The Regional Cardiac Care Program at Southlake

The Future Vision of Regional Cardiac Services

Serving the Populations of York, Simcoe, Muskoka, and Dufferin Regions
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EXECUTIVE SUMMARY

The intent of this report is to provide the York Simcoe Muskoka Dufferin Cardiac System Planning Team with a vision document outlining the future delivery of cardiac care to the rapidly increasing regional population. The proposed model will focus across the entire continuum of cardiac care – from developing heart healthy communities and fundamentally changing the cardiac health of the region, through to ensuring tertiary services, as needed – and will support future population growth. Patient populations considered in the development of this document reside predominantly within three Local Health Integration Networks (LHINs): the Central LHIN (LHIN 8), North Simcoe Muskoka LHIN (LHIN 12), and Central West LHIN (LHIN 5).

History of the Regional Cardiac Care Program at Southlake

The Regional Cardiac Care Program at Southlake Regional Health Centre (Southlake) serving York, Simcoe, Muskoka, and Dufferin regions was founded in a true partnership model. Following the start of cardiac catheterization in 1998, Southlake in partnership with the region, launched a comprehensive regional advanced cardiac care program in 2003, including the Cardiac Surgery Program, the Electrophysiological Program (now called The Heart Rhythm Program), and the Interventional Cardiology (PCI) Program. In 2007/08, the Regional Cardiac Care Program at Southlake performed 9,687 advanced cardiac procedures – the fourth largest comprehensive regional cardiac care program in Ontario!

In its first five years, the Regional Cardiac Care Program at Southlake has demonstrated that it can provide first-class, comprehensive cardiac programs, which achieve quality results in a fiscally responsible manner. Quite simply, patients can, and will continue to receive excellence in advanced cardiac care services at Southlake.

Volume Projections: Preface to the Projections

Tackling a methodology for the projection of future caseload and subsequently ascribing resource requirements based on the projections is always fraught with issues of data quality and sufficiency, as well as the state of the technology and practice at the time. These factors – population growth, demographic change, disease prevalence, and the state of the art with respect to technology, diagnostic, therapeutic and surgical services – all must be taken into account in any projection method. Projections based on the best information available are always limited by the availability of full and absolute knowledge of the interplay of these factors.

The catchment area of the Regional Cardiac Care Program at Southlake for the York, Simcoe, Muskoka, and Dufferin regions covers populations residing in three different Local Health Integration Networks (LHINs). In deliberating which population projections to use in preparation of the forecasts, a comparison was made between the LHIN population projections and those related to the specific regional municipalities and counties. Both are based on Statistics Canada census data adjusted by the Ontario Ministry of Finance. It was determined that the differences were not significant in assessing future requirements, and that the use of LHIN projections would facilitate the replication and testing of the method.

As noted, the current disease prevalence and the current incidence of services to the population are assumed in the model. It is well known that circumstances will change; healthier lifestyles will change disease prevalence; upstream management of disease will affect downstream treatment; and...
more minimally invasive services will supplant the more invasive techniques of today. One cannot predict every eventuality with a significant degree of certainty. The methodologies used here to predict the future are largely based on prevailing knowledge and practice. The use of the projections by the Cardiac Care Network of Ontario (CCN) is also based on published forecast work which is currently being reassessed by CCN at this time. There is little doubt that with more knowledge of all of these factors, the accuracy of the forecasts herein would be improved. In the absence of this knowledge and research, the position taken in projecting future needs is to base these projections on the best available evidence. The projections are in support of the model of service delivery that is in line with the vision of comprehensive high quality services accessible to all of the population served by Southlake and its 10 partnering hospitals.

Changes in Central LHIN’s population profile over the next 10 years will have a significant impact on the prevalence of heart disease and stroke in the region. The population of men and women (aged 50 to 69) is expected to increase anywhere between 27% and 67%, depending upon the age group and gender. Heart disease and stroke still remain the leading cause of death and disability in Canada. Canadian baby boomers are now moving into their middle years, and are expected to cause a large increase in death and disability due to heart disease and stroke. Thus, demographic changes will have a tremendous impact on the demand for cardiac services in the region.

Based on population projections, the demand for cardiac services at Southlake will increase by approximately 36% in the next 9 years, amounting to a total of 102,289 inpatient and outpatient cases. Further, an additional cardiac surgeon and seven cardiologists will be required to meet the inpatient care demands of the regional population by 2016.

In late 2002, the Cardiac Care Network established a Target Setting Consensus Panel to update targeted procedure rates. An analysis shows that Southlake’s volume is significantly below the recommended CCN target levels for catheterizations, CABG, and PCI using these published 2004 recommendations. An additional 2,618 cardiac catheterizations, 785 CABGs, and 929 PCIs would have to be completed by Southlake to meet these CCN consensus panel targets. This demonstrates a significant level of under-servicing of cardiac services by Southlake, and the Central LHIN.

A New Regional Model of Care

When building a new regional model for the future, it is paramount that the patient care excellence already developed, and the established positive, collaborative partnerships be the foundation upon which to build a regional cardiac care ‘Centre of Excellence’ for the future patient needs of the region. Integrated models of care support seamless care, foster inter-professional respect, promote breakdown of traditional silos of care, build and nurture new relationships, and support the provision of care throughout the community.

A new regional model, an Integrated Distributed Model of Care proposed embraces Southlake’s regional leadership and advanced services provider role, and also encompasses the development of satellite care locations to deliver components of cardiac care for the growing and diverse communities of York, Simcoe, Muskoka, and Dufferin. An Integrated Distributed Model of Care would support a comprehensive, consolidated approach to regional cardiac care.

To truly impact the incidence of cardiac disease prevalence in the York, Simcoe, Muskoka, and Dufferin regions, the foundation of the Integrated Distributed Model must focus on heart healthy activities and changing lifestyles, which will in turn, reduce the incidence of the intermediate risk factors, such as increased cholesterol or increased blood pressure, often the precursors to heart disease.
Building upon the foundation of health, community-based cardiac care would be developed across the region. For example, building upon the success of the current York Simcoe Muskoka Cardiac Rehabilitation Network, future patient care volumes suggest further distributing cardiac rehabilitation services ‘closer to home’ across the region. It is not out of the realm of possibility that cardiac rehabilitation, with appropriate clinical support, could take place within designated community and fitness centres across the region.

Another example of developing community-based cardiac care across the region is the initiation of community-based cardiology clinics. Interdisciplinary care teams within local communities could be developed with cardiac expertise, and provide initial cardiac diagnostic tests and, according to a prescribed pathway, consolidate a volume of patients who would require a specialist’s assessment. A Regional Cardiac Care Team could then travel to the local community as needed, and provide specialist care close to home.

Responding to patient population projections, and building from the network of community-based cardiac care across the region, satellite cardiac care centres are proposed. Where population demographics show a consolidated volume of patient need, which is sufficiently large enough to support a team of specialized physicians and other care providers required to provide excellence in cardiac care, satellite centres, which are ‘closer to home’, should be supported and promoted across the region.

Population demographics show an immediate need for additional access to cardiac electrophysiology, cardiac catheterization, and PCI procedures within the York, Simcoe, Muskoka, and Dufferin regions. Catheterization labs at Southlake will expand from three to five cath labs to address short-term population health needs. Furthermore, current population projections suggest that an additional cardiac catheterization lab (beyond the additional two catheterization labs proposed to be built at Southlake to support immediate population needs) may be required to support the York, Simcoe, Muskoka, and Dufferin regions in the future. It is proposed that an additional cath lab be considered to be built in the future at the Royal Victoria Hospital in Barrie.

It is imperative that the York Simcoe Muskoka Dufferin Cardiac System Planning Team ensure that BOTH the comprehensive advanced cardiac services at Southlake AND the new satellite centres succeed in parallel. It is proposed that more than 60% of the incremental volume associated with elective diagnostic cardiac catheterization lab expansion at Southlake be allocated to additional cardiologists associated with the regional partnering hospitals. This will enable future recruitment of cardiologists to the region.

Cardiac surgery, ablations, electrophysiologic studies, and implantable cardioverter defibrillator (ICD) programs are specialized programs and should be done at a tertiary advanced cardiac care centre. A third cardiac operating room (OR), focusing on minimally invasive technology is proposed at Southlake. Looking forward, new surgical approaches may necessitate the need to consider a new concept of a hybrid operating room, which supports both interventional and conventional surgical techniques in one physical setting.

The Heart Rhythm Program at Southlake is internationally recognized as a Centre of Excellence. Building upon the successes achieved at Southlake, the rapidly changing technology, the current long wait time for complex ablation, and the population projections for increased need for heart rhythm diagnostics and intervention, there is an immediate need for a second EPS lab at Southlake.

Finally, to support patient care volumes, a dedicated Cardiac CT, and potentially a dedicated Cardiac MRI will be required in the near future at Southlake.
The proposed Integrated Distributed Model of Care truly supports the entire continuum of care from local health provision and access to specialist expertise. Standardized evidence-based patient care pathways across the continuum should guide all cardiac care, irrespective of where that care is being delivered to the patient. Competition is replaced with cooperation, and the model is truly grounded in partnerships and the principles of patient-centred care.

The proposed Integrated Distributed Model has been designed to support a singular, comprehensive cardiac care model, grounded in the cardiac care expertise at Southlake and supported by true partnerships for care along the continuum.

**Human Resource Strategy**

The greatest asset for any healthcare organization is its people. It is essential that the York Simcoe Muskoka Dufferin Cardiac System Planning Team develop a human resource strategy that builds on the current successes of recruiting ‘only the best’ to the region. Fundamental to the human resource strategy is the development of a comprehensive professional practice model of care, which supports all professionals to work at their maximum scope of practice. Purposeful, targeted and integrated Physician Human Resource planning across the York, Simcoe, Muskoka, and Dufferin regions is essential to ensuring a Regional Cardiac Care Program of Excellence. When volume projections and critical mass support additional regional cardiologists, it is proposed that the recruitment of cardiologists within the community initially focus on general cardiology, and that subspecialized cardiologists be recruited when the critical volume of patients is established.

The singular most critical component in developing and sustaining a regional cardiac care Centre of Excellence and an Integrated Distributed Model is PEOPLE. Therefore, the Regional Cardiac Care Program must be committed to a comprehensive regional human resource strategy, which supports both specialized cardiac care at Southlake, and cardiac expertise across the continuum of care throughout the region.

**Technology Enablers**

Ensuring technology’s role in patient care across the region is essential to the future vision of the proposed York Simcoe Muskoka Dufferin Regional Cardiac Care and the Integrated Distributed Model. Technology must play a major role in creating truly connected healthcare communities. The proposed Integrated Distributed Model of Cardiac Care will utilize standardized patient care pathways across the region. A single, standardized patient care chart allows easy transitions of care across the region to and from the regional acute cardiac care centre and community programs.

In addition, an informative technology system must link and support the partnering hospitals with the advanced tertiary program at Southlake. Wait time management and access to care, as well as monitoring process and outcome indicators that evaluate the regional cardiac system, are essential.

**Quality and Outcomes**

Southlake’s Regional Cardiac Care Team has developed a balanced scorecard framework for the monitoring and reporting of quality indicators. It is envisioned that the existing scorecard will evolve into a tool to assess performance across organizational boundaries with the advancement of an Integrated Distributed Model of Care. A scorecard on cardiac performance across the region will be established.
A growing body of work has demonstrated a relationship between volume and outcome for a variety of complex surgical procedures and medical conditions. A statistically significant relationship between higher institutional case volume and better clinical outcomes has been established. Thus, to support excellent patient care outcomes, a consolidated volume of patient needs which is sufficiently large must be established to support cardiac care development across the region.

**Access and Flow**

Fundamental to a regional approach to cardiac care, and an Integrated Distributed Model is the development of true, patient-focused partnerships and standardized patient care pathways. Evidence-based standardized patient care pathways should guide all cardiac care, irrespective of where that care is being delivered to the patient across the regional continuum of care. Further, regional standardized care pathways and charting tools, supported by a regional cardiac care enabling technology platform, will support a uniform acuity measurement scale and equal access to care across the region.

**Financing the Vision**

It is proposed that rates paid for cardiac services should be based on a sound methodology that is reasonably replicable by participating hospitals, and is based on actual (vs. planned) patient care volumes provided. Increases in incremental volumes of cardiac services should be funded on a procedure-specific basis.

It is further proposed that an adjustment factor of 4% be added to the case-costing allocation to support capital requirement needs. Thus, capital costs would, in part, be built into the case-funding methodology. These funds should be allowed to accumulate in a separate account, allocated specifically for cardiac care capital requirements, and spent as required for capital needs.

It is proposed that an operational funding model, based on a comprehensive case-costing methodology, would support actual patient care volumes as well as patient acuity. Such a model supports actual work completed rather than projected patient acuity or volumes. Utilizing the proposed case-costing methodology, the funds would be allocated where the care is provided and, therefore, as new centres are opened, the funding methodology would already be established.

To support a new regional model of care, it is proposed that new Foundation partnerships be developed to support fundraising activities for regional cardiac care. Foundation partnerships would have the mandate to raise funds required for capital cardiac care expenses and would allow for capital equipment funds to be allocated as needed to support the model of care – across the region. The Foundation partnership is a new and innovative concept, which would fully support the Integrated Distributed Model of Care. Such an approach would distinguish the region and support the fundamental concepts of developing a ‘Centre of Excellence’.

**Partnerships in Care**

The York Simcoe Muskoka Dufferin Cardiac System Planning Team, in partnership with the Regional Cardiac Care Program at Southlake, should re-confirm and establish a number of partnerships to support the continued pursuit of excellence in cardiac care within Ontario, Canada, and internationally. Partnerships should include education and research, industry, the community, other cardiac care providers, the Cardiac Care Network (CCN) and the Ministry of Health and Long-Term Care (MOHLTC) within Ontario, and most importantly patients.
Of particular note, an affiliation with a medical teaching program would further distinguish Southlake’s Advanced Cardiac Care Program. Southlake currently offers one of eight comprehensive advanced cardiac care programs and is the second highest provider in the province of Ontario in electrophysiology and ablation procedures. In fact, all of the other Ontario centres, which offer a comprehensive advanced cardiac care program in Ontario, are affiliated teaching centres.

Clearly, the Regional Cardiac Team’s volumes, coupled with a new Integrated Distributed Model of Care – which will track all cardiac patients across the continuum utilizing standardized pathways – and Southlake’s international recognition in electrophysiology studies, together set the stage for Southlake’s regional advanced cardiac services to be affiliated with a teaching program.

Looking Beyond the Current Horizon

Looking beyond the current planning horizon, future possibilities supporting cardiac patients may include a 256 slice CT with cardiac modules, hybrid diagnostic interventional operating rooms, advanced minimally invasive surgical opportunities, and new pharmaceuticals. Yet other opportunities in the future may be in the realm of genetics and gene therapies and thus, there may be a future need for a cardiac genetics lab to serve regional cardiac centres.

Although none of us can predict the future, what is important is that the Regional Cardiac Care Program at Southlake continues to actively seek new opportunities and partnerships ‘beyond the current horizon’ and corresponding planning is initiated to support the continued advancement of cardiac services within the region.

In summary, the Regional Cardiac Care Program at Southlake has the opportunity to become THE LEADER in regional cardiac care delivery, set the benchmarks in cardiac practice partnerships, and implement a regional model of care that truly supports the full continuum of care. The York Simcoe Muskoka Dufferin Cardiac System Planning Team WILL build a comprehensive, integrated regional model, which WILL BECOME the model of choice for the delivery of cardiac services in Ontario, Canada, and internationally!
RECOMMENDATIONS

1. It is recommended that a forum be established at the organizational and LHIN level to support ongoing dialogue and discussions regarding the impact of population growth and current and future needs for cardiac services.

   - Demand for cardiac services at Southlake will increase by 36% in the next 9 years.
   - An additional 2,618 cardiac catheterizations, 785 CABGs, and 929 PCIs would have to be completed by Southlake to meet the CCN consensus panel targets established in 2004.

2. It is recommended that the excellence developed in patient care, and the positive, collaborative partnerships and relationships be the foundation upon which to build a regional cardiac care ‘Centre of Excellence’ for the future patient needs of the region.

3. It is recommended that the York Simcoe Muskoka Dufferin Cardiac System Planning Team and the Regional Cardiac Care Program at Southlake commit to the development of a ‘Centre of Excellence’ which embraces research-based essential characteristics and features.

4. It is recommended that a new regional model of care, an Integrated Distributed Model, which supports both a centralized, consolidated service delivery model, and the concept of providing services ‘closer to home’, when regional community volumes support such programs, be endorsed.

5. It is recommended that the model of care for cardiac services in the region embrace the full continuum of care, and that the foundation of the model focus on disease prevention and heart healthy activities, lifestyle changes, and reduction of the incidence of risk factors, such as increased cholesterol, or increased blood pressure.

6. It is recommended that the current success of the York, Simcoe, Muskoka, and Dufferin Cardiac Rehabilitation services be expanded, thus allowing for future cardiac rehabilitation patient care to be distributed across the region ‘closer to home’.

7. It is recommended that cardiac rehabilitation protocols and patient pathways be developed in a regional fashion and standardized across the region.

8. It is recommended that local healthcare communities develop interdisciplinary care teams with cardiac expertise. It is recommended that such teams follow prescribed regional patient pathways, and provide initial cardiac diagnostic testing to patients.

9. It is recommended that the local community care teams consolidate patient volumes requiring access to a Regional Cardiac Care Specialist Team, who would travel to the local community and provide specialist care close to home.

10. It is recommended that the Regional Cardiac Care Program investigate the opportunity to secure mobile advanced cardiac diagnostic equipment, thus allowing for additional testing by the Regional Cardiac Care Specialist Team.

11. It is recommended that procedures performed at Southlake be based on patient acuity, and therefore all patients within the region have equitable access to advanced cardiac care.
12. It is recommended that complex pacemakers, such as ICD and BiVentricular pacemakers be inserted at a regional tertiary centre of expertise. Insertion of single or dual chamber pacemakers and pacemaker clinics could be developed at satellite centres in the region, depending upon patient care volumes.

