

Niagara Health System
Together in Excellence—Leaders in Healthcare

July 15, 2008

Hospital Improvement Plan

Submitted to: The Hamilton Niagara Haldimand Brant
Local Health Integration Network

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Acknowledgements

The following individuals along with many members of their respective program teams worked tirelessly to develop the clinical services vision set out in this Hospital Improvement Plan [HIP] submission. We acknowledge and thank them and their colleagues for their leadership and commitment to creating this HIP and a vision for a sustainable hospital system in Niagara.

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We would also like to thank Shirley Stewart of the Hamilton Niagara Haldimand Brant Local Health Integration Network for her assistance with the provision of data and analysis results.

1.0 Executive Summary

Together in Excellence, Leaders in Healthcare.

HNHB LHIN Request for Submission of NHS Hospital Improvement Plan

On May 30, 2008, the Niagara Health System (NHS) was asked to prepare a Hospital Improvement Plan (HIP) by the Hamilton Niagara Haldimand Brant LHIN and submit the plan by July 15. In developing the HIP, the NHS was asked to provide a clinical services plan that:

- Ensures the necessary expertise and resources are available to provide accessible, quality healthcare for the citizens of Niagara;
- Identifies current and future hospital based services by site;
- Establishes timeframes and specific targets for each year of the HIP;
- Links the proposed strategies of the HIP and the public interest; and
- Achieves a balanced operating budget by 2011/12.

NHS HIP Has Achieved Goals Set by the LHIN

With this plan, we have met the goals established by the LHIN, achieving a balanced budget while providing accessible, quality healthcare to the citizens of Niagara, now and in the future.

Vision for Enhanced Clinical Service Delivery

The changes recommended are based on years of strategic thinking and experience with the current system. The leadership of the NHS – the Board of Trustees, Administration and Clinical Leaders – welcomed this opportunity to build upon work currently underway within the Niagara Health System to develop a Vision for enhanced clinical service delivery.

It captures the dedication and commitment to improving the hospital care of every resident in Niagara. The Board, the hospital administration and clinical leadership are ready to implement this vision to ensure that the appropriate hospital-based programs are available to Niagara residents now and in the future.

The Niagara Health System's vision statement and its core values of optimism, creativity, innovation, collaboration, integration and achievement of the highest standards in the delivery of healthcare in Niagara guided the development of this HIP. It:

- Delivers a wider range of hospital services here in the Niagara region;
- Ensures that fewer people have to leave the region to obtain hospital services;
- Brings more people back to the region for hospital treatment closer to their families; and
- Focuses on working with the communities we serve to provide more comprehensive care.

The clinical services plan speaks to a vision and a future that is based on the health needs of the residents of Niagara and demonstrates the passion and commitment of our clinical leaders to transform hospital-based care in Niagara. The plan builds on what we know today about the health of our population, about the trends in the health sector and creates a vision for hospital-based services that best meets the needs of the people of Niagara in the future.

HIP Responds to Key Challenges

The HIP also responds to some key challenges that the NHS and the Niagara Region are facing – an aging population; an aging workforce; decreasing population wellness and increasing prevalence of chronic disease; a need to enhance patient and staff safety; increasing patient/consumer expectations; demands for a better quality of worklife; rising healthcare costs; and poor integration of care particularly related to healthcare information sharing.

Care for Increasing Chronic Disease Requires Investments in “Enablers” Beyond Hospital Services

Niagara residents, like other Canadians, are increasingly likely to suffer from long-term (chronic) conditions such as diabetes, asthma and stroke. Evidence-based best practices show that people suffering from chronic conditions have the best outcomes when they receive most of their care from community-based health services. In many cases, it is now possible to prevent them from getting much sicker and requiring hospital care. As medicine evolves, the healthcare system goes beyond the hospital walls. This plan confirms that by advocating for community investments or “enablers” to provide the right care in the right place at the right time. These “enablers” are essential to realizing the recommendations within the plan. They include:

Enablers Include Improved Transportation System and More Community Services

- a significantly improved medical and non-medical transportation system throughout Niagara; and
- more services in the community to deliver non-acute care services like supportive housing and primary care.

This plan supports moving from a provider focus to a patient focus. It speaks to a system that can adapt to patients’ needs. Every recommendation made herein demonstrates that it improves quality of patient care; is sustainable; and is recognized as best practice in the field.

Quality

NHS Has Adopted Quality Framework with 9 Domains of Quality

First and foremost, quality will drive the delivery of patient care in Niagara – both how it is delivered and where it is delivered. At the NHS, we believe quality healthcare means delivering the right care at the right time in the right place and having the best possible outcome. To that end, the Board of Trustees of the NHS has adopted a Quality Framework, based on definitions used by the Institute of Medicine and Accreditation Canada. The nine domains of quality are:

1. **safe** (keeping people safe - avoiding complications or injuries to patients through the care that is intended to help them and providing a safe working environment for staff);
2. **effective** (providing health services to patients that are proven through scientific knowledge as effective);
3. **patient-centred** (providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions);
4. **timely** (reducing waits for both those who receive and those who give care);
5. **efficient** (avoiding waste, including waste of equipment, supplies, ideas, and energy);
6. **equitable** (providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socio-economic status);
7. **worklife** (supporting wellness in the work environment);
8. **population focus** (working with community to anticipate and meet needs); and,
9. **continuity of service** (experiencing co-ordinated and seamless services).

It is these domains as well as a board approved decision matrix that guided the development of the recommendations included within the HIP.

The Case for Change

Reasons Why Change is Needed in Way Hospital Care is Provided in Niagara

The main reasons why change is needed in the way we provide hospital care across the NHS are straightforward:

- to improve the health of the residents of Niagara;
- to meet and exceed the expects of the residents of Niagara;
- to recognize differences in health status needs and resources across the region;
- to recognize that hospitals are not always the best places to receive health-care;
- to provide more specialized care;
- to more effectively utilize our health-care providers and professionals, buildings and equipment;
- to make the best use of taxpayers' money.

Status Quo No Longer Sustainable for Hospitals

We recognize that money alone isn't going to resolve the challenges facing acute care in Niagara. We also recognize that the status quo in hospital

service is no longer sustainable here in Niagara due both to cost and other factors including:

- increased prevalence of chronic disease and lack of primary health-care in Niagara are driving increased utilization of hospital resources;
- a shrinking number of doctors, nurses and other health professionals;
- changes in technology; and
- changes in funding formulas.

The manner in which we provide health-care has significantly changed in past decades and the pace of change shows no sign of slowing. While these changes can be unwelcome, they create positive opportunities to improve the delivery of healthcare and the health of the entire Niagara community.

Advances in Knowledge and Technology

The acute care hospital of the future will look and be very different from the acute care hospital of today. We will see the emergence of more technology-dependent services. More effective drug treatments and therapies will shorten in-hospital stays for patients. Advanced surgical capability will mean more procedures will be performed on an outpatient basis. We will see more emphasis placed on keeping people healthy with more care being provided in the community. Evidence-based decision-making, standardized treatment and the increased use of research have already become the norm in health-care.

Increasing Specialization of Medicine

Advances in technology are also driving more centralization of services. Specialization means that specialist doctors, along with their teams, need access to high tech expensive equipment and a large enough volume and variety of cases of a specific condition to maintain their skills and develop and sustain their expertise. Specialist care cannot be provided at every single hospital in the Niagara Region. There will never be enough staff with that level of expertise. There is evidence that specialists performing larger numbers of cases achieve better results, particularly in more complex work.

Best Practice

Based on these and other evidence-based best practices, our clinical leaders are calling for changes in the way care is organized to ensure the highest quality care for all Niagara residents.

Duplication

Inherent in the NHS' multi-site system is duplication of core services and equipment. Healthcare technology and equipment is expensive and puts increasing strain on local foundations and auxiliaries that must raise the funds to pay for this equipment locally. Currently foundations are not able to meet the annual demands for new and replacement equipment, a great part of which is created by the need to duplicate the purchase of expensive equipment at multiple sites. Demands on services and the costs of new technologies, drugs and techniques are all increasing, so we must make the best use of all our resources – people, buildings, equipment and dollars and focus on our core business which is delivering quality care.

Challenges to Sustainability

In addition to duplication of services, the sustainability of our hospital system is being called into question in a number of areas:

- **Doctors and nurses now in the system are nearing retirement age.** By 2013, 41% of our Registered Nurses, 44% of our Registered Practical Nurses, and 53% of those in leadership roles will be eligible for retirement.
- **Recruiting new doctors and nurses to NHS is increasingly difficult.** Working conditions and quality of life have become a major factor in attracting doctors and nurses to Niagara. Newer graduates value quality of life and seek an on call schedule of one day out of four or better; want collaborative group practices – working as a team, not in isolation; and look for up-to-date infrastructure, equipment and technology. Under the current structure, these cannot be provided at many NHS sites.
- **Hospital buildings are aging.** Although we have been able to make some recent infrastructure investments at some of our sites, much more needs to be done. Changes are required in how we organize ourselves to strategically plan and manage the scope and number of renovations required and manage the impact this will have on our generous philanthropic donors.
- **We cannot attract student doctors and nurses.** One of the best ways to attract badly needed doctors and nurses to the Niagara region is to have them come to the region as students, where they will live, learn and get to know Niagara. To do this, there is a need to create an environment of excellence supported by research and teaching is critical in Niagara. A new way of delivering care offers the promise of a compelling environment to attract and develop leaders in Niagara who can deliver excellence in patient care.
- **Change requested by the community of Niagara** – we have heard loud and clear from many sources that quality and access to care needs to change in Niagara – through our patient satisfaction surveys, our employee satisfaction survey, our complaints process, and our on-line consultation process to inform the development of the Hospital Improvement Plan. The overwhelming feedback for the Community of Niagara is that ‘it’s about time’ for change to happen in Niagara.

All of these factors make a compelling case for change.

The Vision, the Plan

Every NHS Site Will Contribute to Healthcare of Niagara

One of our key commitments is that every site of the NHS has a role that contributes to overall healthcare of Niagara and at the same time recognizes the healthcare needs of the local community’s population that is in keeping with delivering high quality and safe patient care.

- ✓ **Creating Centres of Excellence** to improve care, be more efficient, and to help Niagara attract needed healthcare professionals. Ninety per cent

of the population of the entire region will be less than 30 minutes from the hospital care they require.

- ***Walker Family Cancer Centre*** - providing systemic/chemotherapy and radiotherapy to residents of Niagara, sited at the new healthcare complex.
- ***Cardiac Catheterization Centre*** – Enhanced diagnostic and new treatment capabilities including a new cardiac catheterization unit that will significantly reduce the need for Niagara residents to travel to Hamilton for this service
- ***Stroke Centre*** – enhancing the continuum of stroke services currently offered by introducing a new, 10-bed dedicated, acute stroke rehabilitation unit, sited at the Greater Niagara General.
- ***Centre of Excellence for Women’s and Children’s Health*** – a dedicated centre focusing on the health care needs of women, offering obstetrical and gynecological services; dedicated operating rooms; comprehensive specialty care for children from newborn to age 18 requiring both medical and surgical care, sited at the new healthcare complex.
- ***Centres for Continuing Complex Care with slow paced recovery*** – introducing slow-paced recovery/rehabilitation for people with complex medical needs, supporting people to transition home with support or to an alternate, more appropriate care environment. These will be sited at the Port Colborne and the Douglas Memorial sites.
- ***Centre of Excellence for Mental Health Centre*** – combining long-term (tertiary) and short-term (acute) services including four pediatric beds, sited at the new healthcare complex; an Emergency Psychiatric Team and dedicated out-patient programs at the Greater Niagara, Welland, Port Colborne, and Fort Erie sites.
- ***Addictions Centre*** – an integrated in-patient/residential and out-patient addictions services in a new, special purpose built location in the community of St. Catharines.
- ***Diabetes Centre*** – a coordinated hub for care planning and patient education, located at the Port Colborne site.
- ***Nephrology Centre*** – a coordinated hub of nephrology services at the St. Catharines site, with satellite services at the Welland, Greater Niagara and Fort Erie sites.

- ✓ ***Specialized Centres for Surgical Care*** – Exciting new technologies and techniques bring the promise of advanced care for patients requiring surgery in Niagara, and new levels of excellence at the following specialized sites:
 - **Dental Surgery** – Greater Niagara site.
 - **General Surgery and Endoscopy** – Welland, Greater Niagara and St. Catharines sites.
 - **Gynaecological Surgery** – St. Catharines site
 - **Orthopaedic Surgery** – two specialized centres for orthopaedic surgery at the Greater Niagara and St. Catharines sites.
 - **Otolaryngological Surgery [Ear, Nose, Throat]** – delivery of ENT surgery for adults at the Greater Niagara site and for children at the St. Catharines site.
 - **Ophthalmological Surgery** – Welland site.
 - **Plastic Surgery** – Greater Niagara and St. Catharines sites.
 - **Thoracic Surgery** - St. Catharines site
 - **Urological Surgery** – Welland site.
 - **Vascular Surgery** - St. Catharines site
- ✓ **Emergency Services** –
 - Emergency Departments in Welland, Niagara Falls and St. Catharines will continue to provide 24 hour, 7 day a week access to services for the acutely ill, including children.
 - Community Health Centres with outpatient clinics will be established at the Douglas Memorial and Port Colborne sites by 2013, replacing the existing 24 hour, 7 day a week emergency departments. Increased access to primary care and chronic disease management in Port Colborne and Fort Erie will dramatically reduce reliance on Emergency departments and inpatient admissions in these communities. Prompt care offering 14-hour emergency services will be implemented at Douglas Memorial and Port Colborne sites during the transition.
- ✓ **Role of Small Sites** - In keeping with the recommendation of the Ontario Joint Policy and Planning Committee, the Douglas Memorial, Port Colborne and Niagara-on-the-Lake sites will transform: “To change how they view themselves and how others see them – moving from places where people go when they get sick to places that provide services to their communities. They will need to be catalysts to develop local access points for health, not just health care, by providing support to community-based health care and social service providers, community

agencies, volunteer associations and human service organizations in their catchment area.”

