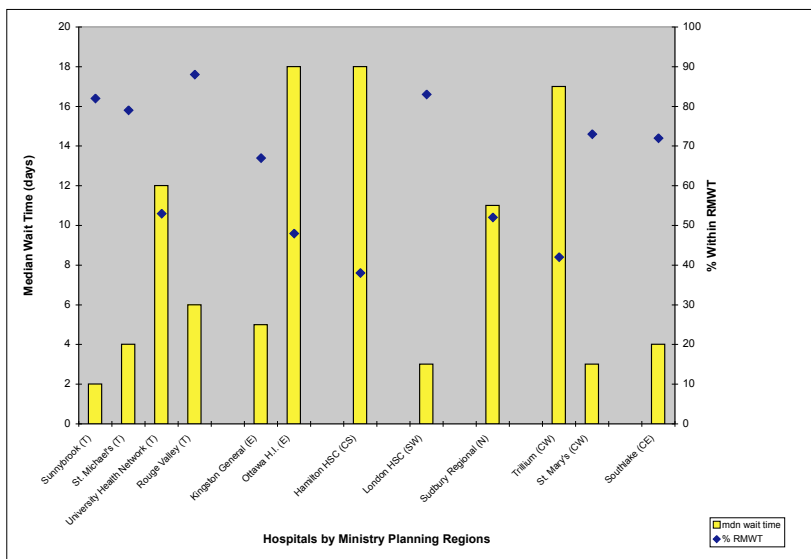
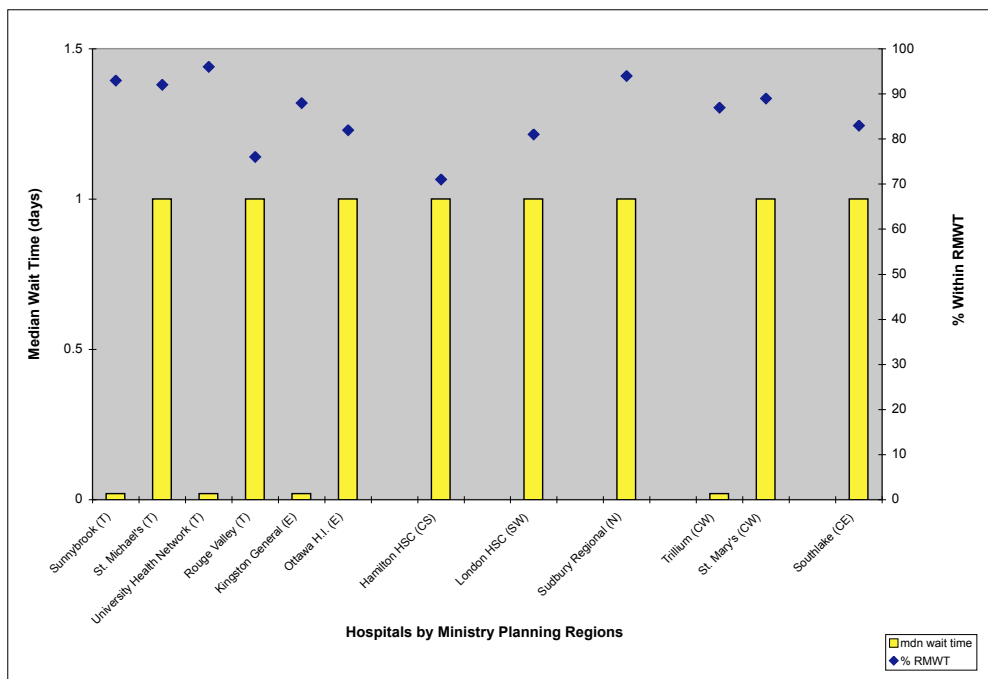


Figure 9 – Adhoc PCI (semi-urgent cath URS) – Median Wait Times and % Patients Completed within RMWT by Hospital and Planning Region, Q3 2004/05



Appendix 4 Spectrum of Selected CCN Activities

Categories	Strategies	Short term Tactics	Long Term Tactics
Manage Demand	Primary Prevention		Partner with HSFO, etc to address risk factors
	Secondary Prevention	Facilitate access to and utilization of cardiac rehab	Monitor, educate around evidence based therapies, etc
	Avoiding repeat procedures	Support utilization of drug eluting stents	
	Evaluate appropriateness		Study procedural outcomes relative to selection criteria as an indicator of appropriateness and “relative value” of the procedure
Manage Supply	Plan for overall capacity in collaboration with MoHLTC	Prepare Target Setting report for MOHLTC	Conduct ongoing reviews of utilization, capacity, and new evidence in order to regularly update targets (recommended in Target Setting Report)
			Model the impact of various strategies for allocation of incremental volumes
		Implement volumes as recommended in Target Setting for 2005/06	Implement volumes (with possible adjustments as above) for 2006/07 & beyond
	Adjust capacity regionally	Targeted distribution of incremental cases for 2005/06	Advise / implement infrastructure expansion as required to meet regional needs
	Ensure access to effective technologies that enhance outcome or enhance efficient use of existing resources	Drug eluting stents	Contribute to rational evaluation and introduction of alternate imaging technology, eg multi slice CT
	Ensure efficient use of existing capacity	Operational benchmarks (CCN manager's group)	

Categories	Strategies	Short term Tactics	Long Term Tactics
Manage the interaction between demand and supply (ie access)	Enhance the matching of patients to available capacity	Inform patients of options wrt travel vs. shorter wait times:	Public education campaign around timeliness of service and options wrt travel, etc. ;
		Referring physicians to check box on referral form;	
		RCCCs to send letters (to outpatients) on receipt of referral	
			Promote consideration of timeliness as a fundamental aspect of the referral process
			Incorporation of appropriately weighted measures of distance and clinical urgency into a summary score – to allow more informed decisions around time-distance tradeoffs
	Provide more timely and readily accessible information on service availability	RCCCs to communicate via e-mail weekly on wait times and number of patients waiting.	Develop and implement web-based, real-time updated version of Cardiaccess
		Improve timeliness of aggregate wait time data on CCN web site	
Monitor the system	Measure wait times across the full continuum of care	Pilot project to measure wait time from primary care referral to specialist assessment	Broader measurement of “upstream” wait times (in collaboration with Ontario CFP, Dr. J. McLean, etc)
			Further the “science of wait lists” using the extensive CCN dataset to validate hypotheses as to the most relevant measures of wait time burden