13. It is recommended that, when cardiac CT and cardiac MRI volumes support, a dedicated cardiac CT and MRI be established at Southlake.

14. It is recommended that there be appropriate access and utilization of cardiac CT angiography and cardiac MRI in the region.

15. It is recommended that there be an equal collaborative expertise and working relationship between Cardiology and Radiology in the provision of non-invasive advanced cardiac imaging services in the region.

16. It is recommended that where population demographics show a consolidated volume of patient need – which is sufficiently large enough to support a team of specialized physicians and other care providers required to provide excellence in cardiac care – satellite centres, which are ‘closer to home’, should be supported and promoted across the region.

17. It is recommended that York Simcoe Muskoka Dufferin Cardiac System Planning Team in partnership with the LHIN, track actual population growth versus the population demographic projections outlined in Section Two of this proposal. Tracking population growth will be essential to make population volume-based decisions in the development of any satellite cardiac care centres.

18. It is recommended that additional cardiac catheterization labs for diagnostic and PCI activity (beyond the additional catheterization labs planned at Southlake) be considered in the future and be located at the Royal Victoria Hospital in Barrie to support the population growth in Simcoe and Muskoka regions.

19. It is recommended that any new satellite centres within York, Simcoe, Muskoka, and Dufferin regions complement the current tertiary centre, and that the Regional Cardiac Centre’s expertise at Southlake not be compromised in the development of additional satellite centres.

20. It is recommended that Southlake provide clinical and administrative leadership to support additional patient care services and the regional integrated distributed model of care in the York, Simcoe, Muskoka, and Dufferin regions.

21. It is recommended that for growth in incremental elective diagnostic cath volumes at Southlake, at least 60% of the volume associated with regional cardiac catheterization labs be allocated to additional cardiologists associated with the regional partnering hospitals.

22. It is recommended that the York Simcoe Muskoka Dufferin Cardiac System Planning Team participate with the planning processes to support and guide the development of cardiac services at the new Vaughan hospital.

23. It is recommended that specialized programs in cardiac surgery, ablations, electrophysiologic studies, and implantable cardioverter defibrillators (ICDs) be done at an advanced regional cardiac centre.
24. It is recommended that a third cardiac operating room (possibly hybrid), with a focus on minimally invasive surgical technologies be supported for development at Southlake.

25. It is recommended that the highest established need for a second electrophysiology lab at Southlake be supported.

26. It is recommended that standardized evidence-based patient care pathways guide all cardiac care, irrespective of where that care is being delivered to the patient across the regional continuum of care.

27. It is recommended that charting tools be based on the patient pathway, be utilized along the continuum of care, be inter-disciplinary in approach, and where possible, be pre-populated checklists.

28. It is recommended that the York Simcoe Muskoka Dufferin Cardiac System Planning Team develop a consolidated, regional strategic plan for human resources to support, implement, develop, and sustain cardiac services to the region.

29. It is recommended that Physician Human Resource planning be purposeful, targeted, and integrated across the York, Simcoe, Muskoka, and Dufferin regions, and volume projections and critical mass guide the regional physician recruitment needs to support the highest quality of care outcomes for patients.

30. It is recommended that a professional practice model allowing professionals to work at their maximum scope of practice, and facilitating the development of new and innovative practice models and roles be integral to the regional human resource strategy.

31. It is recommended that the Regional Cardiac Care Program aims to be a provincial and national leader in the development of new practice models.

32. It is recommended that the York Simcoe Muskoka Dufferin Cardiac System Planning Team be on the ‘leading edge’ of cardiac advancements and significantly contribute to new patient care techniques by enabling a ‘living lab’ for the adoption of new advancements.

33. It is recommended that technology which enables patient care across the region and ‘virtual consultation’ be adopted to support the future vision of the proposed Regional Integrated Distributed Model of Cardiac Care in York, Simcoe, Muskoka, and Dufferin regions.

34. It is recommended that information systems be implemented utilizing the fundamental principle that information should only be entered at one point along the continuum of care, and that the patient’s record will be a single, interdisciplinary record across the continuum of care.

35. It is recommended that the patient’s chart truly be a regional, comprehensive patient record, which tracks the entire patient journey, irrespective of where across the region cardiac care is delivered.

36. It is recommended that a Cardiac Data Management System (CDMS) serve as the IM/IT foundation for the Regional Cardiac Care Program Information Management/Technology Strategy.

37. It is recommended that clinical decision support be an integral component of the regional cardiac technology platform, thus enhancing patient safety and quality of care.
38. It is recommended that a balanced scorecard framework for monitoring and reporting quality indicators be regionally developed, and a scorecard on cardiac performance across the region be established.

39. It is recommended that a defined range of cardiac services be funded through a rates-based methodology, and cardiac services be funded on a procedure-specific basis for patient care provided.

40. It is recommended that an adjustment factor of 4% be added to the case-costing allocation to support capital requirement needs and these funds be allowed to accumulate in a separate account, allocated specifically for cardiac care capital requirements.

41. It is recommended that Foundation partnerships in the region support fundraising activities for regional cardiac care, and capital equipment funds be allocated as needed to support the model of care across the region.

42. It is recommended that Southlake's Regional Advanced Cardiac Care Program seek affiliation with a medical teaching program.

43. It is recommended that the Regional Cardiac Care Team actively seek and partner with existing industry partnerships, provide formal leadership to cardiac care professional forums and affiliations, and explore new opportunities to advance cardiac care for the community, Ontario, Canada, and internationally.

44. It is recommended that the current and future processes and patient flow be mapped, thus providing the basis of a project management plan, including key milestone achievements, resource requirements, interdependencies, and risk-mitigation strategies.
PREAMBLE

The Future Vision of Regional Cardiac Services: Serving the Populations of York, Simcoe, Muskoka, and Dufferin Regions

The intent of this report is to provide the York, Simcoe, Muskoka, and Dufferin regions with a vision document outlining the future delivery of cardiac care to the rapidly increasing regional population. In order to continue to provide the region with a comprehensive cardiac program, the entire continuum of care must be considered. This proposal builds on the LHIN plans to focus on the health of the region and to integrate care across the continuum.

The proposed model will focus across the entire continuum of cardiac care – from developing heart healthy communities and fundamentally changing the cardiac health of the region, through to ensuring tertiary services, as needed – and will support future population growth.

It is important to recognize that this vision document supports the continued development of excellence in cardiac care for York, Simcoe, Muskoka, and Dufferin regions. Although LHIN boundaries have been designated, this report supports the continued development of regional advanced cardiac services for the region of York, Simcoe, Muskoka, and Dufferin. Therefore, the patient populations considered reside predominantly in the Central LHIN (LHIN 8), the North Simcoe Muskoka LHIN (LHIN 12), and Central West LHIN (LHIN 5).

To move forward, it is important to review the history of successes of the Regional Cardiac Care Program at Southlake which has been supported by the partnering hospitals in York, Simcoe, Muskoka, and Dufferin regions.
Following the start of cardiac catheterization in 1998, Southlake in partnership with the region(s) launched a comprehensive regional cardiac care program in 2003, including the Cardiac Surgery Program, the Electrophysiological Program (now called the Heart Rhythm Program), and the Interventional Cardiology (PCI) Program. Today, the populations of York, Simcoe, Muskoka, and Dufferin have access to a comprehensive Regional Cardiac Care Program, which is recognized as a premier provider of cardiac care services in Ontario.

In 2007/08 alone, the Regional Cardiac Care Program at Southlake performed 5,198 cardiac catheterization procedures, 849 cardiac surgery procedures, 1,757 PCI procedures, 620 ablation procedures, 505 electrophysiology studies, and implanted 528 pacemakers and 230 cardioverter defibrillators (ICD).

Figure 1: Comparison of Average Monthly Cardiac Cases Among Ontario Centres

Cardiac Care Network of Ontario Surgery, PCI, Ablation, EPS and ICD (Priority 1 & 2)
Average Monthly Cases (September 2007 - November 2007)
While the graph in Figure 1 (see page 12) indicates the relative average monthly volumes of cardiac services at several major hospitals, the Regional Cardiac Care Program at Southlake performed 9,197 advanced cardiac procedures in 2007/08 – the fourth largest comprehensive Regional Cardiac Care Program in Ontario! This is consistent with the monthly cases noted by the Cardiac Care Network data in Figure 1. In fact, Southlake’s advanced cardiac regional program is larger than at major academic teaching centres, such as Kingston General, London Health Sciences Centre, St. Michael’s Hospital in Toronto, and Sunnybrook Hospital in Toronto (see Table 1).

Table 1

<table>
<thead>
<tr>
<th>Procedure</th>
<th>UHN Toronto</th>
<th>Ottawa Heart Institute</th>
<th>Hamilton HSC</th>
<th>Southlake</th>
<th>London HSC</th>
<th>Sunnybrook Toronto</th>
<th>St. Michael’s Toronto</th>
<th>Kingston General</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheterization</td>
<td>6192</td>
<td>5977</td>
<td>6056</td>
<td>5195</td>
<td>3538</td>
<td>2939</td>
<td>2514</td>
<td>2951</td>
</tr>
<tr>
<td>Surgery</td>
<td>1605</td>
<td>1129</td>
<td>1461</td>
<td>840</td>
<td>1390</td>
<td>717</td>
<td>1013</td>
<td>583</td>
</tr>
<tr>
<td>PCI</td>
<td>2025</td>
<td>2593</td>
<td>2148</td>
<td>1767</td>
<td>1220</td>
<td>1412</td>
<td>1266</td>
<td>1167</td>
</tr>
<tr>
<td>Ablation</td>
<td>400</td>
<td>277</td>
<td>285</td>
<td>497</td>
<td>486</td>
<td>253</td>
<td>273</td>
<td>207</td>
</tr>
<tr>
<td>EPS</td>
<td>641</td>
<td>315</td>
<td>385</td>
<td>620</td>
<td>532</td>
<td>345</td>
<td>342</td>
<td>227</td>
</tr>
<tr>
<td>ICD*</td>
<td>524</td>
<td>287</td>
<td>442</td>
<td>278</td>
<td>334</td>
<td>314</td>
<td>275</td>
<td>192</td>
</tr>
<tr>
<td>Total</td>
<td>11387</td>
<td>10578</td>
<td>10777</td>
<td>9197</td>
<td>7500</td>
<td>5980</td>
<td>5683</td>
<td>5327</td>
</tr>
</tbody>
</table>

Source: Ontario Wait List Statistics 2007-08 by Hospital

Note: Does not include standard pacemaker numbers
* Includes other: i.e., pocket revision, lead repositioning, etc.

York, Simcoe, Muskoka, and Dufferin regions must now plan for the future of cardiac services for the increasing population. Building on a history of unprecedented success, the Regional Cardiac Care Program and the advanced cardiac services provided at Southlake must develop new partnerships and re-define a regional care delivery model, which will support the future provision of excellence in cardiac care to the citizens wherever they may reside.
The following principles will guide the future vision of the Regional Cardiac Care Program for York, Simcoe, Muskoka, and Dufferin.

- Patient-centric model of care
- Excellence in patient satisfaction
- Comprehensive cardiac services available throughout the region served
- Meet or exceed Ontario Wait Times benchmark indicators
- Evidence-based practice guidelines established and followed across the region
- Excellence in patient clinical outcomes
- Standardized patient care pathways established and followed across the region
- Services provided ‘closer to home’ where volumes support satellite programs
- Consolidation of certain regional services at Southlake where volumes and resource needs support such decision
- Equal access to care across the region
- Interdisciplinary delivery care models which support all clinicians with opportunities to work at their maximum scope of practice
- Delivery care models will support ‘professional communities of practice’ allowing a number of specialists to work in partnership to provide regional cardiac care
- Provincial, National, and International leadership in Electrophysiologic Studies
- Provide leadership in Ontario Cardiac Care

The mission of the Southlake Regional Health Centre reads: “We are in the business of caring for people and making their lives better. As a leader in the provision of specialized healthcare services, we are relentless in our efforts to deliver quality services closer to home, and to seek out new and innovative ways to meet the healthcare needs of the people we serve.” Clearly, Southlake’s mission supports the development of advanced cardiac services in partnership with the comprehensive cardiac plan for York, Simcoe, Muskoka, and Dufferin – i.e., to build a comprehensive, integrated regional cardiac care model, which WILL BECOME the model of choice for the delivery of cardiac services in Ontario, Canada, and Internationally!
The Regional Cardiac Care Program and Advanced Cardiac Services at Southlake for York, Simcoe, Muskoka, and Dufferin Regions: 2002 - 2008

The Regional Cardiac Care Program at Southlake for the York, Simcoe, Muskoka, and Dufferin Regions, was from the beginning founded in a true partnership model, focused on supporting the vast populations of these regions. Initial planning for the provision of cardiac care in the region was consultative and inclusive of the entire region, and the York Simcoe Muskoka Dufferin Cardiac System Planning Team will continue to provide the leadership to the ongoing development of cardiac services.

The Regional Cardiac Care Program was launched at Southlake in 1998. From the beginning, the Regional Cardiac Care Program at Southlake has been committed to providing regional world-class clinical and support services, which provided a new level of ‘shockingly excellent service’ to patients and their families.

The Regional Cardiac Care Program at Southlake launched its Advanced Cardiac Surgery Program in December 2003. The Cardiac Surgery Program performs coronary artery bypass graft (CABG) procedures, cardiac valve repair and replacement procedures, and CABG procedures with a valve replacement surgery. In 2007/08, Southlake’s interdisciplinary surgical team completed 849 cardiac surgeries.

In 2007/08, Southlake performed 5,198 cardiac catheterizations – the fourth largest volume in the Province of Ontario. In addition, Southlake provided 1,757 patients with PCI, again the fourth largest volume in the Province of Ontario. The success with primary PCI interventions suggests that the current trend to provide primary PCI to all patients within a defined catchment will continue to exponentially increase. Therefore, the need for, and access to primary PCI will continue to change the dynamics of interventional cardiac care and services in the region. Currently, Southlake’s two cardiac catheterization labs are among the busiest and most efficiently utilized in Ontario.

To further support the mandate of the Regional Cardiac Care Program and the capacity to provide advanced cardiac services to the citizens of the region, Southlake has developed a comprehensive Heart Rhythm Program. One aspect of the Heart Rhythm Program is pacemaker implantations, as well as a specialized procedure, called an implantable cardioverter defibrillator (ICD). Southlake is currently one of eight centres in Ontario to implant such devices.

Southlake’s Regional Cardiac Care Program has also become a recognized leader in Electrophysiologic Studies (EPS), another aspect of the Heart Rhythm Program. The program offered at Southlake is recognized provincially, nationally, and internationally as a ‘Centre of Excellence’ in EPS care. Cardiac rhythm management continues to be a growing segment of cardiac care provided to Ontario patients and Southlake’s Heart Rhythm Program currently provides the second highest volume in Ontario of Electrophysiologic Studies. That is, more than 16% of all EPS studies in 2006/07 in Ontario were performed at Southlake, which is second only to the University Health Network in Toronto.
To further illustrate the exceptional care mandate of Southlake’s Regional Cardiac Care Program and the international reputation it has earned in the provision of cardiac rhythm management, in February 2007, Southlake became the first hospital worldwide to introduce a new, groundbreaking technology that vastly improves the treatment of cardiac patients and reduces exposure to X-rays. Targeted at people who suffer from debilitating and often life-threatening arrhythmias (irregular heartbeats), the system combines a cardiac ultrasound probe with specialized heart-mapping software.

Currently, Southlake is the only heart centre in Canada to use intra-cardiac ultrasound in the treatment of heart rhythm disorders. Southlake is committed to setting the benchmark in excellence in EPS care and to the continued development of a ‘Centre of Excellence in Heart Rhythm Disorder Studies’ for the Province of Ontario. In addition, the Heart Rhythm Program achieved international recognition with the implantation of the first wireless 3-D defibrillator where the device can be monitored remotely.

Over the past five years, advanced cardiac services offered at Southlake have contributed significantly to the proportion of inpatient caseload that is attributed to tertiary care. A comparison of the 2004/05 Hospital results showed that Southlake ranked as the 9th most tertiary hospital in Ontario, tied with the Sudbury Regional Hospital with 29.5% of cases deemed tertiary. As the percentage of tertiary cases has increased, so too has the proportion of the inpatient caseload that is attributed to tertiary care. In fact, all but one hospital with a greater tertiary caseload are teaching hospitals; the other is also a regional advanced cardiac centre.

It is important to recognize that although the Regional Cardiac Care Program at Southlake has contributed to a significantly higher tertiary caseload, the average cost per weighted case at Southlake is lower than at the eight hospitals with higher tertiary care caseloads. Southlake has proven that the highest quality of patient care can be provided within a fiscally responsible framework.

As the Regional Cardiac Care Program looks to the future, it is important to recognize that York, Simcoe, Muskoka, and Dufferin are among the fastest growing regions in Canada, with two and a half times the growth rate of Ontario overall, and just over double when the changing demographics (aging effect) is taken into account.

In its first five years, the Regional Cardiac Care Program at Southlake has demonstrated that it provides first-class, comprehensive cardiac care, which achieves quality results in a fiscally responsible manner.

In partnership, the York Simcoe Muskoka Dufferin Cardiac System Planning Team and Southlake are committed to developing a vision for the future which builds on the successes of the first five years and continues to provide their citizens with premier cardiac care services ‘closer to home’, without necessitating patients and families to travel to Toronto for care. Furthermore, Southlake’s advanced cardiac services team is committed to embrace rapidly changing new technology, and research advancements. The ability to transform services to embrace new and emerging advanced cardiac care technology and research is evident in Southlake’s response to the management of cardiac rhythm irregularities and the development of a ‘Centre of Excellence in Heart Rhythm Studies’.
VOLUME PROJECTIONS

Population Profile

Based on the MOHLTC’s Ontario Wait List Statistics for 2007/08, Southlake had the second largest advanced cardiology program in the GTA. In fact, Southlake’s program is larger than that at many academic teaching centres, such as London Health Sciences Centre, St. Michael’s Hospital, Sunnybrook Health Sciences Centre, and Kingston General Hospital. In the 2007/08 fiscal year, the cardiac program at Southlake served over 3,699 inpatients and provided care to over 71,000 outpatients.