Financial Implications

Population Aging and New Services Will Increase Costs by \$41.7 Million by 2012/13

The overall projected change in NHS operating costs from 2007/08 to 2012/13 is an increase of \$41.7 million, or 11.5%. However, while the operating cost is projected to increase, this does not mean that the proposed clinical services model would increase the NHS deficit. The following is the breakdown of the projected change in costs:

\$8.1 Million for Population Growth and Aging

- \$8.1 million increase operating cost attributable to increased NHS service volumes to respond to the anticipated increase in demand from the aging of the Niagara population.

\$65.5 Million for New Services (e.g. New St. Catharines Hospital), if Approved by LHIN and MOHLTC

- \$65.5 million increase for new services to be provided by NHS, such as inpatient rehabilitation beds, new services included in the planning for the new St. Catharines hospital, tertiary inpatient mental health beds, and new satellite dialysis services. **All of these new services will only be introduced if LHIN and MOHLTC approval and funding is received.**

\$31.9 Million of Savings through Efficiencies and Enablers

- \$31.9 million of savings through achievement of efficiencies and enhancement of health system capacity outside the hospital system. These savings targets include:
 - \$12.6 million from operational efficiency savings for acute care, day surgery, and complex continuing care, from application of the savings targets identified through the recent Health Care Management (HCM) efficiency review (i.e. application of lower cost per Expected Weighted Case (EWC) target to projected equivalent weighted cases) and achievement of “best quartile” targets for use of ambulatory surgery and acute care length of stay. The achievement of this ‘best quartile’ performance will be very dependent on the proposed concentration of services and the establishment of ‘centres of excellence’ at each NHS site.
 - \$10.6 million from reduced Emergency Department visit volumes from enhanced primary care, chronic disease prevention and management, and conversion of the Fort Erie and Port Colborne emergency departments to community based primary care centres
 - \$3.4 million from reduction in acute mental health beds (with reinvestment of potential savings to support tertiary mental health services and an emergency psychiatric team). A parallel increase in outpatient mental health costs of \$3.0 million is included to cover the costs of the emergency psychiatric team and the increased ambulatory clinic visits.

- \$9.7 million from reduction in NHS Alternate Level of Care (ALC) days from 24% of acute care inpatient days (06/07) to 11% by 2012/13, through increased community service investment, Aging at Home strategies, new Long Term Care beds, and expanded home care services

Operating Surplus of \$1.5 Million Projected for 2012/13

The HIP would generate an operating surplus of \$1.5 million for fiscal year 2012/13. The 2012/03 fiscal year has been used as the end point for the HIP since the new St. Catharines hospital will be fully operational for that year.

Community Engagement and Consultation

Community Engagement Responses Indicate Acceptance of Need for Change

Respondents to NHS's HIP community engagement and consultation efforts to date indicate a stronger desire and willingness to move towards change in healthcare delivery than to support the status quo in local hospital care.

Key themes evident in respondent feedback received to date, are provision of quality care; supporting the needs of the aging population; improving access and transportation; and reducing wait times.

Next Steps

Submission of the HIP is just the beginning of the dialogue with our stakeholders and our community. The HIP will now be reviewed by the HNHB LHIN and its External Advisor to assess the feasibility of the plan. We anticipate receiving feedback by the early fall of 2008. At that point, we will initiate the development of an implementation plan, in collaboration with the HNHB LHIN and our community partners.

Passion of Niagara Residents about Hospitals and Healthcare

The residents of Niagara are passionate about their hospitals and their healthcare needs. They are eager to share their views. As part of the HIP development, we had an opportunity to hear from our communities – but we appreciate that we need to hear more. We heard from many people in Niagara that they support change, change that will lead to improved quality of care and patient experiences. And now that we have specific recommendations formed, we want to hear from the people of Niagara on these specific recommendations.

Common Goal of Better Health and Better Healthcare for the People of Niagara

We understand that not everyone will agree with these recommendations or any others that bring about significant change. Many of these recommended changes will also be unsettling for some of our valued health professionals, including our doctors, nurses and allied health professionals. Moving people and services around is never easy. But our entire community has a vested interest in health-care in Niagara, and by working together, we can overcome the barriers and take the next steps in the evolution of NHS services, programs and sites. Our common goal is better health and better healthcare for the people of Niagara, now and in the future.

Together in Excellence, Leaders in Healthcare.

2.0 Introduction/Report Overview

2.1 History

Creation of the NHS in 2000

In March 2000, the Niagara Health System [NHS] was created as a result of an amalgamation of eight hospitals [3 large community hospitals in St. Catharines, Niagara Falls and Welland, 3 smaller hospitals in Niagara-on-the-Lake, Fort Erie and Port Colborne, 1 specialty complex care hospital and 1 outpatient rehabilitation centre in Thorold]. This complex merger resulted in many levels of integration in clinical and administrative services across the Niagara Region. However, in the community of St. Catharines, the delivery of acute care services was divided between the NHS and the then Hotel Dieu Hospital.

Consolidation of Acute Services within NHS in 2005

Subsequently, in November 2004, new Directions were issued by the Government of Ontario for the NHS to become the sole provider of acute in-patient care. As a result, in August 2005, the NHS assumed governance and management of the acute care services delivered by the former Hotel Dieu Hospital and the governance and management of the Shaver Hospital [specialty complex care] and Niagara Rehabilitation Centre [outpatient rehabilitation] were transferred to the newly named Hotel Dieu Shaver Health and Rehabilitation Centre.

NHS is Ontario's Largest Multi-Site Hospital System

Today, the Niagara Health System (NHS) is Ontario's largest multi-site hospital amalgamation, a sophisticated and innovative network of health services, stretching from Lake Erie to Lake Ontario. The NHS is comprised of six hospital sites and an ambulatory care centre serving 434,000 residents across the 12 municipalities making up the Regional Municipality of Niagara. The NHS employs 4,226 employees, of which approximately 1,800 are nurses, and has approximately 945 beds, including long term care and addiction recovery programs. It is supported by a medical staff of approximately 560 physicians and is served by more than 1,100 active volunteers.

2.2 Hospital Service Accountability Agreement

On April 1, 2007 the province's Local Health Integration Networks [LHIN] assumed full responsibility for planning, funding and integrating health services. As part of that responsibility, the LHINs are required to negotiate service accountability agreements with the health service providers they fund [Local Health Services Integration Act, 2006].

In 2007, NHS Signed Accountability Agreement Committing to Balance Budget for 2008/09

On April 4, 2007, the NHS signed a Hospital Service Accountability Agreement with the Hamilton Niagara Haldimand Brant LHIN [HNHB LHIN] which included a provision that the hospital would achieve a balanced budget position for 2008/09.

*NHS Could Not Balance
2008/09 Budget despite
External Validation of
Efficiency*

In March 2008, the NHS did not achieve a balanced budget. This was despite a recent third party review by HCM [The Health Care Management Group] that confirmed that the NHS is among the most efficient hospital in its peer group.

2.3 Hospital Improvement Plan [HIP]

*HNHB LHIN Request for
NHS Hospital Improvement
Plan*

On May 30, 2008, pursuant to Section 9 of the 2007/08 Hospital Accountability Agreement, the NHS was asked by the Hamilton Niagara Haldimand Brant Local Health Integration Network (HNHB LHIN) to produce a Hospital Improvement Plan [HIP]. A copy of the letter requesting the HIP is included as Appendix A. The plan is to be provided to the HNHB LHIN Board no later than July 15, 2008.

Specifically, the request from the HNHB LHIN notes that:

- “The HIP should be a clinical services plan that ensures that the necessary expertise and resources are available to provide accessible, quality care for the citizens of Niagara, identifies current and future hospital based services by site, establishes timeframes and specific targets for each year of the HIP and links the proposed strategies of the HIP, the public interest and achieves a balanced budget by 2011/2012.”
- “The LHIN will continue to work with the NHS to address the deficit and the use of resources required to meet current needs.”

2.4 Link to Vision, Mission, Values

To support the development of a clinical services plan, the Board of Trustees directed NHS Clinical and Administrative leaders to align the recommendations forming the clinical services plan with the organization’s vision, mission, values, and success factors. In addition, the Board articulated guiding principles about people, places, things and processes. These are further outlined below.

Vision "Together in Excellence – Leaders in Healthcare"

Together represents people caring about and for people; teamwork; collaboration; and working together internally and externally with our communities and community partners.

Excellence represents seeking a better way through creativity and innovation; being an employer of choice; exceeding performance targets in patient satisfaction, efficiency and effectiveness; and functioning by best practice standards.

Leaders represents our desire to lead the way in the healthcare sector by achieving and setting high standards -- individually as leaders and as an organization.

Healthcare represents our scope of care going beyond hospital care to prevention and promotion and working with our community partners and other hospital providers for a healthier Niagara.

Mission Building on the contributions of our founding hospitals, the Niagara Health System's mission is:

- We provide equitable and timely access for people throughout Niagara to a wide range of patient-focused care and services;
- We ensure a full continuum of care through partnerships with other health and social service providers within and beyond Niagara;
- We enhance community well-being and health care delivery through health promotion, education and research; and
- We commit to innovation and continuous quality improvement in health services to meet our changing health care needs.

Values **Compassion**

- We focus on patient needs, concerns and feelings
- We display courtesy and helpfulness to others at all times
- We take time to listen first
- We speak to others in a dignified and understanding manner
- We demonstrate sensitivity to the situations of others

Professionalism

- We strive for quality in all aspects of work
- We take responsibility for actions
- We acknowledge the contributions and successes of others
- We welcome new ideas and innovative thinking
- We take advantage of and encourage new learning opportunities

Respect

- We value the ideas and opinions of others
- We promote and support teamwork
- We communicate with others in a positive, considerate and open manner
- We display trust and integrity at all times
- We respect everyone's privacy
- We treat others fairly

2.5 NHS Success Factors



Success Factor 1: Focus on Those We Serve

- In focusing on those we serve, our strategic goal is to ensure that people get the right service with the right information at the right time in the right place by the right providers.



Success Factor 2: Bring out the Best in Each Other

- In bringing out the best in each other, our strategic goal is that the NHS will become the place where staff, physicians, and volunteers choose to work.



Success Factor 3: Build Strong, Successful Partnerships

- In building strong and successful partnerships, our strategic goal is that people know and trust the NHS and partner with us for mutual benefit, to meet the needs of our patients and customers.



Success Factor 4: Create A Better Way

- In creating a better way, our strategic goal is that the NHS develops a culture where we promote, reward and become recognized for creativity, innovation and excellent in service delivery.



Success Factor 5: Use our Resources Wisely

- In using our resources wisely, our strategic goal is that the NHS is appropriately resourced from a human, capital, and fiscal and technology perspective to meet the needs of our patients.

2.6 NHS Principles for Program Planning

General Principles

- We will be creative and innovative stewards of the health and health care needs of the people of Niagara.
- We will look to all parts of the Niagara Health System, the community, and beyond for ideas and inspiration.
- Priority will be given to decisions that will have the most significant impact on quality of care in Niagara in the short and long term.
- Our decisions will comply with laws, regulations and directives of the MOHLTC and the Local Health Integration Network including those that apply to the maintenance of service delivery in locations within the community of Niagara and the Local Health Integration Network.
- We will challenge barriers and will look to the Ministry and the LHIN to work with us to improve the regulatory environment in which we provide services.
- Our decisions will be aligned with our mission, vision, values, and five success factors.

- Our decision-making will be an integrated process and subject to an ongoing dialogue among us consist with our Quality Improvement programs.
- We will respect the integrity of the process and trust and respect the contribution of all.

Principles about People

- We will recognize that the pool of skilled health professionals is expected to continue to be a limited resource.
- Patient demographics and patterns of use of health care services, current and evolving, will be a key factor in our decisions.
- We will recognize that health professionals benefit when they are supported by a critical mass of colleagues and resources.
- We will provide support for all staff, volunteers and physicians in adjusting to and thriving in our changing environment.
- We will build new and enhance existing links with educational partners.

Principles and Places

- “Community” will mean the people of Niagara and surrounding catchment area
- Our planning will acknowledge that consolidation in one physical location is one of many options.
- Decisions that involve physical consolidation will be driven by our desire to strengthen programs, ensure highest possible quality, and the best use of scarce resources (human, financial, spatial, temporal and technology)
- We will centralize to the extent quality requires it. We will decentralize to the extent that quality allows it.
- Every NHS site will make a contribution to the overall health care in Niagara.

Principles about Things and Processes

- Processes for recruitment and retention of quality health professionals will be enabled by quality, up-to-date facilities and equipment and other factors such as opportunities for teaching and research.
- Processes will be analyzed for their impact on the entire system
- Supporting structures and processes will be in place before programs are changed
- Decisions will be fact based.

2.7 Overarching Assumptions Guiding HIP Development

The HIP was developed based on the following overarching assumptions:

1. All decisions will be made based on an analysis of population health needs of the residents of Niagara.

2. There will be no additional base funding to assist in supporting programs currently offered by the Niagara Health System.
3. New programs that need to be delivered within Niagara, supported through population health analysis, must be approved by the LHIN or the Ministry of Health and Long-Term Care (MOHLTC) before implementation. Operating and capital dollars to support provision of programs within Niagara will flow with such approval.
4. New regional programs offered within the new healthcare complex in St. Catharines (i.e. Walker Family Cancer Centre, cardiac catheterization centre and tertiary mental health beds) will be funded with new operating dollars through negotiation of the Post Construction Operating Plan (PCOP) with the MOHLTC.
5. For any divestment of services currently offered by the NHS, there must be alternative providers for such service in the community and the divestment must be approved by either the LHIN or MOHLTC before proceeding.
6. All efforts will be undertaken to avoid layoffs as a result of implementing the Hospital Improvement Plan through retraining, redeployment, attrition, vacancies and retirements.
7. Appropriate stakeholder consultation regarding the Hospital Improvement Plan will be conducted through various means by the NHS and the HNHB LHIN before proceeding with implementation.
8. Proposed programmatic changes will proceed on the basis of implementation of necessary enablers, such as community investments in non acute services, approval by MOHLTC of capital renovations at NHS hospital sites where required, requisite operating dollars for new programs, availability of qualified healthcare professionals, and development of partnership arrangements with community
9. The analysis supporting the HIP will be reflective of best practice and evidence-based decisions, as articulated in the Board approved decision matrix.

2.8 The Opportunity

The HIP provides a timely and exciting opportunity to create a sustainable hospital system in Niagara. Specifically:

- **Quality in patient care comes first.**
 - This is an opportunity to make the best use of our valuable resources to deliver the best care possible for the residents of Niagara.

- **This is an opportunity to build on our strengths to ensure a long-term, sustainable future.**
 - As a regional and efficient system, we are uniquely positioned to leverage our people, our facilities, and our equipment to provide the best care possible over the long term.
 - Doing things differently leverages opportunities for much need investment and re-investment.
- **This is an opportunity to identify the needed community investments for the broader health system, not just hospital care.**
 - Health care is more than hospitals. Investments in community services will help the hospital focus on its core business while ensuring people get the right care in the right place at the right time.
- **We will be responsive to our population health needs.**
 - The health care needs of Niagarans continue to change and we need to better respond to those needs.
- **Our most valuable resources are our talented people and specialized health professionals**
 - The availability of qualified health professionals to meet patient care needs is critical for preparing for the future.
- **We are working toward a better environment for healthcare delivery, quality of work life, teaching and learning**
 - This is an opportunity to improve the work experience for our health professionals and also strengthen our relationship with educational institutions in order to attract the next generation of health care providers.
- **Why change and why now?**
 - The status quo is no longer sustainable.
 - Change will be planned and will not happen overnight.

3.0 Niagara Population Health Overview

Many complex factors influence an individual's health status or the health of an entire community. Population health is influenced by a range of factors including social, economic and physical environments, personal health practices as well as access to health services. Changing demographics, advances in science, economic shifts and technological innovations impact future health needs.

Understanding the demographic and socio-economic characteristics of the residents of Niagara is a starting point to developing a plan for how the Niagara Health System can respond to community health needs in both the short and long-term. Highlights of the analysis of the characteristics and health care needs of the population of Niagara are presented below. Appendix C shows maps of the projected distribution of the HNHB LHIN population in 2012. Appendix C also shows similar information for the residents of the municipalities in Niagara most dependent on NHS for their hospital care.

3.1 Population Growth

The 15 year projected population growth in Niagara is 6.7% compared to 17.3% for the rest of Ontario.

Population aging and population growth are two critical factors in planning for health needs and health service use, particularly since health care usage increases with both aging and population growth. The population in the Niagara region is expected to grow in the future, but at a slower rate than the Ontario average. According to Statistics Canada, the 15 year projected population growth in Niagara is 6.7% compared to 17.3% for the rest of Ontario. Niagara Falls, Port Colborne, Thorold, and Wainfleet have negative growth projections for the next 15 years. Lincoln, Pelham, Niagara-on-the-Lake, West Lincoln, Grimsby, Welland, St. Catharines and Fort Erie show a positive growth projection. The largest percentage change is projected to occur in Lincoln with a 34.3% population growth. The largest negative change is projected in Port Colborne (8.7% drop).

From 2006 to 2011, the increase in population for Niagara is projected to increase by 2.2%, an increase of almost 10,000 people. However, this growth will be concentrated in residents older than 45 years old, with 9% growth projected for residents aged 65 years and older.

Exhibit 1: Projected Change in Population, Niagara and Ontario, from 2006 to 2011

Year	0 to 17	18 to 44	45 to 64	65 to 79	80+	Total
2006 - Niagara	88,601	154,755	118,526	52,659	21,478	436,019
2011 - Niagara	82,683	151,495	130,719	57,257	23,481	445,635
% Change - Niagara	-6.7%	-2.1%	10.3%	8.7%	9.3%	2.2%
% Change - Ontario	-0.9%	2.1%	14.9%	11.9%	17.4%	6.2%

High Proportion of Elderly Population

The Niagara region has a higher proportion of residents over the age of 75 than the rest of Ontario. As the baby boom cohort ages, the number of people aged 50 and older will increase more rapidly than any other age groups. As of 2006, 6.42% of Ontario's population consisted of residents over the age of 75. Niagara was above this provincial average with 8.71%. Niagara-on-the-Lake and Port Colborne show higher proportions of the population over the age of 75 than other communities in the region with 11.55% and 11.56% respectively. As a result, healthcare services will need to deliver care to an increasing proportion of elderly residents.

3.2 Population Characteristics

Population characteristics such as family structure, employment, income, education and ethnicity are known to influence health status and health system use. There is a body of literature that has confirmed that differences in health status and between groups are largely due to differences in the presence of major risk factors for chronic disease and injury.

The majority of Niagara residents live in urban areas and are from a predominately Western European background with a very small number of visible minorities.

Lower Education Level for Niagara Residents

According to 2006 Census data, compared to the provincial average, Niagara's population has less education, lower incomes, and a higher proportion of seniors living alone. The Ontario average of the population 15 years and over with a university education is 24.62% compared to Niagara's 15.95%. Port Colborne, West Lincoln and Welland have the highest percentage population with no certificate, diploma or degree at 29.16%, 28.90% and 27.17% respectively. The Ontario average is 22.24%. Pelham, Grimsby and NOTL have a lower than average number of residents with no certificate, diploma or degree compared to the Ontario average.

Lower Median Income in Niagara

The Median total income in Ontario was \$64,500 in 2005 compared to \$60,600 for Niagara. The prevalence of low income in the Niagara region is lower than Ontario. However, Niagara Falls, Port Colborne and Welland have low income designation.

The Niagara region as a whole has slightly lower unemployment rate than Ontario's rate of 6.4% with the exception of St. Catharines, Fort Erie, Welland and Port Colborne.

3.3 Population Health Status

Canadian Community Health Survey Results

The 2007 Canadian Community Health Survey (CCHS) conducted by Statistics Canada examined the health status of the Niagara Region population using 25 indicators, and compared the results with the overall HNHB LHIN population and the Ontario population. The results show that the Niagara Region population:

- Has a lower percent of the population who perceive their health as very good or excellent than the populations of both the HNHB LHIN and Ontario
- Has a lower percent of the population who perceive their mental health as either very good or excellent
- Has above average rates of chronic diseases such as arthritis (22% in Niagara versus 16% for Ontario) and asthma (10% in Niagara versus 8% for Ontario)
- Has higher reported rates of limitation in activity due to a long term health condition (40% for Niagara, versus 37% for the HNHB LHIN, and 33% for Ontario)
- Has a higher percent of the population who are current smokers (28% in Niagara versus 21% for Ontario)
- Has a higher rate of obesity (based on self-reported body mass index, 20% in Niagara versus 16% for Ontario). A high body mass index is associated with increasing risk of type 2 diabetes, hypertension, dyslipidemia, coronary heart disease, gallbladder disease and osteoarthritis.

Niagara residents have slightly more low birth-weight babies than the Ontario average.

Overall Niagara residents enjoy a similar life expectancy as their counterparts in Ontario, but fewer years without illness. This means that more health care services are going to be needed to treat chronic illnesses and prevent further deterioration from them.

Some local statistics for the two main causes of death in Canada, heart disease and cancer, are presented below along with other examples of chronic conditions that require changes to the local health care services.

Heart Disease

The rate of heart disease is significantly higher in the Niagara region than in Ontario. The rate of death due to a heart attack is also significantly higher for both men and women in the region compared to Ontario and Canada.

Women in the region are 1.4 times more likely (men 1.2 times more likely) than Canadians to die from a heart attack.

Niagara residents have a significantly higher death rate from all circulatory diseases than Ontario (223.9 vs. 205.0 per hundred thousand).

Cancer There is a higher incidence of lung, colorectal, ovarian and leukaemia cancers and a lower incidence of thyroid cancers for residents of Niagara than in Ontario as a whole. Lung, prostate/breast and colorectal cancers have the highest mortality rate for Niagara residents.

Niagara residents have a slightly higher death rate from all cancers particularly with lung cancer with the exception of Thyroid cancer which has a significantly lower death rate than the Ontario average. Men in the Niagara region have significantly higher instances of bladder, kidney, stomach, oral, oesophagus and larynx cancers and lower instances of thyroid cancer than women.

3.4 Summary

The increasing demand for health care in the Niagara Region will be driven primarily by the aging of the population, not by overall growth in population. The major challenge for the NHS is to reconfigure its programs to better care for the elderly and people with chronic illnesses such as heart disease, asthma, and arthritis. Primary care, community-based care, and ambulatory care with strong health promotion and disease prevention programs will be essential.

Compared to the provincial average, Niagara has an older population, inferior social and economic conditions, a higher prevalence of chronic health conditions and fewer resources to maintain and improve population health status. As a result, Niagara residents display higher rates of chronic disease, hospitalization and death, compared to the provincial average.

Evidence shows that the rate of utilization of health services increases with age and that Niagara, with 17% of the population aged 65+ should expect high rates of utilization. In addition, given Niagara's status as a preferred retirement destination for urban Ontarians, and based on Ministry of Finance projections for population growth, these health care needs are projected to escalate.

4.0 Health Sector Trends Impacting Health Service Planning in Niagara

4.1 National and Provincial Priorities

As the Canadian health care system has progressed through structural adjustments and challenges, there has been a great deal of public debate and interest. Two significant reviews of the health system were released in late 2002: The Commission on the Future of Health Care in Canada in November 2002 (Romanow Report) and The Health of Canadians report from The Standing Senate Committee on Social Affairs, Science and Technology in October 2002 (Kirby Report). Following release and debate of these reports a first Ministers meeting in February 2003 drafted the 2003 Accord on Health Care Renewal. The Accord is an action plan intended to improve the timeliness of access to quality care for all Canadians. Reflecting concerns expressed by Canadians and the recommendations of national and provincial studies of the health care system, the Accord set out commitments by First Ministers to reform the system and make it more accountable to citizens.

Building on this renewal agenda the First Ministers subsequently established a 10 year-plan to strengthen health care that was released in 2004. This plan is focused on ensuring that Canadians have access to the care they need, when they need it. Foremost on this agenda is the need to make timely access to quality care a reality for all Canadians, emphasizing a commitment to the dual objectives of better management of wait times and the measurable reduction of wait times where they are longer than medically acceptable (Health Canada, 2004).

Focus on Wait Times

Nationally, wait times have become a significant public policy issue. All provincial jurisdictions have taken steps to achieve meaningful reductions in wait times in priority areas such as cancer, cardiac care, diagnostic imaging, joint replacements, and sight restoration. Wait times are seen as an indicator of the success of the system in responding to population needs and ensuring access to service, and reduction of hospital wait times to periods deemed as “acceptable” in the literature for such services is seen as a priority before examination of opportunities to refocus health services outside acute care. Many provincial strategies have also focused on ensuring that sufficient support services exist outside of hospitals to further support the downsizing of the acute care sector.

Ontario MOHLTC Planning Objectives

In Ontario, recent Ministry of Health and Long-term Care (MOHLTC) planning objectives have been focused on three objectives: healthier Ontarians, reducing wait times, and better access to health services (Government of Ontario, 2006). In establishing a provincial transformation agenda, the Ontario Ministry of Health and Long-Term Care (MOHLTC) has recognized that “Ontarians want a system of care that helps them to stay

healthy, delivers good care to them when they get sick and is there for their children and grandchildren.” To achieve this vision, MOHLTC has determined that fundamental changes in the health care system are required. The Ministry is working to establish a health care system that is patient-focused, results-driven, integrated and sustainable. MOHLTC has developed “a comprehensive plan for building a dependable public health care system. The goal is to improve the overall health of Ontarians and the quality of service that they receive (Ontario Ministry of Health and Long-Term Care, undated).” The transformation agenda is focused on the following three priorities:

Wait Times, Access to Health Care Professionals, Keeping Ontarians Healthy

- Reducing wait times;
- Providing better access to doctors, nurses and other health care professionals; and,
- Keeping Ontarians healthy (Ontario Ministry of Health and Long-Term Care, undated).

As components of the transformation agenda, Ontario has emphasized promoting an integrated and coordinated continuum of care across different health sectors; improving access to primary care by promoting team based approaches (as evidenced by primary care reform initiatives); and moving from acute care dominant models to models that focus on better management of chronic diseases (also referred to as chronic disease management) (Government of Ontario, 2006). The most recently released provincial health priorities, however, are much more concrete. On April 23, 2008, the MOHLTC stated that reducing wait times in emergency departments and improving access to family health care will be Ontario’s two most important health care priorities over the next four years (Ontario Ministry of Health and Long-term Care, 2008).

4.2 Reduced Emphasis on Hospitals

Smaller Percent of Total Health Care Expenditures for Hospitals

As public health measures led to major improvements in the health of Canadians, the health system became dominated by the hospital sector. In 1976, hospitals accounted for 45% of total health expenditures (CIHI, 2005). With the aging of the population, however, risks to health became more dominated by chronic diseases. This resulted in demands for different types of care and a renewed interest in public health. Because of the demonstrated capacity of preventive care and disease management to reduce healthcare costs and manage demand on health systems, the dominance of hospitals began to decline; by 2002 hospitals accounted for only 30% of total national expenditures (CIHI, 2005).

While much of this proportional decline is attributable to faster growth in other health sectors rather than real declines in hospital expenditures, CIHI reports that the real deployment of resources towards hospitals did begin to change in the late 1980s. The number of acute inpatient beds in Canada

peaked in 1988-89 at 179,256. A largely downward trend in bed numbers followed until approximately 2000-2001. Bed numbers have now leveled out at approximately 115,000 with small year-to-year variations (CIHI, 2005).

***Increasing Patients Volumes
Treated in Fewer Beds***

Changes in care patterns, shorter lengths of stay, higher occupancy and an increasing ability to provide care in ambulatory settings, largely facilitated by technological innovations, have allowed greater numbers of patients to be treated in smaller complement of beds. The innovations that have allowed this to occur include:

- Advances in drug therapies
- Less invasive surgical approaches
- Advances in diagnostic and therapeutic technologies and capabilities

As a result, the demand for traditional hospital acute care has declined, although not as quickly as bed numbers. CIHI reports that while beds dropped 36% between 1987-88 and 2002-2003, admissions dropped 26% over the same period from roughly 4 million annually to 3.1 million (CIHI, 2005).

***Continued Support for
Excess Hospital Capacity
May Be Barrier to
Investment Elsewhere in
Health System***

This restructuring of the system has meant that a considerable amount of hospital based care and the financial resources to support it have been shifted from inpatient to ambulatory and other settings such as day surgery and home care (CIHI, 2005). Such structural adjustments have fuelled debate over the appropriate role of hospitals within the health system and heightened concerns about access to hospital care, wait times for acute care and the sufficiency of other components of the system. Despite such challenges, some have argued, however, that the rate of change has been too slow. In their work in the 1990s, the HSRC observed that as the need for non-traditional hospital services has increased, resources have continued to be directed towards maintaining hospital capacity resulting in other needs remaining unmet.