Changes in the Central LHIN’s population profile over the next 10 years will also have an impact on the prevalence of heart disease and stroke in the region significantly. As shown in Table 2 below, the population of men and women aged 50 to 69 is expected to increase anywhere between 27% and 67% (depending upon the age group and gender) between 2007 and 2016. These demographic changes will have a tremendous impact on the demand for cardiac services in the region.

Table 2: Central LHIN Population Profile for 2016

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2007 Female</th>
<th>2007 Male</th>
<th>2016 Female</th>
<th>2016 Male</th>
<th>Percentage Increase Female</th>
<th>Percentage Increase Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 4</td>
<td>44,267</td>
<td>46,338</td>
<td>50,978</td>
<td>53,946</td>
<td>15.2%</td>
<td>16.4%</td>
</tr>
<tr>
<td>5 to 9</td>
<td>48,256</td>
<td>50,505</td>
<td>52,963</td>
<td>56,114</td>
<td>9.8%</td>
<td>11.1%</td>
</tr>
<tr>
<td>10 to 14</td>
<td>51,576</td>
<td>54,885</td>
<td>53,540</td>
<td>56,750</td>
<td>3.8%</td>
<td>3.4%</td>
</tr>
<tr>
<td>15 to 19</td>
<td>52,588</td>
<td>56,250</td>
<td>57,573</td>
<td>60,882</td>
<td>9.5%</td>
<td>8.2%</td>
</tr>
<tr>
<td>20 to 24</td>
<td>55,105</td>
<td>57,773</td>
<td>63,529</td>
<td>66,861</td>
<td>15.3%</td>
<td>15.7%</td>
</tr>
<tr>
<td>25 to 29</td>
<td>56,860</td>
<td>56,821</td>
<td>66,037</td>
<td>66,504</td>
<td>16.1%</td>
<td>17.0%</td>
</tr>
<tr>
<td>30 to 34</td>
<td>63,039</td>
<td>62,074</td>
<td>70,940</td>
<td>70,457</td>
<td>12.5%</td>
<td>13.5%</td>
</tr>
<tr>
<td>35 to 39</td>
<td>68,229</td>
<td>66,992</td>
<td>74,105</td>
<td>73,185</td>
<td>8.6%</td>
<td>9.2%</td>
</tr>
<tr>
<td>40 to 44</td>
<td>72,545</td>
<td>72,053</td>
<td>75,969</td>
<td>75,724</td>
<td>4.7%</td>
<td>5.1%</td>
</tr>
<tr>
<td>45 to 49</td>
<td>69,543</td>
<td>68,921</td>
<td>75,399</td>
<td>74,853</td>
<td>8.4%</td>
<td>8.6%</td>
</tr>
<tr>
<td>50 to 54</td>
<td>59,772</td>
<td>56,997</td>
<td>75,810</td>
<td>76,193</td>
<td>26.8%</td>
<td>33.7%</td>
</tr>
<tr>
<td>55 to 59</td>
<td>49,598</td>
<td>47,928</td>
<td>67,013</td>
<td>65,182</td>
<td>35.1%</td>
<td>36.0%</td>
</tr>
<tr>
<td>60 to 64</td>
<td>36,321</td>
<td>35,822</td>
<td>55,165</td>
<td>51,310</td>
<td>51.9%</td>
<td>43.2%</td>
</tr>
<tr>
<td>65 to 69</td>
<td>28,168</td>
<td>25,858</td>
<td>45,726</td>
<td>43,067</td>
<td>62.3%</td>
<td>66.6%</td>
</tr>
<tr>
<td>70 to 74</td>
<td>24,321</td>
<td>21,548</td>
<td>31,096</td>
<td>28,739</td>
<td>27.9%</td>
<td>33.4%</td>
</tr>
<tr>
<td>75 to 79</td>
<td>20,822</td>
<td>17,280</td>
<td>24,029</td>
<td>20,194</td>
<td>15.4%</td>
<td>16.9%</td>
</tr>
<tr>
<td>80 to 84</td>
<td>16,225</td>
<td>11,168</td>
<td>18,670</td>
<td>14,712</td>
<td>15.1%</td>
<td>31.7%</td>
</tr>
<tr>
<td>85 to 89</td>
<td>9,378</td>
<td>5,181</td>
<td>12,795</td>
<td>8,743</td>
<td>36.4%</td>
<td>68.7%</td>
</tr>
<tr>
<td>90+</td>
<td>5,178</td>
<td>2,046</td>
<td>8,798</td>
<td>4,269</td>
<td>69.9%</td>
<td>108.6%</td>
</tr>
</tbody>
</table>

1 These population estimates (2001-2005) and projections (2006-2016) for the 14 Ontario Local Health Integration Networks (LHINs) have been produced in Spring 2006 by the Ontario Ministry of Finance in response to a request from the MOHLTC to provide LHIN population estimates and projections to assist MOHLTC and its stakeholders with healthcare planning.
Southlake’s Cardiac Care Program comprises approximately 20% of the Hospital’s total case volume. The inpatient population is roughly 66% male and 34% female, with over 56% of the inpatient population comprised of men aged 50 and above.

Table 3 summarizes the age distribution of Southlake’s Cardiac Program’s inpatient population in 2007/08.

Table 3: Cardiac Program – Age Distribution

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Total Inpatients</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>15-19</td>
<td>6</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>20-24</td>
<td>4</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>25-29</td>
<td>12</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>30-34</td>
<td>16</td>
<td>25</td>
<td>41</td>
</tr>
<tr>
<td>35-39</td>
<td>26</td>
<td>53</td>
<td>79</td>
</tr>
<tr>
<td>40-44</td>
<td>47</td>
<td>96</td>
<td>143</td>
</tr>
<tr>
<td>45-49</td>
<td>68</td>
<td>196</td>
<td>264</td>
</tr>
<tr>
<td>50-54</td>
<td>108</td>
<td>286</td>
<td>394</td>
</tr>
<tr>
<td>55-59</td>
<td>146</td>
<td>328</td>
<td>474</td>
</tr>
<tr>
<td>60-64</td>
<td>134</td>
<td>374</td>
<td>508</td>
</tr>
<tr>
<td>65-69</td>
<td>145</td>
<td>353</td>
<td>498</td>
</tr>
<tr>
<td>70-74</td>
<td>172</td>
<td>359</td>
<td>531</td>
</tr>
<tr>
<td>75-79</td>
<td>187</td>
<td>333</td>
<td>520</td>
</tr>
<tr>
<td>80-84</td>
<td>151</td>
<td>168</td>
<td>319</td>
</tr>
<tr>
<td>85-90</td>
<td>126</td>
<td>92</td>
<td>218</td>
</tr>
<tr>
<td>&gt;90</td>
<td>40</td>
<td>25</td>
<td>65</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>1,388</strong></td>
<td><strong>2,721</strong></td>
<td><strong>4,109</strong></td>
</tr>
</tbody>
</table>

**Projection Demographics**

As part of the Hospital’s commitment to ensure effective resource allocation and clinical service planning, growth rates were developed for the cardiac program based on the age and sex adjusted population data generated by the Ministry of Finance and Statistics Canada for the MOHLTC. Details on the methodology are described on the next page.
**Methodology** – Age and sex adjusted population forecasts (based on the Ministry of Finance/Statistics Canada growth rates) were applied to the Hospital’s inpatient and outpatient cardiac caseloads to calculate projected clinical caseloads in 2013 and 2016. The 2007/08 year-end inpatient (Discharge Abstract Database – DAD) and outpatient (NACRS\(^2\), clinic volumes) data from the Hospital Informatics Department was used as a baseline for all population projections.

Southlake’s inpatient case volumes were segmented into four possible LHINS (based on patient residence code analysis) – North Simcoe Muskoka (NSM), Central West, Central, and Other LHINs. The age and sex adjusted growth rates from the MOF/Stats Cdn. Data for Central West, NSM, and Central LHIN were applied to the appropriate hospital clinical caseloads to project cardiac program volumes in 2013 and 2016. The MOF/Stats Cdn. growth rate for the Central LHIN was applied to case volumes for patients residing outside of the above-mentioned three LHINs. Outpatient case volume projections were based on the average inpatient age and sex adjusted growth rates.

For example, according to the 2006/07 inpatient DAD, Southlake saw 248 heart failure (CMG 222) patients in 2007/08. The methodology first segmented these 248 patients into their respective LHINs based on resident code analysis. The patients were then grouped by sex into 14 age categories. A population adjustment was applied to each age/sex category (based on LHIN level Ministry of Finance (MOF) population projections)\(^3\) to calculate the number of forecasted heart failure patients in 2016. This was done for every CMG in the hospital in order to arrive at a population-adjusted profile for the Hospital in the year 2016.

The population projections take into account the effect of changing demographics within the Central LHIN population, holding all other factors constant. While some of these assumptions may be challenged over time, the model can serve as an effective starting point for discussions on future health service planning and growth.

**Current Reality**

The Regional Cardiac Care Program for advanced cardiac services are currently meeting the MOHLTC’s volumes and monitor wait lists for Cath, PCI, Cardiac Surgery, and Heart Rhythm Programs. To date, all the programs that monitor Recommended Maximum Wait Times (RMWT) are now successfully meeting targets. The exception to this is for complex ablation within the Heart Rhythm Program; the current waiting list for these procedures has exceeded one year. The program is planning to add a dedicated EP lab. As stated previously, the population projections do consider the changing demographics, and will require close monitoring by the Regional Cardiac Care Program as well as the York Simcoe Muskoka Dufferin Cardiac System Planning Team.

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\(^2\) NACRS = National Ambulatory Care Reporting System has been mandated in Ontario by the MOHLTC for ER, Day Surgery, Dialysis, Cardiac Catheterization, and Oncology (including all regional cancer centres). This reporting system is designed to provide valuable information to assist with the evaluation of the management of ambulatory care services in Canadian healthcare facilities.

\(^3\) These population estimates (2001-2005) and projections (2006-2016) for the 14 Ontario Local Health Integration Networks (LHINs) have been produced in Spring 2006 by the Ontario Ministry of Finance in response to a request from the MOHLTC to provide LHIN population estimates and projections to assist MOHLTC and its stakeholders with healthcare planning.
Volume Projections

Table 4: Summary of Cardiac Program Projections

<table>
<thead>
<tr>
<th>Cardiac Program</th>
<th>2007/08 Volume</th>
<th>Projected 2013 Volume</th>
<th>Projected 2016 Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inpatient Activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac Surgery</td>
<td>862</td>
<td>1,068</td>
<td>1,186</td>
</tr>
<tr>
<td>Cardiology</td>
<td>2,837</td>
<td>3,482</td>
<td>3,843</td>
</tr>
<tr>
<td><strong>Inpatient Total</strong></td>
<td>3,699</td>
<td>4,550</td>
<td>5,029</td>
</tr>
<tr>
<td><strong>Inpatient Percentage Growth (from 07/08 base year)</strong></td>
<td>23.0%</td>
<td>36.0%</td>
<td></td>
</tr>
<tr>
<td><strong>Outpatient Activity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiac Cath - OP</td>
<td>2,321</td>
<td>2,855</td>
<td>3,155</td>
</tr>
<tr>
<td>PCI</td>
<td>1,757</td>
<td>2,161</td>
<td>2,389</td>
</tr>
<tr>
<td>Arrhythmia</td>
<td>8,263</td>
<td>10,163</td>
<td>11,234</td>
</tr>
<tr>
<td>Cardiology Clinic Visits</td>
<td>1,972</td>
<td>2,179</td>
<td></td>
</tr>
<tr>
<td>Pacemaker</td>
<td>528</td>
<td>649</td>
<td>718</td>
</tr>
<tr>
<td>ICD</td>
<td>230</td>
<td>283</td>
<td>313</td>
</tr>
<tr>
<td>Cardioversion</td>
<td>192</td>
<td>236</td>
<td>261</td>
</tr>
<tr>
<td>EP</td>
<td>620</td>
<td>763</td>
<td>843</td>
</tr>
<tr>
<td>Loop Testing</td>
<td>170</td>
<td>209</td>
<td>231</td>
</tr>
<tr>
<td>Pre-op CVS - in pre-op clinic</td>
<td>344</td>
<td>423</td>
<td>468</td>
</tr>
<tr>
<td>Cardiac ECG</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ECG</td>
<td>28,094</td>
<td>34,555</td>
<td>38,194</td>
</tr>
<tr>
<td>Stress Testing</td>
<td>1,257</td>
<td>1,546</td>
<td>1,709</td>
</tr>
<tr>
<td>Nuclear Stress Testing</td>
<td>1,824</td>
<td>2,243</td>
<td>2,480</td>
</tr>
<tr>
<td>Holter</td>
<td>1,105</td>
<td>1,359</td>
<td>1,502</td>
</tr>
<tr>
<td>Cardiac Clinic</td>
<td>1,603</td>
<td>1,972</td>
<td>2,179</td>
</tr>
<tr>
<td>Cardiac Ultrasound</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ECHO</td>
<td>3,210</td>
<td>3,948</td>
<td>4,364</td>
</tr>
<tr>
<td>TEs</td>
<td>626</td>
<td>770</td>
<td>851</td>
</tr>
<tr>
<td>Stress ECHO</td>
<td>282</td>
<td>347</td>
<td>383</td>
</tr>
<tr>
<td>Stress Dobutamine</td>
<td>25</td>
<td>31</td>
<td>34</td>
</tr>
<tr>
<td>Cardiac Prevention &amp; Rehab</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cardiac Rehab Visits</td>
<td>17,486</td>
<td>21,508</td>
<td>23,773</td>
</tr>
<tr>
<td><strong>Outpatient Total</strong></td>
<td>71,540</td>
<td>87,993</td>
<td>97,260</td>
</tr>
<tr>
<td><strong>Inpatient and Outpatient Totals</strong></td>
<td>75,239</td>
<td>92,543</td>
<td>102,289</td>
</tr>
<tr>
<td><strong>IP and OP Percentage Growth (from 07/08 base year)</strong></td>
<td>23%</td>
<td>36%</td>
<td></td>
</tr>
</tbody>
</table>

As shown in Table 4 above, inpatient and outpatient cases will increase by 23% between 2007 and 2013. Overall, the demand for cardiac services at Southlake will increase by approximately 36% in the next nine years (by 2016), amounting to a total of 102,289 inpatient and outpatient cases. This increase is reflective of the change in demographics that will occur in the key LHINs which comprise

---

4 Inpatient volumes shown in the table entitled, “Summary of Cardiac Program Projections” are based on data collected in the inpatient discharge abstract database (DAD) and may not necessarily reconcile with volumes submitted to the MOHLTC Wait Times Information Office or the Office of the Cardiac Care Network.
Southlake’s current marketshare (i.e., Central LHIN, Central West LHIN, NSM LHIN, and the rest of the Ontario).

This translates to approximately 12,923 inpatient cardiac weighted cases (see Table 5 below) in 2016.

**Table 5: Projected Weighted Cases**

<table>
<thead>
<tr>
<th></th>
<th>Total 2007/08 Case Volume</th>
<th>Projected 2013 Case Volume</th>
<th>Projected 2016 Case Volume</th>
<th>Total 2007/08 Weighted Cases</th>
<th>Projected 2013 Weighted Cases</th>
<th>Projected 2016 Weighted Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac Surgery</strong></td>
<td>862</td>
<td>1,068</td>
<td>1,186</td>
<td>3,810</td>
<td>4,717</td>
<td>5,233</td>
</tr>
<tr>
<td><strong>Cardiology</strong></td>
<td>2,837</td>
<td>3,482</td>
<td>3,843</td>
<td>5,656</td>
<td>6,960</td>
<td>7,691</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>3,699</td>
<td>4,550</td>
<td>5,029</td>
<td>9,466</td>
<td>11,677</td>
<td>12,923</td>
</tr>
</tbody>
</table>

The volume increases for Southlake inpatients are summarized in the following graph.

![Southlake Cardiac Program - IP Projections](image-url)
The volume increases for Southlake outpatients are summarized in the following graph.