***Hospitals Now Seen as Only
One Component of Health
System***

Regardless of the perspective (hospital utilization has declined too quickly, or not quickly enough), the structural adjustments that have occurred, and indeed continue, have permanently changed the role of hospitals. Once largely perceived to be equivalent to the health system, hospitals are now viewed as simply one component of a complete health system, albeit an integral one. Reduced reliance on acute care has triggered a debate about the proper role of the hospital and has had a number of implications for the health system:

- Patients who do require acute care have increasingly complex and often technology dependent needs;

- There are increasing demands for community based support services (home care, respite care, supportive housing) as patients have shorter lengths of stay in hospitals;
- The demand for ambulatory care continues to grow reflecting changing community needs and the evolution of health care practices;
- Greater emphasis on new primary care models designed to improve population health;
- Changing demands for health disciplines at both ends of the spectrum – increasingly specialized demands of acute care and increasingly broad requirements for primary care;
- Different approaches to integrating acute inpatient care, primary care, and community based services.

4.3 Improving Primary Health Care

Romanow Report Call for Enhanced Primary Care

A key area of focus of the report of the Romanow Commission on the Future of Health Care in Canada¹ was on the importance of improving primary health care in Canada. The report stated:

“Primary health care is about fundamental change across the entire health care system. It is about transforming the way the health care system works today – taking away the almost overwhelming focus on hospitals and medical treatments, breaking down the barriers that too frequently exist between health care providers, and putting the focus on consistent efforts to prevent illness and injury, and improve health. In fact, no other initiative holds as much potential for improving health and sustaining our health care system.”

The report called for increased investment in primary care, which could “replace unnecessary use of hospital, emergency, and costly medical treatments with comprehensive primary health care available to Canadians 24 hours a day, 7 days a week”.

ICES Report Showing Higher Costs for Patients with Chronic Disease but no Primary Care Provider

A recent Institute for Clinical Evaluative Sciences (ICES) report² found that although most Ontarians with chronic health conditions do have a primary care physician, those without a primary care physician received potentially avoidable and costly health care services. These services included thousands

¹ Commission on the Future of Health Care in Canada - Building on Values: The Future of Health Care in Canada – Final Report. Commissioner: Roy J. Romanow. November, 2002.

² Glazier RH, Moineddin, R, Agha MM, Zagorski B, Hall R, Manuel DG, Sibley LM, Kopp A. The Impact of Not Having a Primary Care Physician Among People with Chronic Conditions. ICES Investigative Report. Toronto: Institute for Clinical Evaluative Sciences; 2008.

of excess emergency department visits and thousands of excess medical non-elective hospital admissions. The report concluded that:

“Given these impacts on health services and on people, implementing policies to address the current shortage of primary health care physicians in Ontario should be seen as a top health system priority”.

Family Health Teams in Ontario

In Ontario, the MOHLTC has focused on introduction of Family Health Teams as a key approach to improving access to primary care. Since 2005 there have been 150 new Family Health Teams approved across the province, located in both urban and rural settings. These interdisciplinary teams include physicians and other providers such as nurse practitioners, nurses, social workers and dietitians working together to see more patients, provide a more comprehensive array of services and to keep them healthy.

Community Health Centres

A second strategy for improvement in primary care in Ontario has been the expansion of Community Health Centres (CHCs). CHCs are non-profit organizations that provide primary health and health promotion programs for individuals, families and communities. A health centre is established and governed by a community-elected board of directors.

CHCs work with individuals, families and communities to strengthen their capacity to take more responsibility for their health and well-being. They provide education and advice on helping families access the resources they need from other community agencies. CHCs work together with others on health promotion initiatives within schools, in housing developments, and in the workplace.

CHCs in Niagara

The Ontario government has announced 22 new CHCs and 17 new satellite CHCs across the province. Three of these new CHCs are in the Niagara Region: Fort Erie/Port Colborne, St. Catharines/Thorold, and Niagara Falls. There is also an existing CHC in Welland.

4.4 Chronic Disease Management

Impact of Chronic Disease on Hospitalizations, Surgical Intervention, and Mortality

Chronic diseases have long been recognized as impacting hugely on health care systems. Illnesses such as heart failure, asthma, depression and osteoporosis frequently result in hospitalization, surgical intervention and intensive care unit admission. Mortality rates among sufferers of these diseases are significantly higher than among those in the general population.

Demonstrated Impact of Community Based Management of Chronic Disease

Experience in the United States has demonstrated that with aggressive community based management (typically using multidisciplinary teams) it is possible to significantly reduce emergency department visits, hospital admission and mortality rates in these patient populations. Such strategies require the coordinated efforts of physicians, nurses, educators, nurse practitioners, dietitians and exercise therapists (among others) working as an integrated community based team in order to optimize outcomes

***80% of People Older Than
65 Suffer From Chronic
Disease***

Chronic disease has a huge impact on the people of Ontario. One in three Ontarians suffers from chronic disease, such as heart disease, emphysema, diabetes and arthritis. Eighty percent of Canadians who are older than 65 have some form of chronic disease and of those, about 70 percent suffer two or more.³

***Ontario Does Poor Job in
Managing Chronic Disease***

In their 2008 Report on Ontario's Health System, the Ontario Health Quality Council concluded that:

“Quite simply, Ontario is failing to meet the challenge of chronic disease. Close to 8,000 lives could be saved annually — and the quality of life improved for many more people — if we did a better job of delivering the all-important regular care and monitoring that prevents the chronically ill from falling into severe bouts of illness.”

***Ontario MOHLTC Investing
in Chronic Disease
Prevention and
Management Strategy***

In the 2008 Budget, the Government of Ontario announced that it would spend \$190 million over the next three years to implement a Chronic Disease Prevention and Management Strategy, starting with diabetes. To date, the focus of Ontario's chronic disease management activities has been to assist primary health care providers (such as Family Health Teams) with the development of chronic disease management and prevention programs for their patients⁴.

***HNHB LHIN Planning
Initiatives Have Emphasized
Need for Chronic Disease
Management***

The first HNHB LHIN Integrated Health Service Plan (IHSP) acknowledged the investment being made in primary care in Ontario and called for ongoing monitoring of the “extent to which enhanced access to primary health care, improved chronic disease management and increased uptake of self help practices will, for instance, reduce visits to emergency departments and disease burden over time”. The HNHB LHIN population has higher rates of chronic health conditions which are more common among seniors, (i.e., arthritis, cancer, diabetes, high blood pressure and activity limitations).

In February 2007, the HNHB LHIN hosted a roundtable session to discuss opportunities for improved chronic disease prevention and management (CDPM) in the LHIN. CDPM was identified as an emerging priority by the HNHB LHIN.

The HNHB LHIN Environmental Scan (2007) reported that “the high prevalence and significant impact of chronic diseases suggests a need to develop the information, diagnostic and treatment infrastructure to support chronic disease management by primary health care providers”.

³ Gilmour H & Park J. Dependency, chronic conditions, and pain in seniors. Health Reports. 2005;supplement1:21-31. Found at: <http://www.statcan.ca/english/freepub/82-003-SIE/2005000/pdf/82-003-SIE20050007443.pdf>.

⁴ Ontario Ministry of Health and Long-Term Care. “Guide to Chronic Disease Management and Prevention for Family Health Teams”. September 27, 2005

*Chronic Disease
Management Best Provided
in Primary Care*

Management of these conditions is best approached in the ambulatory setting, emphasizing the importance of access to primary care which has, unfortunately, been identified as a key gap in the HNHB.

4.5 Specialized Acute Services

*Consolidation of Specialized
Services Offers Benefits of
Critical Mass and
Professional Specialization*

Many hospitals are emphasizing and embracing their specialized role in the health system by developing centres of excellence in targeted specialized areas. Specialized acute services are increasingly being consolidated to ensure the critical mass and a level of professional specialization that is not possible when services are offered across multiple sites. Indeed, part of the impetus for several HSRC directions in Ontario in the late 1990s were a direct result of the goal of consolidating specialized services. The HSRC noted that specialized program consolidations improve the quality and accessibility of services to meet patient needs and make best use of surplus hospital capacity. Local Health Integration Networks (LHINs) in Ontario have been given a mandate, along with other terms of reference, to shepherd the consolidation of specialized services in part in recognition of evidence of the benefit of consolidation of specialized programs.

*Vascular Surgery is
Example of Trend towards
Consolidation*

Not without controversy, communities across Ontario have seen consolidation in areas such as neurosurgery, vascular surgery, thoracic surgery, ophthalmology, burns, trauma, tertiary mental health, paediatrics and obstetrics. For example, as recently as 10 years ago, vascular surgery was provided in hospitals in Niagara, Kitchener, Guelph Burlington, Brantford and three sites in Hamilton. In 2006, LHINs 3 and 4 led a visioning exercise that resulted in a regional vascular surgery model that focused activity at Hamilton and two associate centres – one in Niagara and one in Guelph.

*Consolidation Coupled with
Establishment of Networks
of Providers as In Ontario
Stroke Strategy*

In many cases, these consolidations occurred in tandem with recommendations to establish a more formal network of providers offering integrated services across hospital sites and across the continuum of care. For example, Ontario's Stroke Strategy aims to decrease the incidence of stroke and improve patient care and outcomes for persons who experience stroke by public education campaigns and re-organizing delivery to improve access to care in specialized centres in a timely manner. The stroke strategy established an integrated system of care where different services and sectors function as a unified whole by linking the different services across the continuum of care and across Ontario. These linkages are intended to prevent duplication of service and emphasize utilization of existing resources. The plan included a three-tiered model of acute care (Regional Stroke Centres, District Stroke Centres and Community Hospitals) and was explicitly built around the notion that for patients to receive high quality care, they must be transported to hospitals with concentrated resources and expertise. While the provincial stroke strategy is generally considered a success, not all recommended consolidations have been fully implemented.

Consolidation of Paediatric Services

The Specialized Paediatric Services Review Committee (now the Provincial Council for Children's Health) made recommendations to establish a coordinated system of tertiary paediatric services that required the five academic centres to commit to closer, collaborative relationships, ensure access to specialized care and centralize tertiary paediatric cardiac surgery on one site. While the various paediatric sites have continued to collaborate, and the number of paediatric cardiac surgery sites has been reduced, it is still provided on two sites in the province.

Consolidation of Surgical Services

A study of consolidation of surgical services in the Capital Health Authority (Edmonton)⁵ found that:

- Consolidating surgical services generally appeared to prevent declines in quality of care and access to services
- If surgical services are consolidated in a regional health system, decision makers should recognize that some surgical services should be available at all acute care sites (e.g. general surgery)

Association between Higher Volumes and Better Outcomes

Positive relationships between hospital and physician volumes and patient outcomes have been found for many surgical and medical services (i.e. higher volume centres and/or physicians tend to have better outcomes). This has been a driving force in policies aimed at promoting the consolidation of many specialized surgical procedures.

4.6 ED and Urgent Care

Consolidation of Services Requires Parallel Changes to Emergency Medical Services

Consolidation of specialized services has many implications across the system, including impacts on Emergency Departments (EDs) and the EMS (emergency medical service) system. For example the Ontario stroke strategy included changes to the core training of EMS personnel to include training to recognize acute stroke so that appropriate patients could be transported to a designated facility along with a "code stroke" pre-notification procedure to alert the designated hospitals of the imminent arrival of an acute stroke.

Need to Ensure Transport to the Right Emergency Department, Not Necessarily Just the Closest Emergency Department

Paramedic response and capability to stabilize life-threatening disease and injury has evolved significantly in recent years. Combined with new on-board diagnostic and communications technologies, paramedics are performing a much different role in emergency response than in the past. Real-time communication to Emergency Department personnel and the ability to conduct diagnostic tests in the ambulance (e.g. ECG) means patients are effectively being stabilized and transported, not just to the

⁵ Saunders et al. "Understanding the Impact of the Consolidation of Surgical Services in a Major Integrated Health Region". Canadian Health Service Research Foundation. June 2003.

closest ED, but to the right ED with the appropriate clinical sub-specialty infrastructure.

The effective use of provincial destination determination guidelines has meant patients are not only receiving the life saving care and intervention they require in optimal timeframes, such as the golden hour in trauma, the three hour window for stroke, or timely access to an interventional cardiology unit, but they are also experiencing better outcomes.

ED Wait Times and Ambulance Off-Load Delays Related to Alternate Level of Care Challenges

Despite such advances in paramedic capability, response and destination determinations, EDs across the province are experiencing significant access challenges, long waits and off-load delays for ambulances. In the late 1990s, the HSRC had noted that emergency department over-crowding was a longstanding, complex problem that will take time to solve and for which there is no single solution. Many patients already in hospital have nowhere else to go, despite the fact that some of them should be cared for in different settings such as long-term care facilities or at home with proper support. As a result, emergency departments become backlogged. Re-balancing hospital and non-hospital services to increase capacity to treat patients in all health care settings is a fundamental component of the solution to this recurring problem.

Urgent Care Centres as Alternative to Full ED

Some jurisdictions have promoted the urgent care centres focused on the management of less urgent conditions to help address ED access challenges while also providing more and improved service for the community. Urgent care centres treat illnesses or injuries that do not require the specialized attention of a hospital emergency department, but that cannot wait for a scheduled appointment with a primary care physician. Typical urgent care centres do not accept ambulances and do not have the capacity to admit patients. They are, however, equipped with many medical services and devices and outfitted to provide treatment for such medical conditions as lacerations, asthma, fractures and dislocations, etc. With highly skilled and experienced staff, and the availability of blood tests, ultrasound, X-ray and pharmacy facilities, urgent care centres treat patients with a variety of illnesses and injuries in a timely way. Urgent care centres are generally open between 8 a.m. and 10 p.m. This schedule is supported by data gathered by the Canadian Institute for Health Information (CIHI). According to its research, emergency department rush hour is between 8 a.m. and 8 p.m. CIHI reports, “Patients were most likely to go to an emergency department between 8 a.m. and 8 p.m., with 11 a.m. recorded as the peak arrival time.