- 2007/08 Volume: 71,540
- Projected 2013 Volume: 87,993
- Projected 2016 Volume: 97,260
Table 6 below provides the Case Mix Group (CMG) level detail for the inpatient growth projections summarized above. As shown, the majority of CMGs will experience double-digit growth by 2013. By 2016, the growth projections are estimating an overall increase of 36% in cardiac surgery and cardiology procedures.5

Table 6: 2007/08 Inpatient Cases and Projections

<table>
<thead>
<tr>
<th>CMG No.</th>
<th>CMG Description</th>
<th>Modified Hospital Program</th>
<th>Total 2007/08 Case Volume</th>
<th>Projected 2013 Case Volume</th>
<th>% Change from 07/08 to 2013</th>
<th>Projected 2016 Case Volume</th>
<th>% Change from 07/08 to 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>176</td>
<td>Card Viv Rep W Pump W Crd Cath</td>
<td>Cardiac Surgery</td>
<td>23</td>
<td>29</td>
<td>24%</td>
<td>33</td>
<td>46%</td>
</tr>
<tr>
<td>177</td>
<td>Card Viv Rep W Pump No Cath</td>
<td>Cardiac Surgery</td>
<td>124</td>
<td>153</td>
<td>23%</td>
<td>167</td>
<td>34%</td>
</tr>
<tr>
<td>178</td>
<td>Cor Bypass W Pump W Card Cath</td>
<td>Cardiac Surgery</td>
<td>126</td>
<td>155</td>
<td>23%</td>
<td>170</td>
<td>35%</td>
</tr>
<tr>
<td>179</td>
<td>Cor Bypass W Pump No Crd Cath</td>
<td>Cardiac Surgery</td>
<td>530</td>
<td>658</td>
<td>24%</td>
<td>731</td>
<td>38%</td>
</tr>
<tr>
<td>181</td>
<td>Oth Cardio Pr W Pump W Cath</td>
<td>Cardiac Surgery</td>
<td>1</td>
<td>1</td>
<td>26%</td>
<td>3</td>
<td>195%</td>
</tr>
<tr>
<td>182</td>
<td>Oth Cardio Pr W Pump No Cath</td>
<td>Cardiac Surgery</td>
<td>10</td>
<td>12</td>
<td>17%</td>
<td>15</td>
<td>45%</td>
</tr>
<tr>
<td>194</td>
<td>Minor Cardiother Proc No Pump</td>
<td>Cardiac Surgery</td>
<td>48</td>
<td>60</td>
<td>24%</td>
<td>67</td>
<td>40%</td>
</tr>
<tr>
<td>183</td>
<td>Maj Cardio Pr No Pump W Cath</td>
<td>Cardiology</td>
<td>78</td>
<td>96</td>
<td>23%</td>
<td>105</td>
<td>35%</td>
</tr>
<tr>
<td>184</td>
<td>Maj Cardio Pr No Pump No Cath</td>
<td>Cardiology</td>
<td>21</td>
<td>25</td>
<td>21%</td>
<td>29</td>
<td>39%</td>
</tr>
<tr>
<td>185</td>
<td>Perm Pacemaker/spec Card Cond</td>
<td>Cardiology</td>
<td>150</td>
<td>186</td>
<td>24%</td>
<td>208</td>
<td>39%</td>
</tr>
<tr>
<td>186</td>
<td>Perm Pacemaker No Card Cond</td>
<td>Cardiology</td>
<td>178</td>
<td>223</td>
<td>25%</td>
<td>247</td>
<td>39%</td>
</tr>
<tr>
<td>187</td>
<td>Ptca With Comp Card Condition</td>
<td>Cardiology</td>
<td>410</td>
<td>499</td>
<td>22%</td>
<td>542</td>
<td>32%</td>
</tr>
<tr>
<td>189</td>
<td>Ptca No Comp Card Condition</td>
<td>Cardiology</td>
<td>559</td>
<td>686</td>
<td>23%</td>
<td>752</td>
<td>34%</td>
</tr>
<tr>
<td>191</td>
<td>Temporary Cardiac Pacemaker</td>
<td>Cardiology</td>
<td>2</td>
<td>3</td>
<td>31%</td>
<td>5</td>
<td>136%</td>
</tr>
<tr>
<td>193</td>
<td>Cardiac Pacemaker Replace/rev</td>
<td>Cardiology</td>
<td>20</td>
<td>25</td>
<td>23%</td>
<td>27</td>
<td>37%</td>
</tr>
<tr>
<td>200</td>
<td>Ami, ang, cath W Shock/pul Emb</td>
<td>Cardiology</td>
<td>10</td>
<td>13</td>
<td>28%</td>
<td>16</td>
<td>58%</td>
</tr>
<tr>
<td>201</td>
<td>Ami W Card Cath With Chf</td>
<td>Cardiology</td>
<td>5</td>
<td>6</td>
<td>30%</td>
<td>7</td>
<td>45%</td>
</tr>
<tr>
<td>202</td>
<td>Ami W Card Cath W Vent Tach</td>
<td>Cardiology</td>
<td>1</td>
<td>1</td>
<td>8%</td>
<td>1</td>
<td>15%</td>
</tr>
<tr>
<td>203</td>
<td>Ami W Card Cath With Angina</td>
<td>Cardiology</td>
<td>2</td>
<td>2</td>
<td>7%</td>
<td>4</td>
<td>85%</td>
</tr>
<tr>
<td>204</td>
<td>Ami W Card Cath No Sp Cond</td>
<td>Cardiology</td>
<td>48</td>
<td>58</td>
<td>20%</td>
<td>64</td>
<td>34%</td>
</tr>
<tr>
<td>205</td>
<td>Ami No Card Cath With Chf</td>
<td>Cardiology</td>
<td>18</td>
<td>23</td>
<td>30%</td>
<td>27</td>
<td>51%</td>
</tr>
<tr>
<td>208</td>
<td>Ami No Card Cath No Spec Cond</td>
<td>Cardiology</td>
<td>36</td>
<td>47</td>
<td>30%</td>
<td>54</td>
<td>50%</td>
</tr>
<tr>
<td>210</td>
<td>Uns Angina W Cath W Spec Cond</td>
<td>Cardiology</td>
<td>3</td>
<td>4</td>
<td>17%</td>
<td>4</td>
<td>27%</td>
</tr>
<tr>
<td>211</td>
<td>Uns Angina W Cath No Spec Cond</td>
<td>Cardiology</td>
<td>33</td>
<td>40</td>
<td>22%</td>
<td>47</td>
<td>42%</td>
</tr>
<tr>
<td>212</td>
<td>Uns Angina No Cath W Spec Cond</td>
<td>Cardiology</td>
<td>4</td>
<td>5</td>
<td>37%</td>
<td>6</td>
<td>52%</td>
</tr>
<tr>
<td>213</td>
<td>Uns Angina No Cath/Spec Cond</td>
<td>Cardiology</td>
<td>41</td>
<td>51</td>
<td>23%</td>
<td>57</td>
<td>40%</td>
</tr>
<tr>
<td>215</td>
<td>Cardiac Cath With Chf</td>
<td>Cardiology</td>
<td>51</td>
<td>62</td>
<td>22%</td>
<td>70</td>
<td>36%</td>
</tr>
<tr>
<td>216</td>
<td>Cardiac Cath With Vent Tach</td>
<td>Cardiology</td>
<td>24</td>
<td>29</td>
<td>20%</td>
<td>33</td>
<td>39%</td>
</tr>
<tr>
<td>217</td>
<td>Cardiac Cath With Unst Angina</td>
<td>Cardiology</td>
<td>8</td>
<td>10</td>
<td>20%</td>
<td>10</td>
<td>30%</td>
</tr>
<tr>
<td>218</td>
<td>Card Cath No Cond Or Les &lt;4</td>
<td>Cardiology</td>
<td>271</td>
<td>324</td>
<td>19%</td>
<td>353</td>
<td>30%</td>
</tr>
<tr>
<td>219</td>
<td>Endocarditis</td>
<td>Cardiology</td>
<td>5</td>
<td>5</td>
<td>6%</td>
<td>7</td>
<td>45%</td>
</tr>
<tr>
<td>222</td>
<td>Heart Failure</td>
<td>Cardiology</td>
<td>248</td>
<td>316</td>
<td>27%</td>
<td>349</td>
<td>41%</td>
</tr>
<tr>
<td>226</td>
<td>Other Circulatory Diagnosis</td>
<td>Cardiology</td>
<td>85</td>
<td>100</td>
<td>18%</td>
<td>107</td>
<td>25%</td>
</tr>
<tr>
<td>229</td>
<td>Atherosclerosis</td>
<td>Cardiology</td>
<td>56</td>
<td>70</td>
<td>25%</td>
<td>78</td>
<td>39%</td>
</tr>
<tr>
<td>232</td>
<td>Acquired Valv Dis (Mnrh)</td>
<td>Cardiology</td>
<td>13</td>
<td>17</td>
<td>31%</td>
<td>21</td>
<td>60%</td>
</tr>
<tr>
<td>233</td>
<td>Hypertension (Mnrh)</td>
<td>Cardiology</td>
<td>16</td>
<td>19</td>
<td>18%</td>
<td>20</td>
<td>27%</td>
</tr>
<tr>
<td>234</td>
<td>Congenital Card Disord (Mnrh)</td>
<td>Cardiology</td>
<td>2</td>
<td>3</td>
<td>29%</td>
<td>3</td>
<td>42%</td>
</tr>
<tr>
<td>235</td>
<td>Angina Pectors</td>
<td>Cardiology</td>
<td>8</td>
<td>10</td>
<td>28%</td>
<td>13</td>
<td>62%</td>
</tr>
<tr>
<td>237</td>
<td>Arrhythmia</td>
<td>Cardiology</td>
<td>269</td>
<td>330</td>
<td>23%</td>
<td>364</td>
<td>35%</td>
</tr>
<tr>
<td>242</td>
<td>Chest Pain</td>
<td>Cardiology</td>
<td>162</td>
<td>195</td>
<td>20%</td>
<td>213</td>
<td>31%</td>
</tr>
</tbody>
</table>

Growth from 07/08 base year 3,699 4,550 23% 5,029 36%

5 Note that for low volume CMGs, percentages sometimes reflect a change in fractions of one case.
Regional Physician Resource Impacts

Regional physician resource impacts at Southlake resulting from the increase in inpatient case volumes are summarized in Table 7 below. In summary, an additional cardiac surgeon and 7 cardiologists will be required to meet the inpatient care demands of the regional population in 2016.⁶ This would bring the full-time complement of cardiac surgeons to 5, and 21 for full-time cardiologists.

Table 7: Physician Manpower Impacts - Inpatients

<table>
<thead>
<tr>
<th></th>
<th># of Physicians in 2006/07 - FTEs*</th>
<th>Increase of Caseload (# of cases)</th>
<th>Typical Caseload Per Physician</th>
<th>2016 Increase in Physicians - FTEs</th>
<th>2016 Projected Complement FTEs based on IP caseload Increases only</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiac Surgery</strong></td>
<td>4</td>
<td>346</td>
<td>250</td>
<td>1.0</td>
<td>5.0</td>
</tr>
<tr>
<td><strong>Cardiology Total</strong></td>
<td>14</td>
<td>1,216</td>
<td>7.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardiology - PCI</td>
<td>4</td>
<td>529</td>
<td>352</td>
<td>1.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Cardiology - Non Invasive</td>
<td>4</td>
<td>224</td>
<td>121</td>
<td>2.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Cardiology - Invasive</td>
<td>3</td>
<td>104</td>
<td>127</td>
<td>1.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Cardiology - EP</td>
<td>3</td>
<td>359</td>
<td>327</td>
<td>3.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

The table above does not include changes to medical staff complement that have occurred post March 31, 2007. The impact of recruiting new cardiologists and/or cardiac surgeons post fiscal year end would have to be considered in any future planning exercises. Medical resource impacts due to increases in outpatient activity are also not included in the above table.

All medical manpower impacts identified above are expressed in terms of Full-Time Equivalents (FTEs). Medical staff, who were assigned privileges for part of the fiscal year, have not been accounted for in the modeling.

It should also be noted that the above projections are based on the most responsible physician (MRP) data from the inpatient discharge abstract database (DAD). Therefore, any case level impacts on non-MRP staff are not included in the projections. Southlake is currently working on a methodology to assess the impact of future growth on non-MRP medical staff.

⁶ Based on full-time equivalents. Typical caseload averages were derived based on 2006/07 physician caseloads validated by Medical Affairs, Southlake, and the Director of the Regional Cardiac Program at Southlake.
**Access to Care**

In 1994 and 1999, Ontario’s MOHLTC asked the Cardiac Care Network of Ontario (CCN) to recommend provincial target rates for diagnostic cardiac catheterization (cath) and coronary revascularization procedures. In late 2002, the Ministry asked CCN to establish a Target Setting Consensus Panel (the Panel) to update the target procedure rates. The Cardiac Care Network’s Consensus Panel report from March 2004 recommended the following target rates per 100,000 for Cardiac Catheterization, PCI, and CABG in Ontario.

Table 8: CCN Consensus Panel Targets (per 100,000)

<table>
<thead>
<tr>
<th></th>
<th>2002/03</th>
<th>2003/04</th>
<th>2005/06</th>
<th>2008/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cath</td>
<td>Actual</td>
<td>Target</td>
<td>Recommended</td>
<td>Recommended</td>
</tr>
<tr>
<td></td>
<td>510</td>
<td>500</td>
<td>623</td>
<td>728</td>
</tr>
<tr>
<td>PCI</td>
<td>149</td>
<td>140</td>
<td>221</td>
<td>260</td>
</tr>
<tr>
<td>CABG</td>
<td>100</td>
<td>107</td>
<td>120</td>
<td>No recommendation at this time</td>
</tr>
</tbody>
</table>

In an effort to understand Southlake’s performance in relation to the CCN recommended targets, the 2005/06 CCN targets were applied to the Central and NSM LHIN populations. Variance from actual Southlake case numbers can be calculated by applying these targets to the Central and NSM LHIN population statistics (2007).

Table 9 shows the number of additional cases that should be done at Southlake to meet the CCN targets for Central LHIN. The Southlake volume is significantly below the recommended CCN target levels for Cath, CABG, and PCI. An additional 2,618 cardiac catheterizations, 785 CABGs, and 929 PCIs would have to be completed by Southlake to meet the CCN consensus panel targets for the Central LHIN.

At a Central LHIN level, cardiac catheterizations would have to increase by 44%, CABG by 67%, and PCI by 43% to meet the CCN Consensus Panel targets. This clearly demonstrates a significant level of under-servicing of cardiac services by Southlake, and the Central LHIN generally.

Table 9: 2006/07 CCN Volumes Statistics – Central LHIN

A similar analysis on the North Simcoe Muskoka LHIN population reveals the following.

---

7 64% of Southlake patients are from within Central LHIN – based on residence code analysis of 2006/07 IP DAD data. Central LHIN Population is based on MOF/Stats. Can. Data – 2006 = 1,613,165
Based on the data presented in Table 10 above, an additional 333 cardiac catheterizations, 115 CABGs, and 119 PCIs would have to be completed by Southlake on NSM residents in order to meet the CCN Consensus Panel Report targets. It is necessary that further discussions occur at the organizational and LHIN level regarding the impact of these findings.

---

Table 10: 2006/07 CCN Volumes Statistics – NSM LHIN

<table>
<thead>
<tr>
<th>Methodology/Source</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southlake Cases from within NSM LHIN*</td>
<td>5,142</td>
<td>900</td>
<td>623</td>
<td>1,977</td>
<td>2,709</td>
<td>732</td>
<td>333</td>
<td>27.0%</td>
</tr>
<tr>
<td>CCN Volumes Stats =0.175*(A)</td>
<td>CCN Volumes Stats</td>
<td>CCN Volumes Stats</td>
<td>CCN Volumes Stats</td>
<td>=((E)/(D))</td>
<td>=((F)/(B/D))</td>
<td>=((F)/(E))</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catheterization CATH + Same Sitting PCI</td>
<td>613</td>
<td>107</td>
<td>120</td>
<td>252</td>
<td>522</td>
<td>270</td>
<td>115</td>
<td>51.7%</td>
</tr>
<tr>
<td>Surgery: Isolated CABG</td>
<td>73</td>
<td>13</td>
<td>76</td>
<td>13</td>
<td>107</td>
<td>13</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>CABG &amp; Valve</td>
<td>22</td>
<td>4</td>
<td>330</td>
<td>330</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve</td>
<td>Miscellaneous +</td>
<td>1,886</td>
<td>221</td>
<td>707</td>
<td>961</td>
<td>254</td>
<td>119</td>
<td>20.4%</td>
</tr>
</tbody>
</table>

* 17.5% of Southlake patients are from NSM LHIN based on residence code analysis of 2006/07 IP DAD data. North Simcoe Muskoka LHIN Population based on MOF/Stats. Can. Data -2006 = 434,838
Impact of Health Promotion and Research

Research into the cause of heart disease is producing advances in knowledge at a rate not even dreamed of 50 years ago. Promising developments in several fields – from gene therapy to how communities are designed – could lead to new and more effective ways of preventing and treating heart disease and stroke.9

The Canadian Heart and Stroke Foundation provides leadership, expertise, and insight on the management of stroke care in Canada. This collaboration has led to the launch of the Canadian Stroke Strategy, a comprehensive program designed to provide all Canadians with the best stroke care possible, regardless of where they live, by 2010.

Remarkable achievements in key areas, such as tobacco control and smoke-free spaces, blood pressure awareness and reduction, obesity awareness, a healthier food supply, trans fat reduction, and improved resuscitation training, have already been made. The Stroke Strategy’s efforts in raising public awareness, developing standards of care for health professions, and coordinating research efforts will, hopefully, have a significant impact on the prevalence of heart disease across Canada.

Unfortunately, however, the changes in disease prevalence will not occur overnight. They will take time, and further investment in cardiac care services will be required to meet the population demands in the near term. Heart disease and stroke still remain the leading cause of death and disability in Canada. Canadian baby boomers are now all moving into their middle years, and are expected to cause a large increase in death and disability due to heart disease and stroke. These factors combined with the demographic changes expected to occur within the Central LHIN population (see Table 2 on page 17) will have a huge impact on the demand for cardiac services within our region.

9 Ontario Heart and Stroke Foundations Annual Report, 2007
A NEW REGIONAL MODEL OF CARE

The Regional Cardiac Care Program at Southlake which is accountable for the delivery of advanced cardiac services for patients include Medical Cardiology (i.e., CCU and Cardiology ward); Cardiac Non-Invasive Diagnostic Services and Cardiac Ambulatory Clinics, Cardiac Prevention and Rehab; The Heart Rhythm Program; Invasive and Interventional Cardiac Program; and the Cardiac Surgery Program. In addition, there are several regional program sub-committees which focus on optimization of program function, assessment and planning, including quality and utilization management, finance, research, informatics, and education.

The York Simcoe Muskoka Dufferin Cardiac System Planning Team oversees all aspects of cardiac care and ensures the optimum development of a comprehensive regional program. This Cardiac System Planning Team is a comprehensive, multidisciplinary team, which brings together representatives from all disciplines and levels of staff across the region.

As mentioned above, the York Simcoe Muskoka Dufferin Cardiac System Planning Team also has several regional initiatives to support a consolidated and consistent approach, and evaluation and patient care outcomes related to cardiac care in the region. These specific regional initiatives include a Cardiac Rehab Wait Times/Outcomes Project, and a Cardiac Patient Readmission Project.

Southlake Regional Health Centre’s vision is to deliver ‘shockingly excellent service’. Likewise, to provide ‘shockingly excellent service’ has been a hallmark and guiding principle of Southlake’s Advanced Cardiac Care Program. Overall, the success of the Regional Cardiac Care Program and the advanced cardiac services provided at Southlake has been founded in positive and collaborative relationships and partnerships. The central and key foundation of these relationships has been a desire to provide excellence in patient care. Therefore, when building a new regional model for the future, it is paramount that the excellence developed in patient care, and the positive, collaborative partnerships and relationships be the foundation upon which to build a regional cardiac care ‘Centre of Excellence’ for the future patient needs of the region.

Defining a ‘Centre of Excellence’

There are many self-proclaimed ‘Centres of Excellence’ within the Ontario Healthcare community. However, there does not appear to be research-based consensus on what indeed are the characteristics of a ‘Centre of Excellence’. Therefore, research on what defines a ‘Centre of Excellence’ is reviewed below with the intent of considering the research when developing a regional program for the future.

Two research papers in Canadian literature were found focusing on defining the attributes or characteristics, which distinguish a ‘Centre of Excellence’. To support its new vision to be a ‘Centre of Excellence’, Seneca College established a ‘Centre of Excellence Task Force’ in 2003 with the intent to define the characteristics of a Centre of Excellence. The Seneca College Centre of Excellence Task Force suggested that Centres of Excellence operate on a national level, support research, and develop national partnerships. Their research defined several characteristics, or the essential components for a Centre of Excellence, including:

- Leading Edge
- Bold Vision
- Viewed by external organizations as an essential resource, with the ability to lead, influence, shape, and establish policy
• Respected for the quality of people, ideas, resources, shared vision, research development and purpose
• Strong intellectual community of innovation, shared vision, research development and purpose
• Leads the sector by developing strategic partnerships to advance the body of knowledge, and
• Strong business plan ensuring sustainability.

Similarly, Hylton (2002) researched best practices associated with Centres of Excellence and summarized his findings for the Regina Qu’Appelle Health Region’s ‘Working Together Towards Excellence’ Project. Again, the key features of a ‘Centre of Excellence’ were defined and include:

• Clear Focus and Objectives
• Relevance of Objectives to Local Community
• Focus on Excellence (referring to a leader in standards)
• Building on Strength
• Incremental Approach to Development
• Core Staffing Requirements
• Synergies Among Teaching, Research, and Service
• Diverse Partnerships and Relationships
• Organizational Capacity, and
• Evaluation, Feedback, and Accountability.

Hylton concluded that centres with the above features would be able to establish themselves as ‘Centres of Excellence’.

As the York Simcoe Muskoka Dufferin Cardiac System Planning Team and Southlake’s Advanced Cardiac Care Program define a new regional model for the future, it is important to consider the research-based essential characteristics/features presented above.

**An Integrated Distributed Model of Care**

“An integrated care and services network is responsible for providing a continuum of co-coordinated services to a given population.” (Bernier, Breton & Ndayegamiye, 2004) Integrated models of care support seamless care, foster inter-professional respect, promote breakdown of traditional silos of care, build and nurture new relationships, and support the provision of care throughout the community. A hallmark of a truly regional model is the development of partnerships across the region, which together support excellence in care provision across the entire continuum of care.

The Pittsburgh Regional Healthcare Initiative is an example of a new, integrated care regional model. (Sirio, Segel, Keyser, Harrison, Lloyd, Weber, Muto, Webster, Pisowicz & Feinstein, 2003) It is an innovative model, which links patient outcome data and standardizes processes of care for 44 hospitals in 12 counties around Pittsburgh. The goal of this regional initiative is to achieve ‘perfect patient care’ in all hospitals by setting aside traditional competitive and political models, and focus solely on the patient and patient outcomes. Outcomes are regionally measured and focus on improvements to clinical practice guidelines and patient safety.

In order to build on past successes and support a truly regional approach to cardiac services for the York Simcoe Muskoka Dufferin regions, a new regional model of care is proposed. This new model of care is proposed to endorse both a centralized, consolidated service delivery model, and the concept of providing services ‘closer to home’, when regional community volumes support such programs. Supported by the York Simcoe Muskoka Dufferin Cardiac System Planning Team, Southlake’s Regional
Cardiac Care Program is eager to lead the development of partnerships across the region, and the development of regional, standardized, evidence-based patient care pathways, which will allow excellence in care, irrespective of where that care is delivered.

This new regional model, an Integrated Distributed Model of Care, would embrace Southlake’s regional leadership and advanced services provider role, and also would embrace the development of satellite care locations to deliver some components of cardiac care for the growing and diverse communities of York, Simcoe, Muskoka, and Dufferin. Fundamental to an Integrated Distributed Model would be the development of true, patient-focused partnerships and careful consideration of patient volumes, community need, economies of scale, professional interdisciplinary practice teams, professional communities to support care, capital investment needs, etc. when making decisions about the distribution of cardiac care services across the region.

An Integrated Distributed Model of Care would support a comprehensive, consolidated approach to regional cardiac care. The model below is a pictorial supporting the proposed Integrated Distributed Model of Care followed by a description of how the proposed model builds incrementally as the need for specialized cardiac care increases.
Heart Healthy Communities: The Foundation of the Integrated Distributed Model of Care

To truly impact the incidence of cardiac disease prevalence in the York Simcoe Muskoka Dufferin regions, the foundation of the model must focus on heart healthy activities, such as diet and exercise. Changing the lifestyle of the population to include heart healthy activities will, in turn, reduce the incidence of intermediate risk factors, such as increased cholesterol or increased blood pressure, precursors to heart disease. Although advanced cardiac services will always be required in the region, in reality, this is providing care after people are ill or ‘sick care’. The prevention of disease and providing a foundation supporting ‘healthcare’ must be the basis of the model of the future!

The Heart Health Initiative currently sponsored by Southlake’s Regional Cardiac Care Program, may provide a model upon which to build future community opportunities. The Heart and Stroke Foundation, fitness centres, diabetes information groups, Community Care Access Centres (CCACs), Public Health, etc. could all partner together to focus on the prevention of heart disease within the region. The community knowledge of overall health and the support of healthy lifestyle choices, such as diet, exercise, blood pressure monitoring, etc. could be part of a comprehensive healthy lifestyles community event in each local community.
Cardiac Rehabilitation Services is an example of how **Community-based Cardiac Care** would be developed within the Integrated Distributed Model. Building on the success of the current York Simcoe Muskoka Dufferin Cardiac Rehabilitation Network, future patient care volumes suggest further distributing cardiac rehabilitation services across the region ‘closer to home’. In partnership with the York Simcoe Muskoka Dufferin Cardiac System Planning Team, Southlake’s Regional Cardiac Care Program could lead the development of regional cardiac rehabilitation protocols and patient pathways, and support satellite care sites across the region. Existing specialist teams could support the development of local community teams of care providers. Utilizing information technology enablers, these local community teams and individual patients could be linked at any time to specialists remotely. Such a model would allow patient care closer to home, support the development of community-based expertise, and ensure access to specialist care at the regional centre as required.

It is not out of the realm of possibility that cardiac rehabilitation, with appropriate clinical support, could take place within designated community and fitness centres across the region. Such an integrated distributed approach to cardiac rehabilitation, potentially coupled with a chronic disease management model, would have the added benefit of increasing the likelihood of patients continuing their exercise routine beyond the cardiac rehabilitation period and making lifelong changes to improve heart health.

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**Community-Based Cardiac Care: Building Upon the Foundation of Health**

### An Integrated Distributed Model of Care

<table>
<thead>
<tr>
<th>What we’re trying to achieve</th>
<th>Examples of Care Delivery</th>
<th>Examples of Care Providers</th>
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<tbody>
<tr>
<td><strong>Heart Healthy Communities</strong></td>
<td>• Broad communications and linkages to healthy lifestyle campaigns</td>
<td>• Alliston • Bracebridge • Collingwood • Huntsville • Midland • Grilloa • Orangeville</td>
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<tr>
<td>• Preventative Care</td>
<td>• Cardiac Care Clinics ‘closer to home’ supported by the regional expert team</td>
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<tr>
<td><strong>Community Cardiac Care</strong></td>
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<td>• Initial Cardiac Care and Diagnostics</td>
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*Cardiologists at Southlake Regional Health Centre, 2009.*
It is recognized that the population of the York Simcoe Muskoka Dufferin regions are among the fastest growing and diverse communities in Ontario. In addition, the population requiring advanced cardiac services served by Southlake's Regional Cardiac Care Program is dispersed over a large geographical area.

The development of community cardiology clinics across the region may be another example of the proposed integrated distributed model to support cardiac care across the region. Within local healthcare communities, a local interdisciplinary care team could be developed with cardiac expertise. The local care team would follow standardized regional patient care pathways and be supported, as needed, by the cardiac care experts at Southlake. The local care team could provide initial cardiac diagnostic tests and, according to a prescribed pathway, consolidate a volume of patients who would require a specialist’s assessment.

A Regional Cardiac Care Team could then travel to the local community every four – six weeks (or as needed) and provide specialist care close to home. Some advanced cardiac diagnostic equipment may also be mobile, allowing for additional testing with experts within the remote community. Patient access to additional tests and procedures only performed at Southlake would be based on patient acuity, and therefore all patients within the region would have equitable access to advanced cardiac care. Linking back to the foundation of heart healthy communities, such community cardiology clinics could become a catalyst to public campaigns within the community.

As expertise within the communities grow, it is feasible that the services offered at the community sites would also grow. In the future, although complex pacemakers, such as ICD and Biventricular pacemakers, would be provided at a regional centre of expertise, standard pacemaker insertions and pacemaker clinics could be fostered at satellite centres in the region. Further, as expertise in Cardiac CT grows, such studies should be performed at healthcare centres across the region. Advanced non-invasive cardiac imaging should involve a collaborative expertise involving both Cardiology and Radiology. Growth in advanced non-invasive cardiac imaging services in the region must correlate with growth in “critical mass” or volume support in community cardiac care centres.
Specialist Care: Responding to Population Projections

An Integrated Distributed Model of Care

The York, Simcoe, Muskoka, and Dufferin population demographics and associated volume projections reviewed earlier show a significant increase in the need for cardiac services. Where population demographics show a consolidated volume of patient need, which is sufficiently large enough to support a team of specialized physicians and other care providers required to provide excellence in cardiac care, satellite centres, which are ‘closer to home’, should be supported and promoted across the region.

The population demographics show a continued need for cardiac catheterization and PCI procedures within the York, Simcoe, Muskoka, and Dufferin regions. The volume projections indicate a need for additional catheterization labs in the future. Heart catheterization labs at Southlake will be expanded from 3 to 5 cath labs to address the short-term population health needs (1 lab for EP / 1 lab for PCI / Diagnostics). Establishing a second EP lab is the highest priority. At this time, there is a one- to two-year wait time for complex ablation. In addition, it is proposed that Southlake continue to utilize the one existing procedure room.

In the long term (within 7–10 years), the population demographics support the need for an additional catheterization lab. It is vital that the York Simcoe Muskoka and Dufferin Cardiac System Planning Team in partnership with the LHINs, track actual population growth versus the population demographic projections outlined earlier in this proposal. Specific and intentional tracking of actual population growth will allow for informed decisions as to the actual need and number of additional catheterization
labs within the region. Moreover, tracking actual population growth allows for timely decision-making regarding the need for additional cath labs and the ability to build and operationalize new labs to coincide with the actual population need.

Current population projections suggest that an additional cardiac catheterization lab (beyond the additional 2 catheterization labs proposed to be built at Southlake to support immediate population needs) will be required to support the York, Simcoe, Muskoka, and Dufferin regions. It is proposed that an additional cath lab be considered to be built at The Royal Victoria Hospital in Barrie in the future. The development of additional cath labs in the region will both support an increased demonstrated need but also potentially support timely access to PCI as the population of Barrie and areas to the north of Barrie increase. In addition to the actual cath labs, the regional planning must include the infrastructure to support any future comprehensive satellite PCI program in the region.

It is important that new tertiary resources within the York, Simcoe, Muskoka, and Dufferin regions complement the current tertiary centre, and that Southlake’s expertise in advanced cardiac care not be compromised in the development of additional satellite centres. In order to support the advanced cardiac needs of the population, a commitment to ensuring that the development of future regional teams complements and supports the proposed Integrated Distributed Model of Care. Existing patient care teams needed to support tertiary care at an advanced level must not be compromised in the development of future satellite centres. It is imperative that the York Simcoe Muskoka Dufferin Cardiac System Planning Team ensures that BOTH the comprehensive advanced cardiac service at Southlake AND the new satellite centres succeed in parallel. It is proposed that at least 60% of any incremental elective diagnostic volume associated with cardiac catheterization lab expansion at Southlake be allocated to additional cardiologists Outside of Southlake from the partnering hospitals in the region. This will significantly support cardiology recruitment in the region, outside of Southlake.

Furthermore, the expertise at Southlake should be utilized as a resource and contributor in the proposal for, and development of, any future satellite cath labs. In addition, it is essential that Southlake continue to provide clinical and administrative leadership to support the York Simcoe Muskoka Dufferin regional model of care. The physician needs to support the increased cardiac services within the York, Simcoe, Muskoka, and Dufferin regions have been reviewed earlier. The importance of a consolidated, regional approach to health human resources, including physicians, will be considered in the Human Resource Strategy section within this paper.

It is imperative that standardized, evidence-based patient care pathways be utilized at all cardiac catheterization labs in the region. Not only is one pathway desirable from a patient safety and outcomes perspective, it is paramount in order to facilitate patient transfers to and from the respective health centres depending on the need for specialized, tertiary cardiac care. (Standardized Care Pathways are discussed on page 39.)

In April 2007, the MOHLTC announced the support for the Central LHIN to commence planning for new hospital services to support the Vaughan community. The York Simcoe Muskoka Dufferin Cardiac System Planning Team is eager to participate with the planning processes to support and guide the development of cardiac services at the new Vaughan hospital. As the vision for the new hospital emerges, the York Simcoe Muskoka Dufferin Cardiac System Planning Team must play a vital role to ensure the Integrated Distributed Model of Care both supports, and is supported by the plans for cardiac care across the continuum.
The significant successes of the advanced cardiac services program at Southlake have been articulated at the outset of this paper. It is paramount that the advanced cardiac services currently established at Southlake continue to provide professional communities of practice in specialized cardiac care, and the development of satellite programs does not detract from the benefits of consolidating highly specialized cardiac care volumes. Furthermore, as standards of care change, new technology is introduced, and new patterns of practice emerge, it will be imperative for the York Simcoe Muskoka Dufferin Cardiac System Planning Team to consider the critical mass required to support the highest quality care outcomes for patients.

Obviously, it would not be appropriate for all elements of cardiac care to be delivered at every hospital. Cardiac surgery, ablations, electrophysiologic studies, and implantable cardioverter defibrillator (ICD) programs are clearly specialized programs and need to be done at an advanced regional centre.
The indications for cardiac surgery are rapidly changing with the technology advances allowing for advanced interventional procedures, the development and adoption of heart healthy community practices, and the implementation of chronic disease models of care. The need for incremental cardiac surgery growth within the region has been supported by the population volume projections. Therefore, a third cardiac operating room (OR) at Southlake is proposed. Clearly, cardiac surgery of the future will continue to focus on minimally invasive surgical techniques. New surgical approaches may necessitate the need to consider a new concept of a hybrid operating room, which supports both interventional and conventional surgical techniques in one physical setting.

The Heart Rhythm Program established at Southlake is internationally recognized as a Centre of Excellence. In 2007, Southlake became the first hospital worldwide to introduce a new, groundbreaking technology that vastly improves the treatment of cardiac patients and reduces exposure to X-rays. Targeted at people who suffer from debilitating and often life-threatening arrhythmias (irregular heartbeats), the system combines a cardiac ultrasound probe with specialized heart-mapping software. Currently, Southlake is the only cardiac centre in Canada to use intra-cardiac ultrasound in the treatment of heart rhythm disorders.

Building upon the successes of Southlake, the rapidly changing technology, and the population projections for increased need for heart rhythm diagnostics and intervention, there is an established need for a second EPS lab at Southlake. There is currently a 1-2 year wait time for a complex ablation procedure. Southlake currently performs more complex ablations than any other centre in Canada.

It is important to recognize the significant and increasing role for advanced diagnostics capabilities to support a tertiary advanced cardiac centre. In partnership with the MOHLTC, Southlake has recently invested in 64-slice CT technology, including the cardiac diagnostics option.

As patient volumes increase, there is support for a dedicated Cardiac CT at Southlake. Additional needs for a dedicated Cardiac CT both at Southlake and across the region will follow the fundamental principles of the Integrated Distributed Model of Care – where population demographics show a consolidated volume of patient need, satellite centres, which are ‘closer to home’, should be supported and promoted across the region.

Advances in Cardiac MRI mirror the advances in Cardiac CT. Currently at Southlake, one half day/week of MRI time is dedicated to the cardiac program. It is feasible to propose that a dedicated full-time Cardiac MRI will be required in the foreseeable future – possibly as early as within five years.
Putting it all Together: An Integrated Distributed Model of Care

This new model of care is proposed to endorse both a centralized, consolidated service delivery model, and the concept of providing services ‘closer to home’, when regional community volumes support such programs. This new regional model would embrace Southlake’s regional leadership and advanced services provider role, and also the development of satellite care locations to deliver some components of cardiac care for the growing and diverse communities of York, Simcoe, Muskoka, and Dufferin regions.

As the need for interdisciplinary, specialized teams to support the complexity of patient care increases, the number of sites providing such highly acute services within the region decreases. Conversely, the patient volumes increase as the complexity of care decreases, thus supporting the concept of providing ‘care closer to home’.

Such a proposal truly embraces an integrated distributed model, supports local health provision and access to specialist expertise. Competition is replaced with cooperation, and the model is truly grounded in partnerships and the principles of patient-centred care.
**Standardized Care Pathways**

Standardized patient care pathways are essential to supporting an integrated distributed model and a regional approach to cardiac care. Standardized patient care pathways should be evidence-based and should guide all cardiac care, irrespective of where that care is being delivered to the patient. An essential role of a regional centre is to lead the development of evidence-based clinical pathways. Moreover, it is paramount that all care providers along the continuum participate in the development and continuous evaluation of clinical pathways.