Primary Care Teams and Facilities Can Provide Prompt Access to Health Care for Many Urgent Problems

Many Family Health teams or other primary care facilities such as CHCs, have further refined this approach to decanting emergency department visit volumes while concomitantly providing prompt access to excellent health care for a variety of urgent problems. By providing access to services such as those noted above until 9 or 10 pm 7 days a week, patients of the “group” receive care in their usual primary care setting, delivered either by their

family physician or his or her colleagues, who also has access to their chart and thus their relevant medical history.

***Opportunities to Reduce
Less and Non-Urgent Use of
ED in HNHB LHIN***

The ED visit profile of the Hamilton Niagara Haldimand Brant LHIN suggests that such an option may be worth considering. In 2004/05, residents of the LHIN accounted for over 580,000 visits to the emergency department (ED). 59% of these visits were considered to be ‘non-urgent’ conditions with potential to be treated in primary care settings, (e.g., minor infections, colds, cysts, etc.). This is higher than the Ontario rate of 56%.

***Opportunity for
“Observation Medicine”***

A number of other phenomena in the practice of Emergency Medicine have significance for the Niagara Health System. “Observation Medicine” (i.e. the use of extended periods of observation and intensive treatment in the Emergency Department) has allowed for significant decreases in the rate of admission of patients, both adult and paediatric, to hospitals.

***Expanded Use of Non-
Physician Providers Can
Reduce Hospital Admissions***

Many new care providers are found in the Emergency Department, thus decreasing reliance on physician resources. Providers such as nurse practitioners and physician assistants have assisted departments to cope with the continuing issues of physician recruitment and retention. The move to a truly trans-disciplinary model of care, incorporating the skills of nurse practitioners, social workers and mental health workers, among others, has resulted in significant decreases in the number of people admitted to hospital. Utilizing the skills of such individuals allows for the identification and mobilization of community resources necessary to support, for instance, the elderly or those suffering mental illness in the community. Such strategies not only result in lower admission rates, but keep the elderly, for instance, in a more familiar environment (thus lessening the rate of episodes of confusion), lessen the rate of interventions which may be associated with increased morbidity (such as bladder catheterization which may lead to complicated urinary tract infection), and decrease the number of patients who ultimately are designated as needing an alternate level of care.

4.7 Impacts of Alternate Level of Care Patients

Alternate Level of Care

The presence of alternate level of care (ALC) patients in acute care hospitals poses a significant and, in Ontario, growing problem. ALC patients are patients who occupy a hospital bed but do not require the level of care that is normally provided to hospital inpatients. ALC patients could be cared for in alternate care setting (such as at home with home care, in long-term care, in a rehabilitation facility) if such a setting was available to them.

***ALC Reduces Effective
Acute Care Bed Capacity***

The extended lengths of stay experienced by this patient population as a consequence of the lack of availability of more appropriate placement (such as continuing care or assisted living) results in a lack of availability of acute care beds necessary to accommodate the incoming acute admissions generated in the emergency department. This is a major contributor to the issues of ambulance offload delays outlined in earlier sections of this report.

ALC Prevents Acute Care Hospitals from Being Fully Used to Respond to Acute Care Needs

It inhibits the ability of the hospital to recruit and or retain nursing staff, who have an expressed interest and aptitude in the provision of acute care, rather than continuing care, and inhibits the hospital's surgical program owing to the ongoing occupancy of surgical beds by patients who, more appropriately, should be cared for in another environment.

The Ontario Hospital Association (OHA) has surveyed the hospitals in Ontario to determine the magnitude of the ALC challenge in Ontario. The May 2008 survey found that:

19% of All Ontario Acute Care Beds are used for ALC; Most are waiting for LTC

- There are 2,900 patients in acute care beds in Ontario on any given day, who are waiting for access to an alternate level of care. This represents 19% of all acute care beds in the province
- Most ALC patients (58%) are waiting for long-term care
- There are also an average of 730 patients waiting in emergency departments for admission to an inpatient bed

The results for the HNHB LHIN showed that:

The HNHB LHIN Has the Largest Number of ALC Patients

- The HNHB LHIN had the largest number of ALC patients of any LHIN (468 patients)
- The HNHB LHIN had the largest number of ALC patients waiting for inpatient rehabilitation (96 patients)
- The HNHB LHIN had the largest number of ED patients waiting for admission to an acute care bed (128 patients)
- The HNHB LHIN had the highest percent (24%) of non-acute beds (i.e. complex continuing care, rehabilitation) occupied by ALC patients

Further breakdown of the survey results for the HNHB LHIN to specifically examine the Niagara Health System results showed that:

NHS Has Very High ALC Volumes, Many Waiting for Inpatient Rehabilitation

- 24% of acute care beds and 64% of non-acute beds in the NHS were occupied by ALC patients
- There are an average of 32 patients per day waiting in the NHS EDs for admission to an acute care bed
- There were 115 ALC patients in the NHS acute care beds, 66 of whom were waiting for access to inpatient rehabilitation
- There were 144 ALC patients in the NHS complex continuing care beds, 93 of whom were waiting for long-term care and 46 for access to inpatient rehabilitation

The OHA survey results show that ALC patients are having a dramatic impact on the available capacity of hospital beds in the NHS. They also show that in addition to the challenge of limited access to long-term care services in Niagara (a challenge that is shared by many other communities),

Niagara is unique in that a very large number of ALC patients are waiting for access to inpatient rehabilitation services.

4.8 Role of Small Hospitals

JPPC Core Service Role of Small Hospitals in Ontario Report

In 2006, the Ontario MOHLTC asked the Ontario Joint Policy and Planning Committee (JPPC) to examine the role of small, rural sites within multi-site hospital corporations⁶. The JPPC and the Ontario Hospital Association (OHA) agreed that it was prudent to expand the exploration to include all small hospitals, regardless of corporate configuration. The JPPC defined small hospitals as those with fewer than 4,000 inpatient weighted cases per year, and divided these hospitals into two groups:

- Very Small (< 1,500 weighted cases)
- Small (1,500 to 3,999 weighted cases)

NHS Small Sites Determined by JPPC to be Less Rural and Closer to Larger Hospitals than Most Small Hospitals in Ontario

Two NHS sites (Niagara-on-the-Lake and Douglas Memorial) were categorized as very small, and the Port Colborne site (with 1,664 annual weighted cases) was categorized as small. Of the 93 small and very small Ontario hospitals, all of the NHS sites were identified as being in the top 5 in terms of least rural, and in the top 10 in terms of proximity to a large acute care hospital.

The JPPC identified the core services that would be expected to be available in small hospitals in Ontario (e.g. emergency services, inpatient medical beds, diagnostic services), but specified that if a small hospital site was part of a larger corporation, it would not necessarily be expected to provide the full range of core services.

Recommended Role of Small Hospitals as Local Access Points for Health

The JPPC recommended that small hospitals “consider providing a more diversified set of services by developing stronger linkages with other institutions and provider groups, viewing them as strategic partners and not competitors”. The JPPC encouraged small hospitals:

“To change how they view themselves and how others see them – moving from places where people go when they get sick to places that provide services to their communities. They will need to be catalysts to develop local access points for health, not just health care, by providing support to community-based health care and social service providers, community agencies, volunteer associations and human service organizations in their catchment area.”

⁶ Joint Policy and Planning Committee (2006). The Core Service Role of Small Hospitals in Ontario Phase Three: The Future. Report prepared by the Multi-Site/ Small Hospitals Advisory Group of the JPPC for the Ontario Ministry of Health and Long-term Care. December 4, 2006.

4.9 Role of Complex Continuing Care

HSRC Definition of Complex Continuing Care

The Ontario Health Services Restructuring Commission (HSRC) identified chronic care as encompassing complex continuing care, respite, and palliation. Complex continuing care was defined a level of care for medically complex patients who were unlikely to be discharged to either home or long-term care.

Changing Role of Complex Continuing Care

The 2006 Ontario Hospital Association (OHA) examination of the current role of rehabilitation and complex continuing care services in Ontario⁷ found that:

“Complex Continuing Care is significantly different from the chronic care provided in the past. Today’s CCC provides specialized care critical to achieving high levels of medical recovery by ensuring patients obtain the services and supports required and are then “transitioned” home and/or to other appropriate levels of care along the care continuum, wherever possible.

This trend has resulted in significantly shorter lengths of stay and a need for “intermediate stay” programs. In other words, CCC has evolved into being viewed as a “resource” rather than a final destination. Increasingly, CCC beds are being used to enhance the system’s capacity to transition people to lower levels of care or back to the community.”

Chronic Beds Increasingly Used for Slow Stream Rehab and Reactivation

The OHA recommendations for possible future roles for chronic beds included:

- Enhancement of slow stream rehabilitation (SSR) and reactivation services for complex patients to ensure better outcomes for patients.
- Development of partnership programs with hospitals, CCACs and LTC to support seniors with chronic diseases in their home or LTC setting.
- Enhancement of CCC “outreach programming” to ensure more appropriate care delivery and avoid unnecessary use of acute and emergency resources (e.g., PACE program for seniors in Montreal).
- Expansion of “transitional care” units to provide a graduated change in support for individuals being discharged following significant stays in acute care as a result of catastrophic illness/events.

⁷ “Optimizing the Role of Complex Continuing Care and Rehabilitation in the Transformation of the Health Care Delivery System”. A Discussion Paper Developed by the Complex Continuing Care and Rehabilitation Provincial Leadership Council of the Ontario Hospital Association. May 2006.

4.10 Home Care

Home Care Recognized as Cost-Effective Approach to Providing Health Service

Home care is an essential part of modern, integrated and patient-centred health care. Improving access to home and community care services will improve the quality of life for many Canadians by allowing them to be cared for or recover at home. Services provided in the home can be more appropriate and less expensive than acute hospital care. Greater use of home and community care services can reduce wait times for acute hospital beds by making beds available for those who are more acutely ill, can provide choices for end-of-life care, and be an effective option for some patients with chronic mental health concerns. All governments have recognized the value of home care as a cost-effective means of delivering services and are developing home care services to prevent or follow hospitalization (Health Canada, 2004).

The availability of home care has developed substantially over the last decade in Canada and can be expected to continue its growth as technology such as home telehealth continues to broaden the capacity for care outside of traditional hospital walls.

4.11 Health Human Resources

Importance of Enhanced Planning and Management of Health Human Resources

Ontario has expressed its direction for health human resources as having the right number and mix of appropriately prepared health care providers when and where they are needed (Government of Ontario, 2005). The health and well-being of the health workforce and the quality of the healthcare work environment has a profound impact on the effectiveness and efficiency of healthcare services. The ability to reduce wait-times and ultimately, the sustainability of the Canadian healthcare system depends on a strong supply of healthy healthcare providers. This has been recognized through numerous commissions and task forces (e.g., Romanow Report, Kirby Report, 2003 First Ministers' Accord on Health Care Renewal) that have recognized that appropriate health human resource planning and management is key to ensuring access to needed health resources (Health Quality Council, 2005).

Belated Recognition of Importance of Health Human Resources as Backbone of all Health System Transformation

With staffing shortages affecting more healthcare professions and evidence that shortages will only get worse in the near future, there is a broad consensus that employers must do more to support and develop their current employees. There is increasing recognition of the importance of focusing on human resources as a key lever for achieving health system transformation:

“The inability to reap the full benefits from current investments in health care results, in many instances, from the difficulties of creating and maintaining an effective, efficient and motivated workforce. A host of problems, ranging from looming shortages of some types of health care workers, accelerating labour migration, and distributional imbalances of various types (geographic, gender, occupational, institutional) to qualitative imbalances (under-qualification or mis-

qualification of health care workers), have undermined the capacity of health systems to respond effectively to the challenges they face. This has given rise to a belated recognition of the centrality of human resources for health as the backbone of all health actions.” (Rechel et al., 2006)

Challenges for Small and Rural Hospitals

With the structural changes occurring so quickly, a number of challenges for Health Human Resource planning have arisen. In particular, the supply of practitioners relative to the needs of the population has changed. Increasing numbers of practitioners have chosen specialty fields that support the centres of excellence; this does not, however, have the same beneficial affect on the demand for generalists in more rural environments. More than 15 per cent of the population lives in rural areas, but only five percent of all physicians practice in rural areas in Ontario (Government of Ontario, 2005).

NHS Health Care Workforce Demographics

The NHS and all other Canadian health care providers are facing the challenges imposed by the demographics of their workforce at the same time the demographics of the population is leading to increased demand for health care services. One in five NHS staff will be eligible to retire at the end of the 2008 calendar year. By 2013, 38% of NHS staff will be eligible to retire. The number is even higher for full time RNs... 42% will be eligible to retire by 2013. More than 30% of full time RPNs are eligible to retire now, and this will increase to 58% by 2013. As health human resources become an increasingly scarce commodity, all health care providers must make the most effective use of this limited resource, and focus on creating health care delivery environments that can attract and retain staff.

Fewer Generalist Family Physicians, Working Fewer Hours per Week

In addition, there have been significant changes in the model of care provision demonstrated by physicians. Family Physicians, in general, practice fewer “disciplines” (e.g. emergency medicine, in-hospital medicine, and obstetrics) than their predecessors. They are more likely to have “boutique practices” which focus on finite areas of care, such as women’s health, geriatrics or sports medicine, and in general, have been shown to work fewer hours per week than was previously the case.

Uneven Distribution of Workers and Skills

Changes in the practice of medicine and in the way in which patients seek medical care have changed the demand for Health Human Resources, resulting in new, and unfilled demands for primary care practitioners of all types. As a result there is an uneven distribution of workers and skills in certain practice areas, which has resulted in a shortage of certain types of workers (such as family practitioners and medical laboratory technologists) and skills (such as critical care and operating room nurses).

Greater Examination of Opportunities to Use Alternate Providers to Complement and Support Physicians

This has resulted in a call for increased supply of health care professionals in Canada, including doctors, nurses, pharmacists and technologists. Increasing the supply however is a long-term solution. More immediate approaches such as the introduction of non-traditional professional, such as

nurse practitioners and physician assistants may offer better opportunities for relief in the short-term.

The Ontario Medical Association report “Physician Human Resources OMA Position on Physician Workforce Policy and Planning Revisited - recommendations to address Ontario’s doctor shortage by OMA Human Resources Committee (OHRC)” found that:

“At the same time, physician work patterns are shifting in a manner that will reduce the future “effective supply” of physician resources. This includes an aging physician workforce (and its associated decline in hours worked); an increasing number of female physicians; older graduating students; the tendency of physicians to place a greater relative emphasis on personal/family commitments; and the increasing frequency of early retirement. All of these changes point to a diminishing effective supply of physician services in the future as physicians’ ability to further increase their productivity becomes limited.”

***Changing Physician
Expectations re Volume and
Frequency of After Hours
Service***

The 2007 National Physician Survey found that 2nd year medical residents said that the most important factor for them, as they begin their professional life, is the ability to achieve balance between work life and personal life. A measure of this trend is the unwillingness of physicians to commit to patterns of after hours service provision which have been shown to adversely affect personal wellness and increase rates of stress and burnout in health care workers. While determining a “standard” for the provision of after hours service is not possible owing to variables such as the frequency of call backs when on call, the intensity of the service provided, and the array of supports available, in general the frequency of call can and should not exceed one in three for any service. A conjoint report issued by the OHA, OMA and MOHLTC suggested that specialists should not be expected to be on call more frequently than one night in five, albeit with the provisions noted above.

***NHS Experience with
Recruitment of Physicians to
Sites with Small On-Call
Groups***

The NHS has already experienced challenges related to recruitment of physicians and onerous on-call schedules. This occurs particularly when there are simultaneous vacancies at multiple NHS sites... the preferred position is always the one with the largest call group, which has historically been the St. Catharines General Hospital group. Some positions have remained vacant for extended periods (in anaesthesia, paediatrics, and radiology) because of the small call group.

4.12 Health Care Technology

Changes in Technology Will Change Patient Populations, Balance of Inpatient and Ambulatory Care, and Treatment Venue within Hospitals

In the years ahead, innovations in treatments and technology will mean, among other changes, that more people will receive care on an outpatient basis. This will occur as a result of the advent of treatments and procedures which allow for less invasive therapy, and hence more rapid recovery.

Technologic innovation will also offer treatment to populations of patients who have been heretofore deemed untreatable, and even those with “incurable” disease will have longer life expectancy.

Technologic innovation will also shift the paradigm of therapy, in many cases, from invasive treatments such as surgery to pharmacologic therapy. Many more therapies will be biologic in nature and targeted at specific populations who have a genetic predisposition to certain diseases.

Technologic innovation will also shift the “venue” of treatment within organizations. Virtual colonography will shift colonoscopy from the endoscopy suite to the radiology suite and similar shifts can be anticipated in the conduct of angiography.

Expense and Human Resources Required for New Technologies will Lead to Concentration in Smaller Number of Centres of Excellence

As such technologies will be expensive, and only a limited number of practitioners will be skilled in their use, they will be concentrated in a limited number of sites which can be anticipated to become “centres of expertise”, offering the service to health systems, regions or, in some cases, the entire province.

Electronic health records and telehealth are key to health system renewal, particularly for Canadians who live in rural and remote areas. Increasingly, patients’ entire health profile will be captured in an electronic format, which will allow the individual to share his or her health history (either in person or via electronic networks) with a variety of service providers. Such technology is already being used, for instance, in telehealth systems which allow a physician at one site to “examine” a patient who may be hundreds of kilometres away. Many centres have developed expertise in tele-robotic surgery, allowing a surgeon in one country to conduct a surgical procedure on a patient in another country.

NHS Has Experiences Recruitment Challenges Because Available Technology Does Not Meet Current Standards

Limitations in available technology within the NHS have been impediments to recruitment of new staff that have been trained in centres where the standard of care relies on access to new technologies. Medical residents in surgery (e.g. vascular, urology, general surgery, orthopaedic surgery) expect to use laparoscopic techniques, but the NHS cannot always offer the equipment, OR time, or experienced dedicated nursing staff to support laparoscopic services. Potential anaesthesia recruits have commented that the NHS equipment does not meet the standard of care they have grown to expect in their academic or current practice.

5.0 Current Utilization of Hospital Services in Niagara Region

Analyses Show Opportunities to Focus NHS Services on Hospital Care and to Support HNHB LHIN Priorities to Improve Access to Primary Care and Prevent and Manage Chronic Disease

5.1

Hospital Service Records for Inpatient Acute Care and Day Surgery Acquired for all of Ontario

To support the development of the HIP the NHS has examined historical patterns of hospital utilization by the residents of Niagara and other communities in Ontario. The results of analyses of hospital utilization show opportunities to focus NHS services on the needs of the Niagara population for hospital care and support the provincial and HNHB LHIN priorities to improve access to primary health care and to better prevent and manage chronic disease.

Population Based Utilization

The NHS obtained data from the Ontario MOHLTC that included a record for every person discharged from an inpatient bed in any Ontario acute care hospital between April 1, 2006 and March 31, 2007. A second data set included a record for every “day surgery” (i.e. a patient who had an ambulatory procedure in an acute care hospital, but did not require an overnight stay) patient discharged from any Ontario hospital during that same fiscal year. Discharges from acute care beds and from day surgery units are both referred to as “separations” from hospital.

Each record contained information about the patient, such as their age, gender, and postal code, and included information about their hospital stay, such as their diagnosis, any procedures they had, what type of physician was responsible for their care, and how long they stayed in hospital. Every patient discharged from an acute care bed or day surgery unit in Ontario has a standardized record of their care prepared by hospital health records staff, according to national guidelines established by the Canadian Institute of Health Information (CIHI), and these records are submitted to CIHI who prepare a copy including all Ontario activity that is provided to the MOHLTC. None of the records obtained by the NHS included patient health numbers or names, so individual patients could not be identified.

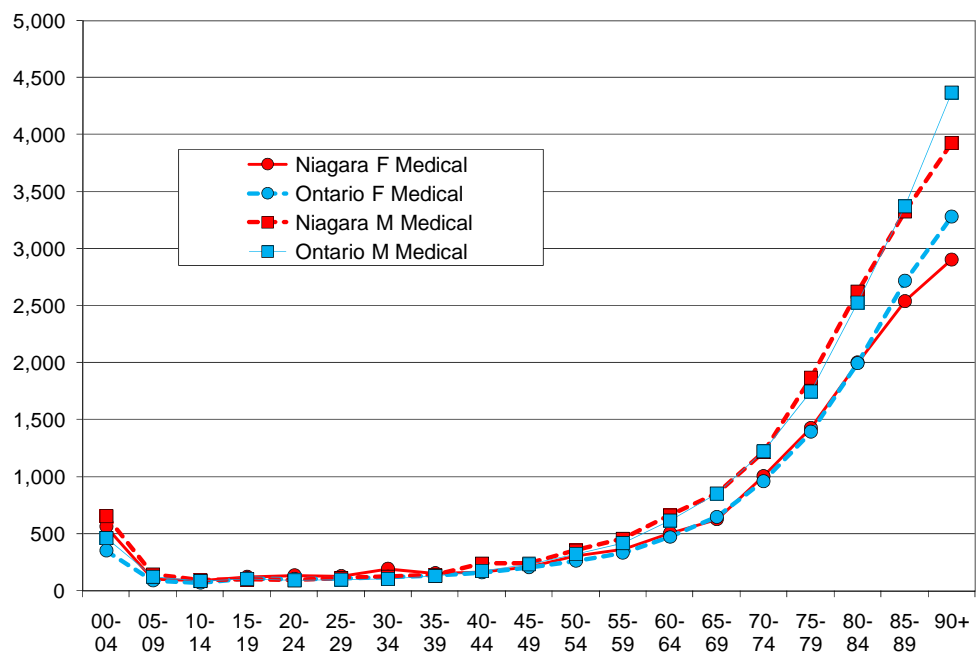
Population Based Analyses Look at Where Patients Live, Not Where They Received Care

The first examinations of utilization of hospital services shown in this report are “population based” analyses, which assign hospital activity to the community where the patient lives (based on postal code). The charts show use of hospital services by the residents of each community, no matter where the residents received their care. For example, if a resident of Wainfleet was admitted to the Hamilton Health Science Centre for a hip replacement, the data record describing this case would be assigned to Wainfleet (where the patient lives) rather than Hamilton (where the patient was hospitalized).

The population based analyses look at the utilization rate of hospital services by the residents of each community by calculating the number of hospital separations per capita (usually expressed as separations per 10,000

population). We know that older people are much more likely to require admission to hospital. The following chart shows that both for Niagara residents and for all residents of Ontario, the rate of admission to hospital increases with age. Very few people younger than 55 years old get admitted to hospital over the course of a year, but the rate of hospitalization increases for senior citizens, such that people aged 90 and older are hospitalized at a rate that is almost 10 times the rate for people under 55 years old.

Exhibit 2: Medical Separations per 10,000 Population by Age and Gender for Ontario Residents and Niagara Residents



“Standardization” Used to Compare Utilization Rates across Regions

Because of the impact of population age on hospital utilization the comparisons of utilization shown in the following pages have been “standardized” by age and gender. Age/gender standardization reduces the impact of differences in population age and gender by applying the actual utilization rate in each age/gender cohort (e.g. Males, 45 to 49 years old) to a consistent “standard population” (in this case, the Ontario 2006 population). The overall utilization rates shown for each community represent what the utilization would be if the community had a population that had the age and gender distribution of the Ontario population.

High Hospital Utilization Rates in Niagara Could Demonstrate Need for Other Health Care Services

Where the Niagara utilization rate is higher than the rates in other communities this could mean that the Niagara population could reduce its use of hospital services if other health care (e.g. primary care, community based services) was available. Alternatively, it could mean that the Niagara population has greater need for hospital care, because, for example, of higher disease rates or less healthy lifestyles.

Low Utilization Could Demonstrate Barriers to Access Hospital Care

Where the Niagara utilization rate is lower than the rate for other communities, this could either mean that the Niagara population is healthier, or alternatively, that there are barriers to accessing care that limit hospital utilization.

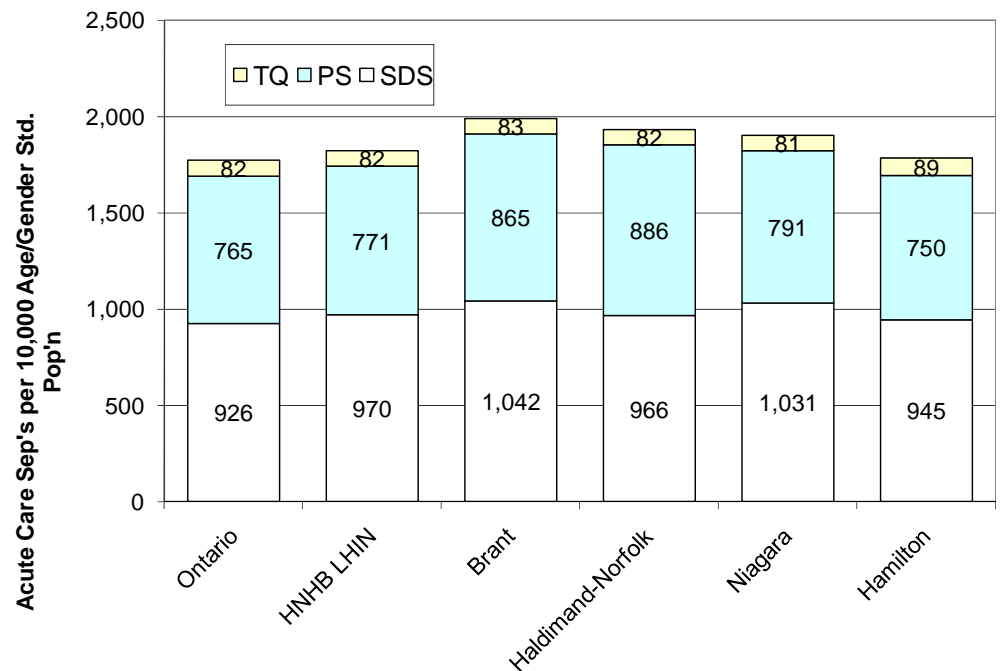
5.1.1 Inpatient Acute Care and Ambulatory Procedures

The following chart shows the inpatient and ambulatory procedure (day surgery) utilization for residents of Ontario, the HNHB LHIN, and the individual regions within the HNHB LHIN. The utilization is shown separately for three categories of care:

Categories (Levels) of Care

- SDS – Same day surgery (ambulatory procedures)
- PS – Primary and secondary inpatient care. Primary and secondary inpatient cases are those that would be expected to be accommodated in virtually every Ontario hospital, such as normal deliveries, strokes, and uncomplicated elective joint replacements
- TQ – Tertiary and quaternary inpatient care. Tertiary inpatient cases are specialized cases that would usually be consolidated in regional centres, such as complicated joint replacements and low weight births. Quaternary cases are the most specialized cases, such as cardiac bypass surgery and kidney transplants, that only a very small number of hospitals provide.

Exhibit 3: Acute Care Separations per 10,000 Age/Gender Standardized Population by Level of Care by Region

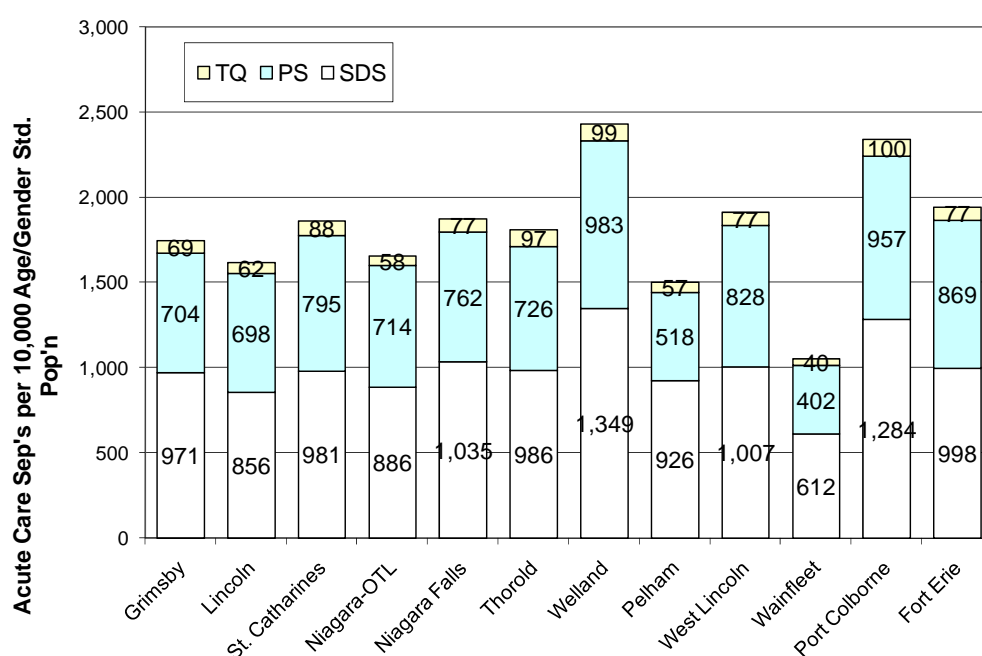


***Higher Hospital Utilization
in Niagara than Ontario or
HNHB Average***

The overall acute care utilization rate for the residents of Niagara is higher than the average utilization rate for either Ontario or the HNHB LHIN. Niagara residents use more day surgery per capita and have more Primary/Secondary inpatient admissions than residents of Hamilton. Hamilton residents have a higher rate of use of Tertiary/Quaternary inpatient care.