Clinical pathways can also be used as an outcomes tool to help identify where and why the standardized pathway fails. Analysis will allow for continuous quality improvement and revision to the patient flow pathway. Further, standardized clinical patient flow pathways can allow for significant charting efficiencies. Charting tools can be based on the patient flow pathway, can be utilized along the continuum of care, can be inter-disciplinary in approach, and can be pre-populated checklists.

In an Integrated Distributed Model of Care, clinical pathways are also essential to ensure all patients within the region have equal access to specialized care, such as cardiac surgery or electrophysiologic studies.

In summary, in partnership with the York Simcoe Muskoka, Dufferin Cardiac System Planning Team, Southlake is committed to developing a new regional model of care, which embraces its regional leadership and specialized care delivery teams, as well as the development of satellite care locations to deliver some components of cardiac care for the region. The proposed Integrated Distributed Model has been designed to support a singular, comprehensive cardiac care model, grounded in the cardiac care expertise at Southlake and supported by true partnerships for care along the continuum. Further, the proposed Integrated Distributed Model supports all characteristics outlined at the beginning of this section, which are critical to a ‘Centre of Excellence’.
HUMAN RESOURCE STRATEGY

Investment in People: A Key Strategy for Regional Success

The greatest asset for any healthcare organization is its **people**. Recall that the attributes of a ‘Centre of Excellence’ include being viewed as an essential resource with the ability to lead and shape policy, being respected for the quality of its people, and fostering the development of a strong intellectual community. These are all attributes that are related to the quality of individuals, and the people that work within the program. Simply, quality people attract quality people. It is essential that the York Simcoe Muskoka Dufferin Cardiac System Planning Team develop a human resource strategy that builds on the current successes of recruiting the best to the region.

Southlake's Strategic Plan identifies the importance of people in achieving the goal of transforming to a ‘Regional Health Centre of Excellence’. Its ‘People’ strategic goals include:

- **Strong Sense of Community**
  *To care passionately about our people and our organization, one must feel a part of the Southlake community. We will nurture the development of positive working relationships and friendships.*

- **Healthy Work Environment**
  *Part of walking our talk is promoting and maintaining a healthy and safe work environment – physically and emotionally.*

- **High Performance Workforce**
  *A team that is happy, engaged, and challenged can do great things. We will seek to recruit the best and brightest and find new ways to inspire our people, foster their passion and evolve to better meet their professional needs.*

Clearly, Southlake is committed to the development of ‘Our People’ and staff, physicians, and volunteers are a key strategic focus of the organization. Coupled with the focus on ‘Program and Service Opportunities’ and the goal to be relentless in the mission to provide Regional Tertiary Services closer to home, the focus on People is equally important across the continuum when developing a new integrated distributed model of care.

It is paramount to the success of the proposed Integrated Distributed Model of Cardiac Care that the York Simcoe Muskoka Dufferin Cardiac System Planning Team consider the development of a strategic plan for human resources to support, implement, develop, and sustain cardiac services in the region.

The Cardiac Care Human Resource Strategy of York, Simcoe, Muskoka, and Dufferin should be as comprehensive and integrated as the model of care for cardiac services. The Strategy must include elements of building, developing, and maintaining a high-performing integrated work force that is dedicated, motivated, and enthusiastic to achieve the highest levels in order to support the patient-centred model of care.

In partnership across the continuum, the Regional Cardiac Care Team must be committed to both the recruitment and retention of staff, and to a sustainable performance coaching system that supports human resource models (which are nimble and flexible and able to respond to a rapidly changing healthcare environment), and provides opportunities for professionals to work at their maximum scope of practice.
**Professional Practice Model**

Fundamental to the success of the proposed Integrated Distributed Model of Care for Cardiac Services in the York, Simcoe, Muskoka, and Dufferin regions is the development of a comprehensive professional practice model of care, which allows all professionals to work at their maximum scope of practice. Thus, as professional scope of practice changes, and new expanded practice and advanced practice roles are defined, new models of care which embrace such changes will be required. The Regional Cardiac Care Program must be steadfast in its resolve to be a provincial and national leader in the development of new practice models, which support the proposed Integrated Distributed Model for Regional Cardiac Care.

Specialized, nurse-led cardiac clinics have been implemented across the world and the research regarding clinical outcomes is virtually universal in their endorsement of nurse-led clinics. Nurse-led heart function clinics have been initiated in some regional cardiac care programs within Ontario. Clinical outcomes include a reduction in the number of unplanned admissions, a decrease in length of stay (LOS) when hospitalized, and a decrease in mortality.

Other nurse-led clinics may include post-operative clinic care for patients recovering from recent cardiac surgery, recent MI’s, rapid access chest pain clinics, nurse-led cardioversion service, and nurse-led heart failure clinics, to name a few. Although nurse-led clinics are most cited in the literature, the principle is the same for all professional disciplines and the newly recognized Anaesthesia-extender RT model proposed by the Ministry of Health Surgical Process Analysis and Improvement Expert Panel is such an example within Ontario.

The support of interdisciplinary teams is a hallmark characteristic that when present, allows professional practice at the maximum scope of practice. Interdisciplinary teams truly support the unique contributions of each professional discipline to a comprehensive patient-centric model of care. The Regional Cardiac Care Program will continue to nurture interdisciplinary practice models within Southlake and along the regional cardiac care continuum. The Integrated Distributed Model proposed previously provides examples where professionals across the continuum will be supported in the development of cardiac care expertise. At the same time, Southlake will continue to enhance its leadership capacity to support the development of interdisciplinary teams across the cardiac continuum of care.

**Physician Human Resource Plan**

The proposed Integrated Distributed Model has been designed to support a singular, comprehensive cardiac care model, grounded in the cardiac care expertise at Southlake, and supported by true partnerships for care along the continuum. The Integrated Distributed Model proposed allows for physicians to practise in a professional community of peers. In a fully decentralized model, a sole provider of specialist care within a community does not provide a workplace that supports consultation with peers. Therefore, purposeful, targeted and integrated Physician Human Resource planning across the York, Simcoe, Muskoka, and Dufferin regions is essential to ensuring a Regional Cardiac Care Program of Excellence.

It is paramount to a Centre of Excellence that the ‘best and brightest’ physician providers continue to be attracted to Southlake’s Advanced Cardiac Program. The Regional Cardiac Care Program at Southlake expects to be on the ‘leading edge’ of cardiac advancements and thus able to significantly contribute by enabling a ‘living lab’ for the adoption of new advancements. Providing ‘Excellence in Care’ and supporting a culture, which embraces clinical innovation, stimulates provincial, national, and international interest in the physician community.
Volume projections, technology advancements, technology enablers, and the development of cardiac clinical pathways along the continuum MUST guide the regional physician recruitment needs. Furthermore, given the proven relationship between volumes and quality outcome indicators, it will be imperative for the York Simcoe Muskoka Dufferin Cardiac System Planning Team to consider the critical mass required to support the highest quality care outcomes for patients.

Beyond the tertiary centre, a regional physician recruitment plan is integral to succeeding in developing the Integrated Distributed Model of Care. When volume projections and critical mass support additional regional cardiologists, it is proposed that recruitment of cardiologists within the community initially focus on general cardiology, and that Interventional Cardiologists be recruited once a critical volume of patients has been established.

Physician recruitment strategies, which are regionally led, can also enable new and innovative recruitment strategies, which can attract the ‘best and brightest’ physicians. Physicians who may specialize in a new and emerging area of cardiac care may be attracted to a regional model with potential research and academic partnerships with University Hospitals. Regionally-led physician recruitment should allow for new, innovative physician partnership agreements between two or more hospitals.

In summary, it is essential that the vision for cardiac services in the York, Simcoe, Muskoka, and Dufferin regions and the population demographics and associate patient volumes define physician recruitment needs. It is paramount that physician recruitment be an integrated activity within the region and that the York Simcoe Muskoka Dufferin Cardiac System Planning Team facilitate cardiac physician recruitment.

**Nursing, Allied Health, and Support Services Human Resource Plan**

Mirroring the Physician Human Resource Plan, purposeful and targeted planning is essential for all disciplines within the interdisciplinary team. Again, volume projections for cardiac care across the region can guide professional manpower needs of the future. A regional approach to recruitment for cardiac care services would support the regional centre – Southlake Regional Health Centre – as well as other cardiac program needs across the region.

Further, a regional approach to recruitment may allow professionals to gain expertise in the standardized patient care pathway guidelines at Southlake prior to providing cardiac care at a distributed setting across the continuum. Similarly, existing care providers within communities across the continuum could develop new knowledge and skills at the regional advanced care centre – Southlake Regional Health Centre – and return to their community to provide cardiac care. Ongoing updates and continuing education and practice opportunities would be supported in an Integrated Distributed Model.

Such a model not only supports the development of expert practitioners in cardiac care, but ensures ongoing expertise development and lifelong learning as well. Similarly, a regional approach to retain cardiac care experts along the continuum of care within the region is proposed.

It is important to note that the proposed regional approaches to recruitment and retention strategies for cardiac care expertise do not negate the ability for staff to be hired by and associated with individual care providers.
In summary, the Regional Cardiac Care Program for York, Simcoe, Muskoka, and Dufferin is acutely aware that the singular most critical component in developing and sustaining a Cardiac Care Centre of Excellence and an Integrated Distributed Regional Model is PEOPLE. Therefore, the Regional Cardiac Program is committed to a comprehensive regional human resource strategy, which supports both specialized cardiac care at Southlake as well as cardiac expertise across the continuum of care in the region.

TECHNOLOGY ENABLERS

“The most remarkable feature of this 21st century medicine is that we hold it together with 19th century paperwork.”

– Tommy G. Thompson, Former Secretary, Department of Health and Human Services, USA

Ensuring that technology enables patient care across the region is essential to the future vision of the proposed Integrated Distributed Model. In the white paper, “Connected Healthcare Communities: The New Model for Health Care in the United States” (Healthvision Inc., 2006), the importance of integrated information technology solutions “… that allows disparate IT systems to share information throughout an entire healthcare system” (p.5) is highlighted. Technology must play a major role in creating truly connected healthcare communities.

The strategic role of Information Management/Technology (IM/IT) to enable the region in achieving its vision of a truly regional model for patients is evident. Southlake, with its cardiac care partners has developed a Regional Cardiac Care Program Information Management/Technology Strategy until the year 2010.

The Regional Cardiac Care Program Information Management/Technology Strategy 2010 moves beyond the traditional themes of reliability and availability of technology and focuses on the use of information and technology to profoundly change, impact, and improve the delivery of patient care in a Regional Cardiac Care Model.

The Information Management/Technology Strategy mirrors the Integrated Distributed Regional Model outlined earlier in this paper. The integrated distributed model recognizes the transition to a more regionalized, community-based care ‘closer to home’ (where volumes and professional practice models support this transition), and anticipates that Southlake’s Regional Cardiac Care Program will function as the acute-care nucleus of the regional network. Therefore, a broad group of stakeholders are identified in the vision for 2010, reflecting these continuously shifting delivery models.

The proposed Regional Integrated Distributed Model of Cardiac Care will utilize standardized patient care pathways across the region. Regionalized standardized patient care pathways will allow for the delivery of evidence-based care irrespective of where the patient receives care in the region. Moreover, standardized technology platforms will facilitate equal access to services based on patient acuity and need, facilitate communication between providers irrespective of where they are physically located, and allow for the development of an integrated cardiac patient record – thus facilitating consistent quality care, outcome measures, and decision-making across the entire region.
“Centralized patient data also allows healthcare systems to implement a number of solutions that can greatly impact the efficiency and quality of patient care: electronic prescribing, mobile inpatient rounding, and physician portals that enable anywhere, anytime access to patient information.” (Healthvision, 2006, p.7)

A single, standardized patient care chart further allows the Regional Cardiac Care Program at Southlake to actively participate in provincial, national, and international benchmarking opportunities and the continued development of patient care standards and the use of information and technology in the delivery of cardiac care to a region. Most important, a single, standardized patient care chart allows easy transitions of care across the region to and from the regional acute cardiac care nucleus (Southlake) and community programs located ‘closer to home’.

There have been significant investments at the provincial and national level to accelerate the use of technology in healthcare, presenting new funding and partnership opportunities for the York, Simcoe, Muskoka, and Dufferin Regional Cardiac Program. It is proposed that the Cardiac Care Regional Technology platform will leverage current technology strengths, establish new partnerships and achieve Canadian ‘firsts’ by accelerating the implementation of cardiac-specific technology enablers and focusing on the new integrated distributed model proposed.

Information systems in a regional integrated distributed model will be implemented utilizing the fundamental principle that information should only be entered at one point along the continuum of care, and all other needs for that information dataset are populated from the original entry point. The patient’s record will be a single, interdisciplinary record across the continuum of care. This does not necessarily mean that there is only one ‘view’, but rather that as any professional discipline charts at any location within the region, the information populates the ‘views’ of other disciplines, irrespective of location.

Simply put, technology supports and enables the concept of one team across the region, working virtually together for the heart health of the community.
Looking forward to the year 2010, six priorities have been identified for the Regional Cardiac Care Program for York, Simcoe, Muskoka, and Dufferin:

1. **Cardiac Data Management System**

   Access to information and technology is a key enabler for achieving the program's vision. Southlake’s Regional Cardiac Care Program is embarking on the implementation of a Cardiac Data Management System (CDMS). CDMS will be the overarching solution for cardiac patient management covering all cardiac modalities and can serve as the IM/IT foundation for the Regional Cardiac Care Program Information Management/Technology Strategy 2010. With deployment and integration of high-capacity Cardiac Network Storage (e.g., SAN, PACS) with CDMS, it will allow our staff and physicians to access cardiac clinical information in one place, irrespective of the physical location within or outside of Southlake.

2. **Access**

   As the patient’s chart becomes increasingly based in electronic documentation solutions, and the shift from traditional paper-based documentation solutions continues, easy and convenient access to enabling technologies is paramount. Access to technology across the region enables clinical workflow.

| Integrate clinical information into patient-centric, profession-specific views | • Clinical information will be available online and in one place.  
• Graphical user interfaces and web-based technology will be used to provide meaningful views of clinical information.  
• Appointment and procedure scheduling will be patient-centric, integrated, and standardized. |
|---|---|
| Capture clinical documentation in discrete, structured formats | • Clinical data will be captured in discrete, structured formats in support of usability at the point of care and subsequent retrospective analysis.  
• The depth and breadth of online content will be significantly increased and duplicate data entry will be decreased. |
| Provide secure access wherever clinical information is required | • Point of care and wireless devices will be deployed to provide access wherever data is captured and decisions are made.  
• The Regional Cardiac Care Program staff will have secure remote access to all required systems. |
3. Clinical Best Practice and Patient Safety

Patient safety and quality of care will be key areas of focus for the Regional Cardiac Care Program. Therefore, it is paramount that clinical decision support becomes an integral component of the regional program organizational culture, engaging clinicians in their workflow and demonstrating measurable results.

| Increase adoption and expand scope of clinical documentation at point of care | • Data collection will be entered online.  
• Data collection process will be re-engineered to support workflow and align with clinical best practices.  
• Clinical activities and decision making will be guided by evidence-based clinical alerts, protocols, and pathways.  
• Clinical decision support efforts will be supported by structures and processes will encourage collaboration with Southlake’s Cardiac Care partnering clinicians.  
• Handheld technology will be considered to support the availability of decision support information, where appropriate. |
|---|---|
| Improve clinical decision making at point of care | • Clinicians will be notified of critical results and events in real-time.  
• Clinicians will be provided with tools for mortality and morbidity risks.  
• Clinicians will have access to an integrated medication profile, and potential adverse drug events will be proactively identified.  
• Adverse clinical events will be accurately documented and feedback mechanisms will be in place to minimize recurrence. |
| Improve patient safety through process improvement and use of clinical alerts | --- |
4. Accountability

Accountability is a key tenet of the Regional Cardiac Care Information Management/Technology Strategic Plan including the appropriate communication accountability processes – timely feedback to management, staff, and ministry on the performance of the overall program.

<table>
<thead>
<tr>
<th>Integrated information systems link key departmental and other datasources</th>
<th>• Data from all major cardiac information systems is integrated to support performance measurement and reporting.</th>
</tr>
</thead>
</table>
| Robust data quality and data management infrastructure ensure data accuracy and integrity | • Data to support performance reporting is credible, accurate, and comprehensive.  
• Ongoing data quality activities are operationalized to ensure continued relevance to performance and ministry reporting requirements. |
| Sophisticated performance tracking and reporting capabilities allow management to align operational decision making with the strategies of the RCCP and Southlake | • Front-line managers, program teams and clinical leaders across the region have access to timely and relevant information related to clinical activity.  
• Program senior management has comprehensive information required for program planning and policy setting. |
5. Community Focus

In order to enable the vision of an integrated distributed model, consideration of the continuum of care across the region must be integral in the Information Management/Technology Strategic Plan. Strong, formal linkages across the York, Simcoe, Muskoka, and Dufferin regions, and the broader healthcare community and visible leadership in regional and provincial initiatives that promote information integration solutions is paramount to the Regional Cardiac Care Program.

| Improve continuity of care through information sharing with regional partnering hospitals and community providers | • Through provincial initiatives, all cardiac providers will sharing with regional partnering have access to patient information across the region.  
• Community providers and the network of Southlake’s Regional Cardiac Care Program partnering hospitals will access patient-specific results online for shared patient populations.  
• Community providers and Southlake’s Regional Cardiac Care Program partnering hospitals will have the opportunity to take part in patient diagnosis remotely through use of available Internet infrastructure, e.g., Telehealth, SSHA.  
• Supported by an integrated network, patients requiring cardiac care will be identified utilizing a patient acuity measurement tool and will, therefore, have equal access to cardiac care within the region. |
|---|---|
| Improve access to Southlake’s Regional Cardiac Care Program services | • Referral processes within the region (e.g., to/from Southlake’s acute programs and to/from regional satellite cardiac care programs) will be optimized, including electronic sharing of key referral information.  
• Community providers and regional partnering hospitals will have electronic access to information about hospital services and prerequisites for referrals. |
6. Patient Experience

Access to information and technology is a central component of the Regional Cardiac Care Program IT/IM Strategy to empower patients and improve the patient experience. However, relatively little is known currently about how patients want to access and view electronic information. The cardiac management team is committed to working closely with patients and regional partner care venues, to evaluate technology and information-presentation options.

| Provide patients with secure access to their personal health information, care schedule, and educational tools | • In collaboration with Most Responsible Physician (MRP), patients will access components of their record online and update demographics to facilitate a more streamlined registration process.  
| • To support management of cardiac care, patients will contribute to their electronic patient record in the form of a journal.  
| • Patients will have access to care schedules online.  
| • Patients will have access to customized education materials and interactive tools to support decision making and self-care. |

| Provide patients with new ways to access services that support individual choice | • Telehealth programs will be further developed to support delivery of care to geographically disparate areas.  
| • Patients will have access to tools for communicating with providers via the Internet.  
| • Home monitoring systems will be used to support delivery of cardiac care. |

Privacy

The Regional Cardiac Care Program places a high value on the confidentiality of its patients and the protection of personal information. The organization has a long-standing privacy-sensitive culture based on professional ethics and strict data access safeguards. As a result of comprehensive and dedicated efforts in privacy management, the organization is well prepared to respond to provincial and federal privacy legislations and to work with partners across the continuum of care to ensure privacy of patient information.

In conclusion, the York Simcoe Muskoka Dufferin Cardiac System Planning Team and Southlake’s Regional Cardiac Care Program are committed to being a leader in working with partners across the continuum of care and developing and implementing comprehensive, integrated information management and technology solutions. Southlake fully embraces the strategic role of information technology as the Regional Cardiac Care Program implements a new, Integrated Distributed Model of Cardiac Care.
QUALITY AND OUTCOMES

Southlake has a commitment to quality that is clearly articulated in its vision statement:

– Shockingly Excellent Service.

Vision without action, it has been said, is just a dream, never realized. Action without vision merely marks the passage of time (Barker). In the past five years, a tremendous amount of progress has been made in developing structures to support a philosophy of ‘Continuous Improvement’ across all levels of the organization. In addition, a variety of strategies have been undertaken to elicit customer feedback and to promote the use of data monitoring and analysis to identify action and evaluate improvement initiatives. However, in a complex system such as healthcare, past success does not ensure or predict future success.

Quality is not a static target to be achieved, celebrated, and marked off our list of tasks to complete. It is a journey in which the bar is constantly being raised and challenged and “shockingly excellent” is the benchmark by which we measure and are measured. In the true spirit of ‘Continuous Improvement’, we must periodically re-examine our structures and processes and continue to evolve in response.10

Cardiology Scorecard

Southlake has developed a balanced scorecard framework for the monitoring and reporting of quality indicators by all areas of the organization. Based on the work of Kaplan & Norton (1992), the Balanced Scorecard is a management system that enables organizations to:

• Clarify their vision and strategy and translate them into action
• Monitor performance over many dimensions
• Examine the inherent and dynamic relationships between indicators

Indicators are developed based directly on the goals of the organization or business unit and grouped within four quadrants: Customer Perspective, Internal Business, Financial and Innovation and Learning. This basic framework has been adapted for use by many key healthcare stakeholders. The Ontario Hospital Association has adapted this framework for its Hospital Report Series as well as the Canadian Council for Health Services Accreditation.

Within Southlake’s cardiology program, a number of performance measures are monitored to assess advancement toward programmatic goals and objectives. Figure 2 on page 51 illustrates these measures.

10 In Support of Quality Improvement, Southlake, Nov. 2003
It is envisioned that this programmatic scorecard will evolve into a tool to assess performance across organizational boundaries with the advancement of an Integrated Distributed Model of Care. In essence, a scorecard on cardiac performance across the region will be established.

**Relationship Between Clinical Outcomes and Volume**

Over the past 20 years, researchers and healthcare systems have had a growing interest in understanding what makes for high-quality care, with the ultimate goal of improving patient outcomes. Numerous studies have concluded that for a majority of procedures, patients do better under the care of hospitals and physicians performing large numbers of that particular procedure.11

In addition to being recognized as managing one of the largest cardiac programs in North America, Southlake's commitment to excellence in patient outcomes has garnered much attention internationally. In the 2007 Hospital Report, the Hospital Report Research Collaborative (HRRC) identified Southlake as the only hospital to earn the prestigious “high performing hospital” designation two consecutive years in a row.

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11 Does Quantity Mean Quality in Medical Procedures? 17 September 2002 / Volume 137 Issue 6 / Page I-52
A growing body of work has demonstrated a relationship between volume and outcome for a variety of complex surgical procedures and medical conditions. In 2000, Dudley et al found that, among 128 studies examining 40 different procedures or conditions, 80% reported a statistically significant relationship between higher institutional case volume and better clinical outcomes; none of the published studies reported an association between higher volume and worse outcomes.12

**Impact on Mortality Rates** – A recent study undertaken by Stroke Outcome Research Canada also found that adverse outcomes were more frequent in patients treated in low-volume facilities (<50 strokes/year) than in those treated in high volume facilities (100 to 199 and >200 strokes patients/year).13 They concluded that high annual hospital volume was consistently associated with lower stroke mortality.

This finding has been replicated in four large studies conducted in the United States, which conclusively demonstrated that larger annual surgical case volumes were associated with substantial reductions in in-hospital mortality. These results were quite consistent despite the fact that the studies used different data sources, different patient selection, different risk adjustment methods, and different definitions of volume. Jenkins et al 14 used aggregated hospital discharge data from California (1988) and Massachusetts (1989) to demonstrate a significantly higher risk-adjusted odds of in-hospital mortality for centres performing less than or equal to 300 cases per year relative to those performing >300 cases.

**Impact on Hospital Cost Structures** - In addition to better clinical outcomes, hospitals with higher procedure volumes for CABG surgery or PCI have also been associated with lower costs per patient.15

The cost impact on supply chain management is also considerably higher in organizations with higher volumes, and thus greater economies of scale.

The MOHLTC Surgical Process Analysis and Improvement Expert Panel suggests hospitals develop organized and effective processes that manage how products are selected and purchased, i.e., the use of a limited but sufficient range of instrumentation and vendors to enable good choice and minimize inefficiencies and confusion.

**Relationship of Patient Satisfaction With Care and Clinical Outcomes**

Much has been written in the literature regarding the link between increased patient satisfaction and better clinical outcomes. In 1997, Kane et al examined the relationship between three dimensions of patient satisfaction (quality of care, hospital care, and physician time). Their findings demonstrated that improvement in overall health status and alleviation of specific symptoms were both related significantly to patient satisfaction results.16 These observations are echoed in the 2007 Hospital Report results which not only identify Southlake as a high performing hospital, but also the only hospital in the Central LHIN to have above-average ratings in: overall impressions, overall patient satisfaction, and nursing care.

12 Reevaluation of the Volume-Outcome Relationship for Pediatric Cardiac Surgery. Kimberlee Gauvreau, ScD. From the Department of Cardiology, Children’s Hospital; Department of Pediatrics, Harvard Medical School; and Department of Biostatistics, Harvard School of Public Health, Boston, Mass
13 NEUROLOGY 2007;69:1142-1151 © 2007 American Academy of Neurology. Hospital volume and stroke outcome:Does it matter?.G. Saposnik, MD, MSc, A. Baibergenova, MD, PhD, M. O'Donnell, MD, M. D. Hill, MD, MSc, M. K. Kapral, MD, MSc, V. Hachinski, MD, DSc On behalf of the Stroke Outcome Research Canada (SORCan) Working Group
14 Reevaluation of the Volume-Outcome Relationship for Pediatric Cardiac Surgery. Kimberlee Gauvreau, ScD. From the Department of Cardiology, Children’s Hospital; Department of Pediatrics, Harvard Medical School; and Department of Biostatistics, Harvard School of Public Health, Boston, Mass
16 Medical Care. 35(7):714-730, July 1997. Kane, Robert L. MD; Maciejewski, Matthew BSFS; Finch, Michael P.
ACCESS AND FLOW

The vision for the Regional Cardiac Care Program for York, Simcoe, Muskoka, and Dufferin is to develop a new regional model of care that supports both a centralized consolidated advanced care service delivery model at Southlake, and the concept of providing services ‘closer to home’, where regional community volumes will support such programs. This new regional model, an Integrated Distributed Model, would embrace Southlake's regional leadership role, as well as the development of satellite care locations to deliver some components of cardiac care.

Standardization of Care Pathways Across the Region

Fundamental to a regional approach to cardiac care, and an Integrated Distributed Model is the development of true, patient-focused partnerships and standardized patient care pathways. Evidence-based standardized patient care pathways should guide all cardiac care, irrespective of where that care is being delivered to the patient across the regional continuum of care.

In an Integrated Distributed Model, different aspects of cardiac care, covering the spectrum from prevention and healthy lifestyles to highly specialized acute care, are provided ‘closest to home’ where patient volumes permit. This model is built on the principle that the expertise of Southlake’s Advanced Cardiac Care Team are available to coach, mentor, consult, and guide cardiac care across the region. Information technology enablers, which would support the Integrated Distributed Model, have been discussed earlier in this paper.

Standardized care pathways used across the continuum will allow for teams in different locations to easily share knowledge regarding a patient. Furthermore, an outcome of standardized care pathways across the continuum will be standardized charting tools, allowing for easy data and information transfer. The patient’s chart truly is a regional, comprehensive patient record, which tracks the entire patient journey. This is significantly different from today's episodic chart, with portions of a patient’s journey captured in each individual care setting.

It is noteworthy to restate that clinical pathways also support clinical outcomes, evaluation measures, quality indicators, charting efficiencies, and comprehensive regional data management.

Patient Access to Care Across the Continuum

Within the Integrated Distributed Model, as patients’ needs change, patient care will be provided at the centre ‘closest to home’ which delivers the acuity of care needed. The patient care team is therefore a regional care team, with differing levels of expertise and specialization in cardiac care, and the acute spectrum being provided at the Regional Cardiac Care Program of Excellence located at Southlake.

It is therefore essential that access to different levels of care across the region be based on patient presentation and acuity rather than the individual community in which the patient resides. Simply, there must be equal access to care across the continuum. Equal access is a fundamental principle for both increasing patient acuity needs and decreasing patient acuity needs and care delivered ‘closer to home’.
Patient Flow

Regional standardized care pathways and charting tools, supported by a regional cardiac care enabling technology platform, will support a uniform acuity measurement scale and equal access to care across the region. In addition, standardized care pathways should have patient referral points built into the model, and the ‘referrals’ should be automatically generated with the associated supporting patient information sent to the appropriate centre in the region.

Essentially, at any given time, all patients receiving cardiac care across the region will be able to be tracked. Further, tracking actual patient flow, bottlenecks, and excess capacity will allow for refinement of the Integrated Distributed Model as cardiac care in the regional cardiac program grows.

Because the regional standardized care pathways will guide all cardiac care and access to services across the region, it is essential that they are evidence-based and continuously updated utilizing the most current research regarding cardiac care.

FINANCING THE VISION

Too often, vision papers articulate a vision for patient care without considering the financing considerations required to realize the vision. Fundamental to the Integrated Distributed Model of Care proposed in this paper is a fully integrated regional approach to patient care, technology, human resource strategies, patient care access, and partnerships.

Financing principles to support the new Integrated Distributed Regional Model of Cardiac Care should also be grounded in a fully integrated regional approach. The York Simcoe Muskoka Dufferin Cardiac System Planning Team, in partnership with the LHINs, should be fully engaged in developing, proposing, and endorsing the financial considerations to support cardiac care within the region.

Operational Finance Needs: Utilizing Case Costing of Cardiac Procedures

It is proposed that rates paid for cardiac services should be based on sound methodology that is reasonably replicable by participating hospitals. Increases in incremental volumes of cardiac services should be funded on a procedure-specific basis. The following principles and recommended practices should guide the setting of rates for cardiac services:

- Funding should focus on outputs, instead of inputs.
- Modeling would start with Case Mix Groups (CMGs).
- Ontario Case Costing Initiative (OCCI) data would be used for cost analysis in the development of underlying base funding rates.
- MIS/Ontario Cost Distribution Methodology should be used for comparison of results.
Furthermore, it is proposed that the following rules and/or practices should be utilized when defining and costing designated priority services:

- The designated cardiac service will be defined by specific case costing initiative (CCI) codes.
- The ‘scope’ of the designated cardiac service must be clearly delineated and measurable (i.e., course of treatment, length of stay, limited to procedure, device costs, etc.) to make explicit where funding ‘starts and ends’ relative to other funding sources.
- Only data sources that are proven accurate and reliable will be used.
- A ‘base rate’ for funding incremental volumes will be derived from OCCI data. This will consist of the actual direct cost of providing the service (as identified by the CCI codes) given the prescribed scope and the portion of the actual average indirect cost that varies with patient volumes.
- Case costing data is adjusted for inflation.
- The funding rate shall only incorporate a hospital specific acuity adjustment if the variable(s) can be demonstrated to impact costs. If valid and reliable data does not exist, the acuity adjustment will not be made and only the base rate will be employed.
- Funding rates for designated priority services will be reviewed every three years and consideration at that time will be given to adjust the rate based on new information derived from clinical and administrative data sources.
- Services that are mature or that have stabilized will be transferred to the hospitals’ base budget and no longer ‘managed’ by the MOHLTC or CLHIN.¹⁷

It is proposed that the range of cardiac services that would be funded through a rates-based methodology follow the MOHLTC Priority Services Adult Cardiac Care definitions:

- Diagnostic Cardiac Procedures
  - Cardiac Catheterization
  - Electrophysiology Studies
- Cardiac Revascularization Surgery
  - CABG Only
  - CABG Only – Off Pump
  - CABG & Valve
- Interventional Cardiology
  - Angioplasty (PTCA)
  - Coronary Stent
  - IIb/IIia Inhibitors
- Other Open Heart Surgeries
  - Valve Only
  - Other open Heart surgeries
- Arrhythmia Intervention
  - Ablations
  - Automatic Implantable Cardiac Defibrillators (AICDs)
  - Permanent Pacemakers¹⁸

¹⁷ Review of Priority Services Funding Methodology: Selected Cardiac Services, Joint Policy and Planning Committee, 2005 p. 10
¹⁸ Review of Priority Services Funding Methodology: Selected Cardiac Services, Joint Policy and Planning Committee, 2005 p. 18
It is further proposed that an adjustment factor of 4% be added to the case-costing allocation to support capital requirement needs. Thus, capital costs would, in part, be built into the case funding methodology. These funds should be allowed to accumulate in a separate account, allocated specifically for cardiac care capital requirements, and spent as required for capital needs.

It is proposed that an operational funding model, which is based on a comprehensive case-costing methodology, would support actual patient care volumes as well as patient acuity. Such a model supports actual work completed rather than projected patient acuity or volumes. Recall that the proposed Integrated Distributed Model of Care supports the provision of cardiac care across the region including, where patient volumes support, the development of satellite specialty centres. Utilizing the proposed case-costing methodology, the funds would be allocated where the care is provided and therefore, as new centres are opened, the funding methodology would already be established.

**Regional Cardiac Care Foundation Partnerships**

The Integrated Distributed Model of Care proposed endorses both a centralized, consolidated service delivery model, and the concept of providing services ‘closer to home’, when regional community volumes support such programs. This new regional model, would embrace Southlake’s regional leadership and advanced services provider role, and also the development of satellite care locations to deliver some components of cardiac care for the growing and diverse communities of York, Simcoe, Muskoka, and Dufferin. Competition is replaced with cooperation, and the model is truly grounded in partnerships and the principles of patient-centred care.

Utilizing the same principles of a fully integrated approach to care, it is proposed that a new, integrated, regional plan be developed to support the financial needs for fully realizing the vision of the Integrated Distributed Model of Care across the York, Simcoe, Muskoka, and Dufferin regions. It is proposed that a York Simcoe Muskoka Dufferin Cardiac System Planning Team support fundraising activities for cardiac care in the region.

The Foundation at Southlake Regional Health Centre will establish partnerships with other hospital foundations in the York, Simcoe, Muskoka, and Dufferin regions with the mandate to raise funds required for capital cardiac care expenses across the region. Recall that capital expenses to support the Integrated Distributed Model of Care could range from the need for a portable piece of diagnostic equipment at a given local hospital, or utilized to support travelling regional cardiac specialist teams, or for new or replacement equipment at a tertiary centre. Foundation partnerships would allow for capital equipment funds to be allocated as needed to support the model of care across the region.

Today, the Foundations of each of the respective hospitals in the region are focused on an individual hospital rather than on the regional, integrated capital equipment needs. Furthermore, it may be difficult for smaller communities to raise funds for expensive cardiac capital equipment, or for regional care centres to bear the burden of raising capital funds for equipment which supports regional patient needs. Foundation partnerships in the region could fully consider the regional cardiac capital equipment requirements.

Although unprecedented, Foundation partnerships would truly be a signal that the Integrated Distributed Model of Care is indeed a NEW model of care to support cardiac care. Moreover, Foundation partnerships demonstrate in action that the model of care is fully integrated and focused on regional population needs for cardiac care.
Further, Foundation partnerships may also have the opportunity to explore large benefactor donations and endowment funds, which may not be attractive when considering only a segment of the care pathway. Supporting a new, innovative model of care, which is grounded in the principles of partnerships to support quality, patient-centred care may indeed be an exciting option to propose to individual or corporate benefactors within the region. Their donations would support regional rather than specific hospital initiatives.