There is variation in acute care utilization within the Niagara region. The follow chart compares the 2006/07 acute care utilization for the residents of each of the 12 municipalities within Niagara.

Exhibit 4: Acute Care Separations per 10,000 Age/Gender Standardized Population by Level of Care by Niagara Municipality



***Highest Utilization for
Residents of Welland, Port
Colborne, and Fort Erie***

Utilization of acute care hospital care is highest for residents of Welland, Port Colborne, and Fort Erie, particularly due to higher rates of Primary/Secondary inpatient cases. Utilization is lowest for residents of Wainfleet and Pelham.

***Hospitalization for Medical
(i.e. Non-Surgical, Non-
Birthing) Cases Also High
in Niagara***

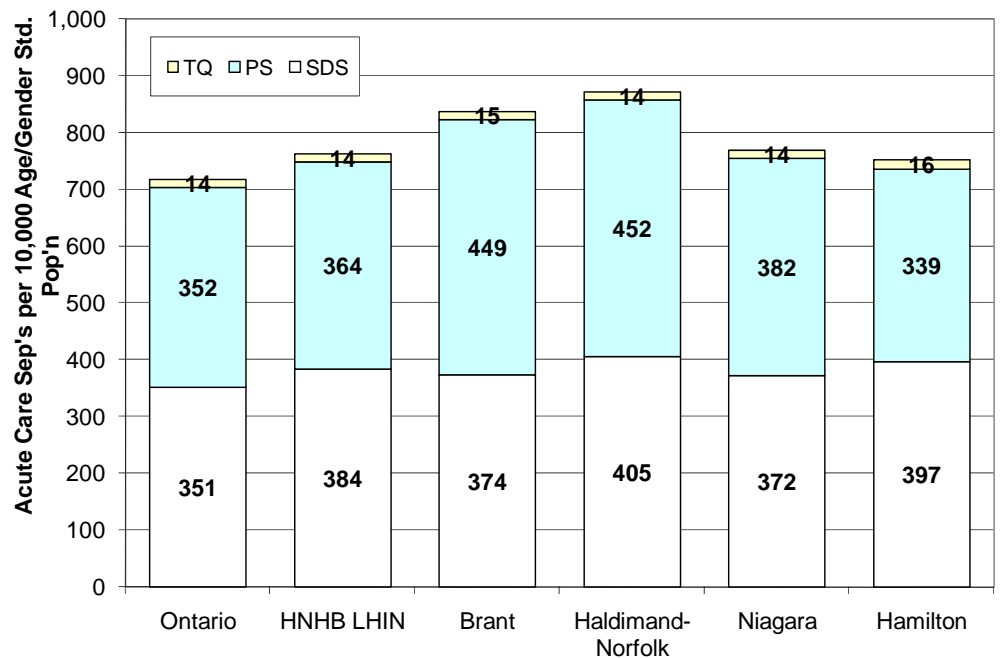
The chart above includes medical, surgical, and obstetrical cases. The chart below is restricted to only medical cases. For medical cases the Niagara utilization rate is higher than both the Ontario average and the HNHB LHIN average, particularly for inpatient Primary/Secondary medical cases. Hamilton residents have the lowest medicine utilization rate for Primary/Secondary care.

***High Hospital Utilization
Related to Low Numbers of
Primary Care Physicians***

While all of the counties in the HNHB LHIN have ratios of primary care physicians per population that are lower than the Ontario average, Hamilton has the highest ratio. All of the municipalities in Niagara have been

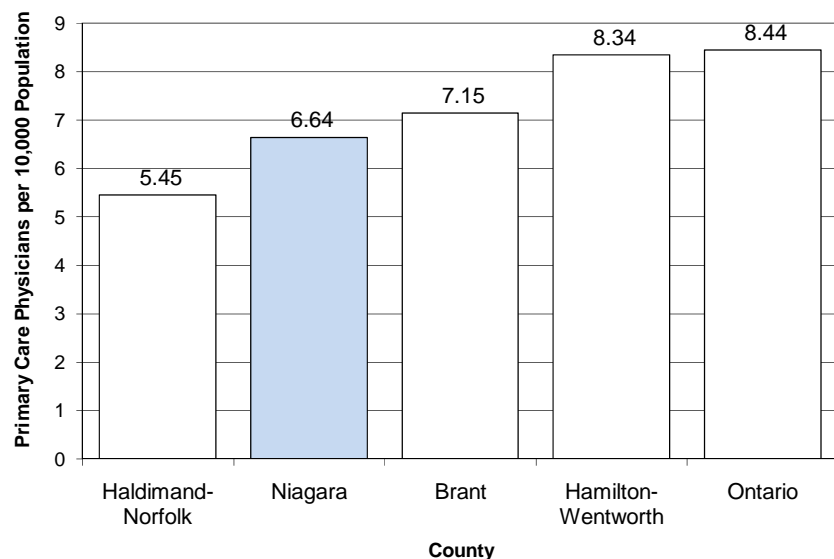
designated as “underserved areas” for general/family practitioners by the MOHLTC. As of June 2008, Niagara had 95 vacancies for general and family practitioners (compared to 46 vacancies for the rest of the HNHB LHIN). Availability of, and access to, primary care is associated with reduced reliance on hospital care, particularly for Primary/Secondary admissions.

Exhibit 5: Medical Separations per 10,000 Age/Gender Standardized Population by Level of Care by Region



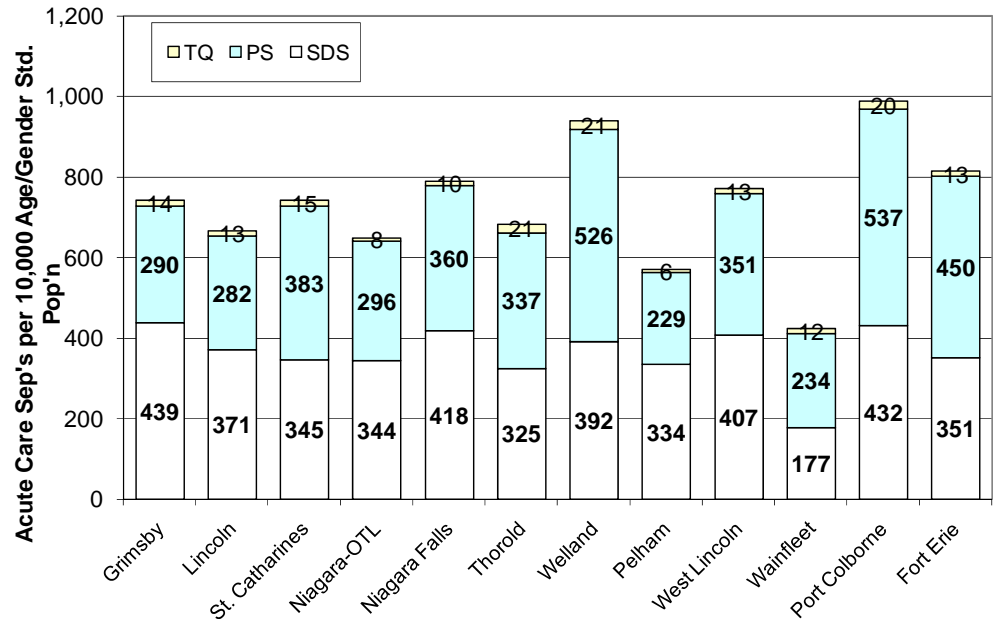
Low Ratio of Primary Care Physicians per Population for Niagara

Exhibit 6: Primary Care Physicians per 10,000 Population, 2006 (Ontario Physician Human Resource Data Base)



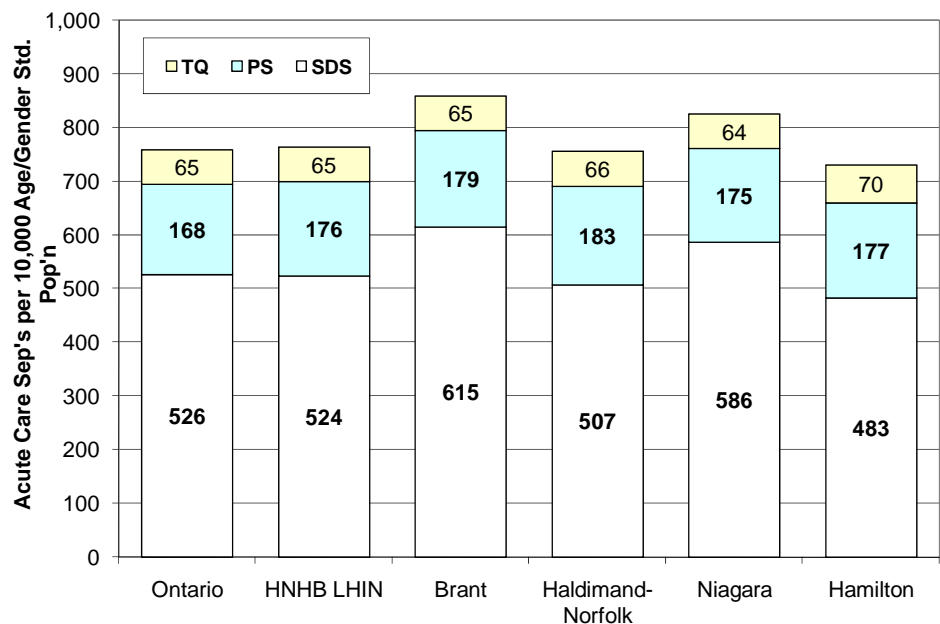
Hospital utilization for medical cases in Niagara is highest for residents of Port Colborne, Welland, Fort Erie, and Niagara Falls.

Exhibit 7: Medical Separations per 10,000 Age/Gender Standardized Population by Level of Care by Niagara Municipality



Niagara residents have the second highest utilization rate in the HNHB LHIN for hospital surgical care.

Exhibit 8: Surgical Separations per 10,000 Age/Gender Standardized Population by Level of Care by Region



Niagara Residents have 2nd Highest Rate of Hospitalization for Surgery of Regions in HNHB LHIN

Utilization for inpatient surgery by Niagara residents is very similar to the overall HNHB LHIN average. The higher overall rate of surgical cases for Niagara residents is due to a high rate of day surgery.

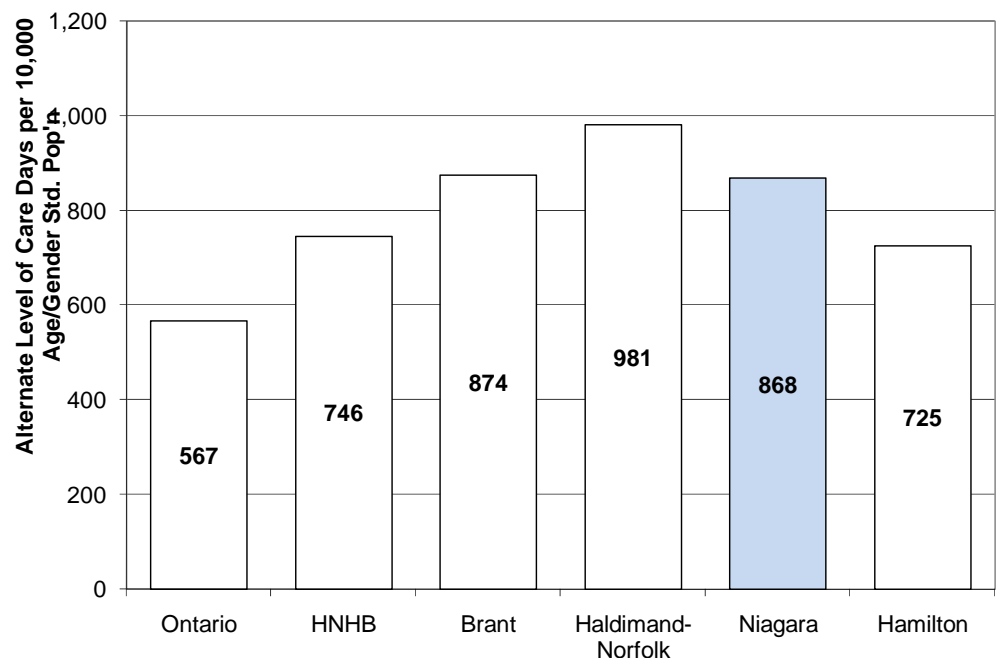
5.1.2 Alternate Level of Care

Following hospitalization, Niagara residents face lengthy waits for post-acute care. This is reflected in the higher than average rates of alternate level of care (ALC) patients (patients not requiring in-hospital acute or chronic care) in local hospitals. On a daily basis, approximately 31% (07/08) of Niagara's acute and chronic care hospital beds are inappropriately occupied by patients designated ALC. Insufficient acute inpatient capacity is reflected in the frequency of emergency room overcrowding and 'consideration status' in Niagara's hospitals.

In 2006/07, Niagara residents had 868 ALC days in acute care hospitals per 10,000 population, a rate that was 53% higher than the Ontario average.