It is paramount that the proposed Foundation partnerships work in the various aspects of all of the cardiac program with the York Simcoe Muskoka Dufferin Cardiac System Planning Team. It is important for the Foundations to be fully aware of the future plans for cardiac equipment requirements across the region. In addition, the regional focus on quality and patient care outcomes should be fully shared with the Foundations to support their fundraising efforts.

The proposed Cardiac Foundation Partnership is a new and innovative concept, which would fully support the Integrated Distributed Model of Care. Such an approach would distinguish the region and support the fundamental concepts of developing a ‘Centre of Excellence’.
PARTNERSHIPS IN CARE

It is imperative that the Regional Cardiac Program at Southlake and the York Simcoe Muskoka Dufferin Cardiac System Planning Team re-confirm and establish a number of partnerships to support the continued pursuit of excellence in cardiac care within Ontario and internationally. Partnerships should include education and research, industry, the community, other cardiac care providers, the Cardiac Care Network, and the MOHLTC within Ontario, and most importantly patients.

In addition, developing a ‘Network of Cardiac Care Excellence’ sponsored by Southlake and the York, Simcoe, Muskoka, Dufferin Cardiac System Planning Team would provide international benchmarking opportunities, a forum to engage with other global cardiac experts, and position the regional cardiac care program and the Integrated Distributed Regional Model as a premier model of care. Recall that the Seneca College Centre of Excellence Task Force (2003) determined that Centres of Excellence operate on a national level and develop national partnerships.

Education and Research Partnerships

Supporting a strong intellectual community of innovation, shared vision, research development and purpose, as well as leading the sector by developing strategic partnerships to advance the body of knowledge were recognized as two defining attributes of a Centre of Excellence. (Seneca College Centre of Excellence Task Force, 2003)

Affiliation with a medical teaching program would further distinguish Southlake and the York Simcoe Muskoka Dufferin Cardiac System Planning Team. Southlake currently offers one of eight comprehensive advanced cardiac programs including a full-spectrum of specialty services, and providing a larger total volume than the London Health Sciences Centre, Toronto’s St. Michael’s Hospital, Toronto’s Sunnybrook Hospital, and Kingston General. Further, as previously highlighted, Southlake is the second highest provider in the province of Ontario in electrophysiologic and ablations procedures, and does the highest number of complex ablations in the county. In fact, all of the other Ontario Centres, which offer a comprehensive Advanced Cardiac Program in Ontario, are affiliated teaching centres.

Clearly, the Regional Cardiac Program’s volumes, coupled with the proposed new Integrated Distributed Model of Care, which will track all cardiac patients across the continuum utilizing standardized pathways, and Southlake’s international recognition in electrophysiological studies, together set the stage for Southlake's regional advanced cardiac services to be affiliated with a teaching program. Further, the Regional Cardiac Program’s volumes and standardized data collection tools will make the region a prime centre to be considered as a ‘living lab’ for research.

Affiliation with a medical teaching institution is proposed for all disciplines involved with cardiac care, and not just the physician component. It is equally important that all other professional disciplines which also provide excellence in care, participate and lead research opportunities, and play a leadership role in the development of new expanded and advanced roles, across the continuum of cardiac care in the region.

Moreover, it is essential to recognize that a commitment to lifelong learning will continue to keep the Regional Cardiac Care Program at Southlake pushing the boundaries in advancements of cardiac care. A formal relationship with a medical teaching centre will foster ongoing lifelong learning opportunities for the entire team.
Industry Partnerships

Southlake has already distinguished itself as an advanced cardiac care provider committed to partnering with industry leaders, and it has introduced new state-of-the-art technology in treating its patients. In February 2007, Southlake’s Heart Rhythm Program became the first hospital worldwide to introduce a new, groundbreaking technology that vastly improves the treatment of cardiac patients and reduces exposure to X-rays. This new system is used to generate precise three-dimensional (3-D) images of the heart or individual heart chambers enabling physicians to pinpoint the exact locations of the heart requiring treatment. This is one example of a host of ‘firsts’ for Ontario, Canada, and internationally that have been launched in partnership with cardiac care industry leaders and Southlake’s Regional Cardiac Care Centre of Excellence Team.

As the Regional Integrated Distributed Model of Care becomes effective across the continuum of care in the region, the potential for industry and vendor partnerships is endless. New, portable diagnostic equipment and tools, and technology enablers allowing for virtual care models are two such examples where cardiac specialists would be positioned to be a key partner in beta-testing of such equipment within the field.

The Regional Cardiac Care Team will actively seek and maintain existing industry partnerships as well as search for new opportunities to advance cardiac care for the community, Ontario, and internationally. It is recognized that ‘cutting-edge’ opportunities may be beyond the traditional medical industry and thus a commitment to nurturing industry partnerships and consistently being on the leading edge and advancing cardiac care is desirable.

Community Partnerships

The new regional Integrated Distributed Model will provide vast opportunities for community providers to partner across the region. The Integrated Distributed Model is a comprehensive model, which encompasses the full spectrum of cardiac care from prevention to highly specialized acute cardiac care needs. Therefore, the model is poised to embrace a diverse range of community partners with the goal of ‘Heart Healthy Communities’.

Some community partnerships may be formally recognized cardiac care providers, such as the Heart and Stroke Foundation of Canada, while others may be non-traditional partners, such as fitness centres, community centres, and restaurants (which provide ‘heart healthy’ menu items) – the possibilities for partnerships are vast.

Embracing community partners will enable formal healthcare providers to partner with a much larger definition of healthcare. Such partnerships will allow for a sharing of ideas, materials, and resources rather than a duplication of such resources. The singular focus will be ‘Heart Healthy Communities’.

Cardiac Care Partnerships: Existing Partnerships and Future Opportunities

The Regional Cardiac Care Program at Southlake has, from the outset, been built on partnerships. The York Simcoe Muskoka Dufferin Cardiac System Planning Team has been the foundation for the development of cardiac care partnerships. The mandate of this committee is to oversee the full continuum of cardiac care services, and to work collaboratively to advance access, quality, and efficiency for residents within the region.
Evidence of this successful collaboration is seen with the repatriation process that began in 2006. Markham Stouffville, Royal Victoria Hospital, Orillia's Soldiers Memorial Hospital, and York Central Hospital have all partnered with Southlake to provide care. Once a patient has completed the procedure and recovery aspect of PCI and has met the criteria for repatriation, the patient is transferred back to their ‘home’ hospital to continue with post-procedural recovery and care. The success of this project was measured both with patients and staff, who agree that shared care supports a patient-centred philosophy and a collaborative model.

Partnerships and agreements are also evident with other regional hospitals. Markham Stouffville, York Central, and Royal Victoria Hospital's cardiologists provide diagnostic catheterization in the catheterization labs at Southlake. Furthermore, these cardiologists participate in partnership with Southlake’s Cardiology Team in regular program meetings.

In 2006, an agreement with Headwaters Hospital in Orangeville was developed to ensure that patients of this community had timely access to cardiac services. Although not named by the MOHLTC as part of the York, Simcoe, and Muskoka Regions’ mandate to provide cardiac services, strong partnerships have been cultivated. The result is enhanced care for the citizens of Orangeville, including bypass of Headwaters Hospital Emergency Department for patients who meet the ST elevation MI criteria for direct access to the cath lab for Primary PCI.

Providing a final example of existing partnerships, the York Simcoe Muskoka Regional Rehab committee is yet another example of partnerships. York Central Hospital, Collingwood District Memorial Hospital, Stevenson Memorial Hospital, and Soldiers Memorial Hospital in Orillia are all partners in this committee. This group meets quarterly to identify, plan, and evaluate the cardiac rehab services within the regions. Last year, a successful implementation of Home-Based Rehab was developed. This program allows patients (who have had a cardiac procedure at Southlake) to determine where their cardiac rehabilitation service will take place. If the patient prefers to follow a prescribed program at home, they can then access education and support services of a kinesiologist or physiotherapist at a hospital that is close to the patient’s home.

Recall that a hallmark of a Centre of Excellence is to be viewed by external organizations as an essential resource, with the ability to lead, influence, shape, and establish policy. Southlake’s Cardiac Care Team is already recognized as a premier provider for cardiac care in Ontario. The implementation of the proposed new Regional Integrated Distributed Model will further position the York Simcoe Muskoka and Dufferin regions and Southlake’s Advanced Cardiac Care Programs at the forefront.

It is essential that the Regional Cardiac Care Program and Southlake’s clinical expert team continue to provide leadership to various cardiac care partnerships in Ontario, Canada, and internationally. Cardiac care partnerships will encompass the MOHLTC, other cardiac care centres in Ontario, the Cardiac Care Network, and other international network partners discussed previously. In addition, Southlake's Regional Cardiac Care Team has attracted, and will continue to attract internationally recognized experts in many professional disciplines.

Furthermore, the York Simcoe Muskoka Dufferin Cardiac System Planning Team should purposefully target and track professional cardiac care professional affiliations, and encourage and support all staff to take leadership roles within these professional organizations and affiliations. Similarly, purposefully tracking key professional conferences, aggressively seeking forums to share the regional cardiac care experiences and results, and participating in conference committees are all activities that will increase exposure for the program and increase the opportunities to be informed about new and emerging practices internationally.
IMPLEMENTATION AND SUSTAINABILITY

Continuing to transform Southlake’s Regional Cardiac Care Program of Excellence, which is already highly regarded internationally to the next level, can indeed be a daunting task. The York Simcoe Muskoka Dufferin Cardiac System Planning Team and Southlake’s Expert Cardiac Care Team equally embrace the opportunities ahead, and to define and implement a new Integrated Distributed Model to guide the full spectrum of cardiac care across the continuum, to the citizens of the region.

In order to realize the new Integrated Distributed Regional Model of Care, it is paramount that planning be aggressive and commence with a wide community consultation of this vision document. Articulating the vision for the centre from the outset is paramount to achieving success!

The current processes and patient flow must be mapped completely and as accurately as possible. This will allow for a review of current processes and comparisons with future processes. The outcome will be a detailed analysis of all changes requiring implementation. These changes should then be ranked for ease of implementation and program impact. The complete analysis will result in an implementation roadmap. A key feature of the implementation roadmap will be milestones and phasing. It is worthy to note that some changes will require incremental milestones and full transformation to the new Integrated Distributed Regional Model will require months and years to realize.

It is vital that, for the vision to be realized fully and within an aggressive and pre-determined timeframe, strict project management principles be applied. Key milestone achievement, resourcing requirements, interdependencies, and risk-mitigation strategies are all critical project management components for successful implementation.

Following project-management principles, each phase of the implementation will have defined goals, pre-determined targeted outcomes, and success indicators. Outcomes measured will encompass both process metrics and outcomes metrics. In addition, it is paramount that when engaging a wide spectrum of providers to contribute to a regional model, it will be important to define key accountabilities for action.

In summary, defining a vision, a project charter, and adhering to project management principles will ensure success. The Regional Cardiac Care Team is committed to achieving – and exceeding – the vision of a new Regional Integrated Distributed Model for York, Simcoe, Muskoka, and Dufferin regions.
A PATIENT’S STORY

A new model of care, an Integrated Distributed Model, has been proposed within this vision document. This new model proposal is uniquely patient-centric, focuses on the entire patient’s health journey across the continuum, supports local health provision and access to specialist expertise, and is truly grounded in regional partnerships.

It is true that quality measures, outcome measures, and process metrics are important indicators for the regional cardiac care provided. However, an equally or perhaps more important measure of care is the impact on patients, their lives, and their loved ones.

When we truly have it ‘right’ from the patient’s perspective, a letter might look like this:

Dear Minister of Health,

I have been hearing about the positive changes taking place in our province’s healthcare system and I must admit that until very recently, I was a bit skeptical. Well, not any more! If my recent experience in York Region is any indication of what is going on with healthcare in the rest of Ontario, my skepticism is completely cured!

Earlier this year I had an unusual tingling in my chest. Quite coincidentally I noticed in the newspaper that our local community centre was hosting a drop-in information session about heart disease and that a nurse from our local hospital would be available to speak one-on-one with individuals. I decided to go and I can’t tell you how glad I am that I did. The nurse, Julie, had special training in cardiac care and had brought with her a couple of special machines. She was able to do some tests on me right then and there.

The results showed that there were some ‘irregularities’ and Julie told me about an excellent Cardiologist from Southlake. Her recommendation made me feel very good about the doctor; however, I live more than an hour from Newmarket and I don’t have a car. Right away, Julie assured me that this was not an issue since the Southlake Cardiologist comes to our local hospital for monthly clinics. I was so surprised by this. I had always thought that I would need to go to a larger centre to see a specialist, but I guess all of that has changed.

At my appointment, it was determined that I needed a test called an Echo and again, much to my surprise the cardiologist had brought both the machine and the staff to perform this test right at the clinic. I just thought this was incredible – no wait time at all.

In the end, the diagnosis was that I needed a cardiac catheterization. In short order I was scheduled in at Southlake and when I arrived for the procedure, I was again pleasantly surprised to find that both my test results and my prep work were already right there on Southlake’s computer. My procedure was successful and I was really impressed with the Southlake staff. Not only were they friendly and skilled, but they always made sure to introduce themselves to me and explain exactly what they would be doing. Never once did I feel like a ‘number’.

Now that the procedure is behind me, I am back to seeing Julie at the community centre and I see the Southlake Cardiologist in my own hospital every few months. As much as I was impressed with my visit to Southlake, I am really happy that I can just go down the street for my follow-up care.

I can’t believe what a great service we have for people with cardiac problems in my area. It is so well organized and I was always made to feel that my care was a priority. I don’t know if other areas in the province handle cardiac care as well as they do here. I hope so because this is really how healthcare should be – great people, great service, great outcomes. (You can use that if you’d like!!)

Thanks again for making a real difference in my life,

Sincerely,

Mrs. J. Franklin
LOOKING BEYOND THE CURRENT HORIZON

It is imperative that Southlake and the York Simcoe Muskoka Dufferin Cardiac System Planning Team continuously plan for the future needs of cardiac services within the region. As technology, pharmaceuticals, implants, diagnostics, and all other elements of a comprehensive cardiac care program continue to change the current and future landscape of cardiac services, it is paramount that these respond to the changing landscape. Keeping a focus, in a planned manner, on new aspects of care is essential to allow planning time to be ready to adjust to changes in care and a commitment to providing ‘state-of-the-art’ equipment, programs, and services.

To name only a few on the current horizon, future possibilities may include 256-slice CTs with cardiac modules, hybrid diagnostic interventional operating rooms, advanced minimally invasive surgical opportunities, and new pharmaceuticals. Developing partnerships with industry leaders discussed earlier could be an essential component to ensure that the Regional Cardiac Care Program keeps a focus on both current and future opportunities.

Other opportunities in the future may be in the realm of genetics and gene therapies. There may be a future need for a cardiac genetics lab to serve regional cardiac centres.

Most importantly, recall that the fundamental building block of the proposed Integrated Distributed Model is preventative medicine. Looking ten years ahead and beyond, developing comprehensive prevention programs, as well as models to proactively manage chronic diseases, such as congestive heart failure, are essential to begin NOW in order to mitigate the exponential demand for cardiac services in the future. Ensuring that ‘Heart Healthy Communities’ are based in widespread community campaigns to change lifestyle is fundamental to the citizens of the region in taking responsibility for their own ‘heart health’.

Although none of us can predict the future, what is important is that the Regional Cardiac Care Program continues to actively seek new opportunities ‘beyond the current horizon’ and corresponding planning is initiated to support the continued advancement of cardiac services within the region.
CONCLUSIONS

Southlake opened its cardiac catheterization labs in 1998 and subsequently formed partnerships and linkages with the hospitals in York, Simcoe, Muskoka, and Dufferin regions. A comprehensive regional advanced cardiac care program was initiated in 2003, including the Cardiac Surgery Program, the Electrophysiological Program (now called the Heart Rhythm Program), and the Interventional Cardiology (PCI) Program.

The Regional Cardiac Care Program at Southlake is now the fourth largest comprehensive Regional Cardiac Care Program in Ontario! Today, the populations of York, Simcoe, Muskoka, and Dufferin regions have access to a comprehensive Regional Cardiac Care Program, which is recognized as a premier provider of cardiac care services in Ontario.

Building on a history of unprecedented success, the Regional Cardiac Care Program, and the advanced cardiac services provided at Southlake must develop new partnerships with and re-define a regional care delivery model, which will support the future provision of excellence in cardiac care to the citizens of the region, wherever they may reside.

Therefore, the intent of this report is to provide the York Simcoe Muskoka Dufferin Cardiac System Planning Team with a vision document outlining the future delivery of cardiac care to the rapidly increasing regional population. The population profile, population projections, and associated cardiac care projects substantiate the need for a comprehensive regional plan for cardiac care for the future.

Building on past successes, a truly regional approach to cardiac services for York, Simcoe, Muskoka, and Dufferin and a new regional model of care is proposed. This new model of care will endorse both a centralized, consolidated service delivery model, and the concept of providing services ‘closer to home’, when regional community volumes support such programs. The proposed new regional model, an Integrated Distributed Model, would embrace Southlake’s regional leadership and advanced services provider role, and also would embrace the development of satellite care locations to deliver some components of cardiac care for the growing and diverse communities of York, Muskoka, Simcoe, and Dufferin regions.

Starting with a foundation of building ‘Heart Healthy Communities’, the Integrated Distributed Model of Care would support a comprehensive, consolidated approach to regional cardiac care up to and including the need for highly specialized cardiac care.

The York Simcoe Muskoka Dufferin Cardiac System Planning Team has the opportunity to become THE LEADER in regional cardiac care delivery, set the benchmarks in cardiac practice partnerships, and implement a model of care that truly supports the full continuum of care. When successful, the York Simcoe Muskoka Dufferin Regional Cardiac Program will be the model of choice for delivery of cardiac services in Ontario, Canada and Internationally!
“The future is not a result of choices among alternative paths offered by the present, but a place that is created – created first in the mind and will, created next in activity. The future is not some place we are going to, but one we are creating.”

– John Schaar, Futurist