**Exhibit 9: ALC Days per 10,000 Age/Gender
Standardized Population by Level of Care by Region**

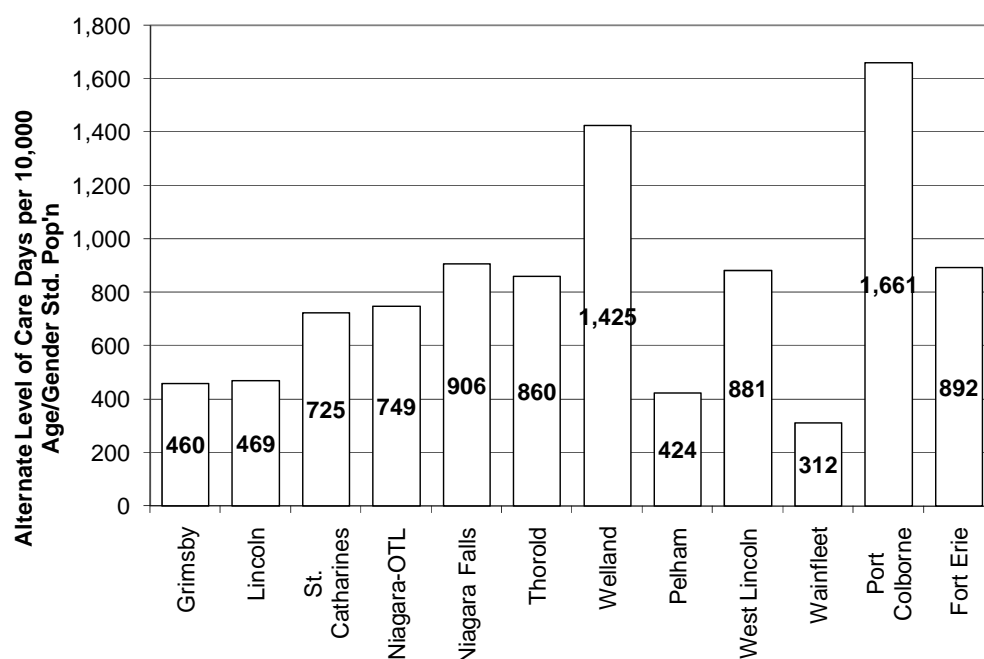
*Niagara Residents Had ALC
Rate 53% Above Ontario
Average*



*Port Colborne and Welland
Residents Have Highest
ALC Rates*

Residents of Port Colborne and Welland have the highest ALC day rates in Niagara. Only residents of Grimsby, Lincoln, Pelham, and Wainfleet have ALC day rates lower than the Ontario average.

**Exhibit 10: ALC Days per 10,000 Age/Gender
Standardized Population by Level of Care by Niagara Municipality**



5.1.3 Ambulatory Care Sensitive Condition Admissions

Ambulatory Care Sensitive Conditions Are Conditions Where Access to Primary Care Could Reduce Admissions to Hospital

Ambulatory Care Sensitive Conditions (ACSC) are conditions, such as asthma, diabetes and hypertension, where appropriate primary health care in the community may prevent or reduce the need for hospital admission. A May 2008 report⁸ from the Canadian Institute for Health Information (CIHI) and Statistics Canada measures ACSC admission rates in health regions across Canada and explores the factors that contribute to higher or lower rates. Glenda Yeates, President and CEO of CIHI stated that:

“This indicator is important for health planners. Hospital stays can be disruptive for patients and costly for the health system as a whole. While hospitalizations for ambulatory care sensitive conditions are not always avoidable, higher rates of admission may signal an opportunity to improve the planning or delivery of primary health care services to better meet the needs of the population.”

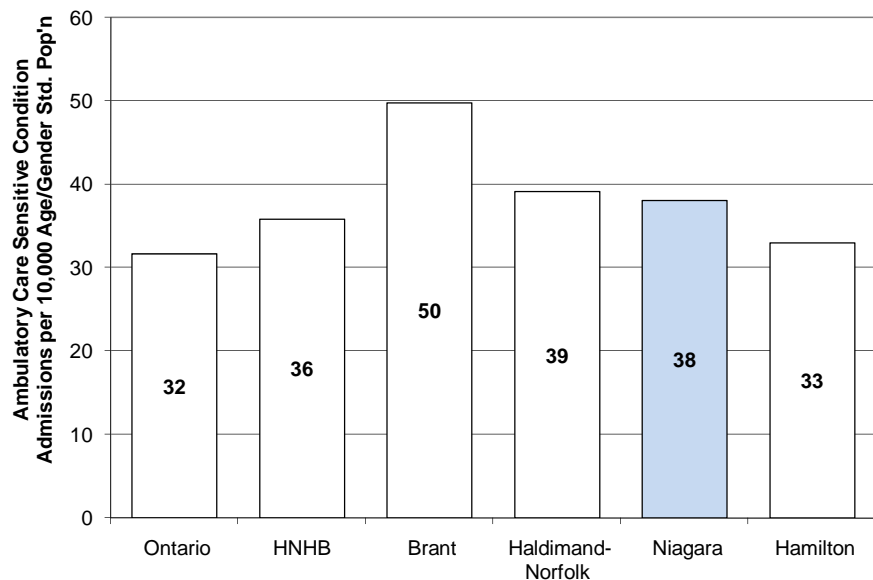
The CIHI study found that the rate of hospitalization for ACSCs has been decreasing in Ontario, but about 20% of patients hospitalized because of an ACSC are re-admitted to hospital within a year for the same or another ACSC.

⁸ Health Indicators 2008, Canadian Institute for Health Information, May 29, 2008, Ottawa.

***Niagara ACSC Rate Was
19% Above Ontario Average***

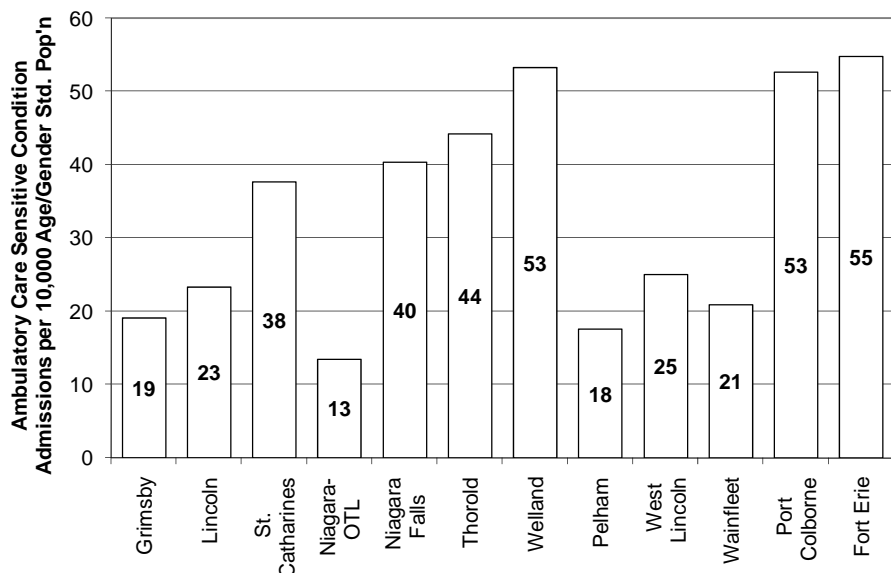
In 2006/07, residents of Niagara had a rate of admission to hospital for ACSCs that was 19% above the Ontario average rate.

Exhibit 11: Ambulatory Care Sensitive Condition Admissions per 10,000 Age/Gender Standardized Population by Level of Care by Region



Within the Niagara region, the highest rates of admissions due to ACSCs were for residents of Port Colborne, Fort Erie, and Welland.

Exhibit 12: Ambulatory Care Sensitive Condition Admissions per 10,000 Age/Gender Standardized Population by Level of Care by Niagara Municipality



***Highest ACSC Admission
Rate for Residents of
Welland, Port Colborne, and
Fort Erie***

***Chronic Disease
Management and Primary
Care Could Reduce
Hospitalization for Welland,
Fort Erie, Port Colborne
Residents***

The high rates of admissions for ACSCs for residents of Welland, Port Colborne, and Fort Erie suggest that hospitalizations for residents of these communities could be reduced if their chronic illnesses could be better managed in the community and their access to primary care was improved. Residents of Niagara-on-the-Lake have the lowest rates of admissions for ACSCs. The NHS supports a hospital-based Primary Health Care Clinic at the Niagara-on-the-Lake hospital site, where nurse practitioners, supported by a team of family physicians, see more than 130 outpatients per day.

5.1.4 Emergency Department Visits

The NHS received emergency department (ED) visit data for all visits to any ED in Ontario during fiscal year 2006/07. This data contained information about the patient age, gender, and residence, and information about why the patient visited the ED and where they were sent after their visit. Each visit record was also assigned a triage category, based on the Canadian Triage & Acuity Scale (CTAS). CTAS is a tool that enables an ED to prioritize patient care requirements and to examine patient case mix. The CTAS assigns each ED visit to one of 5 categories:

***Canadian Triage & Acuity
Scale (CTAS) Categories***

- CTAS 1 – Resuscitation (e.g. heart attack, stroke)
- CTAS 2 – Emergent (e.g. chest pain, unstable angina)
- CTAS 3 – Urgent (e.g. headache, unspecified gastroenteritis)
- CTAS 4 – Less Urgent or Semi-Urgent (e.g. urinary tract infection, ankle sprain)
- CTAS 5 – Non-Urgent (e.g. open wound to finger, pharyngitis [sore throat])

CTAS 4 and 5 visits (less urgent and non-urgent visits) are often considered to be visits that could be supported in community and/or primary care, and could, with appropriate community supports, be redirected away from a hospital ED.

***Niagara Has High ED
Utilization Rate, Particularly
for Less-Urgent Visits***

In 2006/07, the age/gender standardized rate of ED visits per 10,000 population for Niagara residents was 25% higher than the Ontario average. The Niagara ED utilization rate for non-urgent visits (CTAS 5) was lower than the Ontario average, but the Niagara rate for less-urgent visits (CTAS 4) was 37% higher than the Ontario average.

Exhibit 13: ED Visits per 10,000 Age/Gender Standardized Population by Region

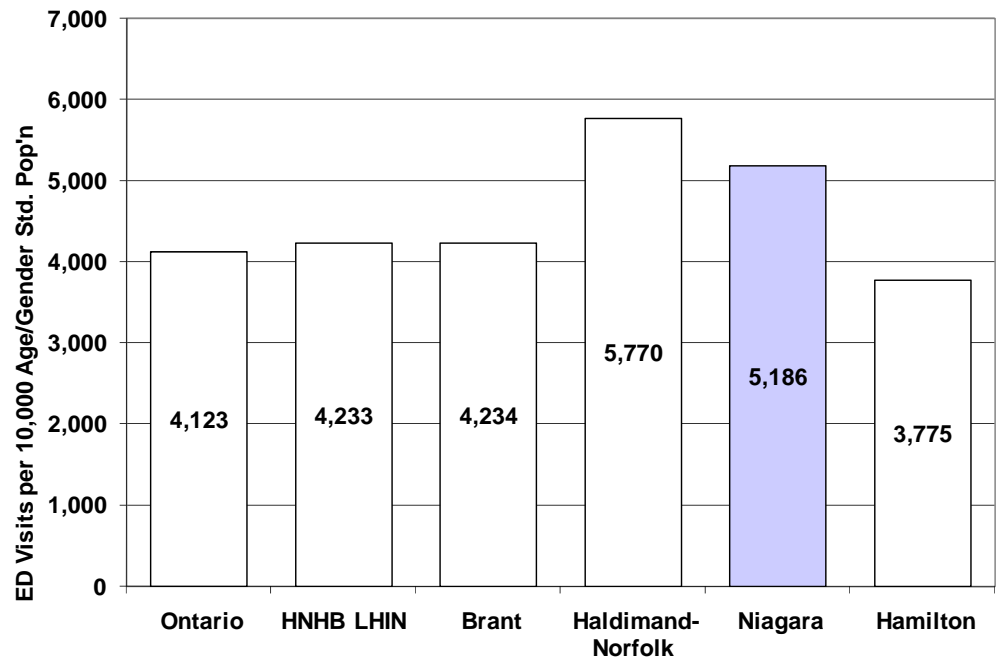
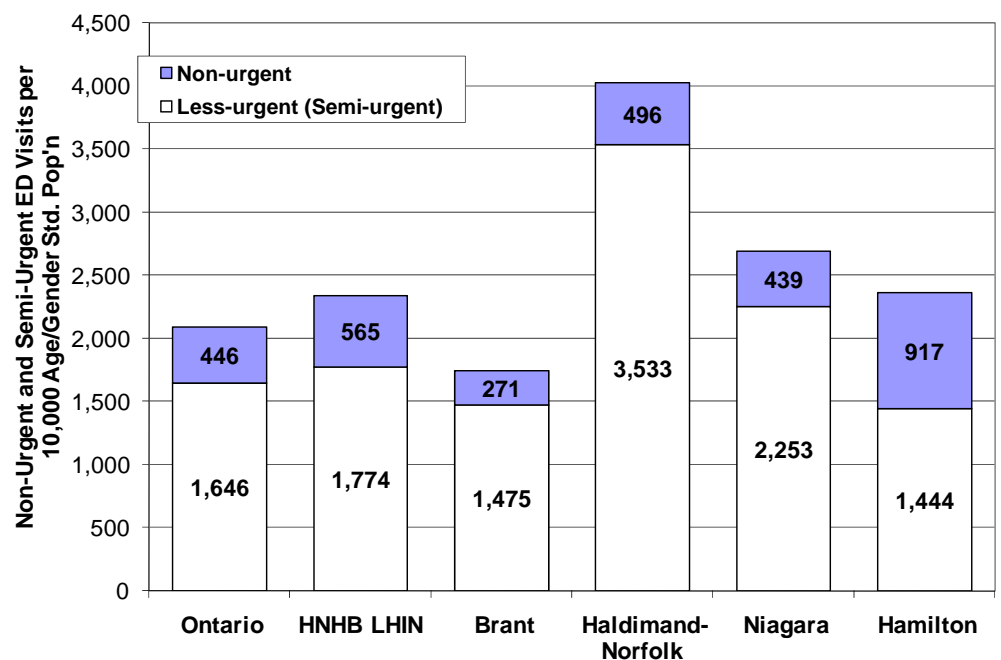


Exhibit 14: CTAS 4/5 (Less Urgent and Non Urgent) ED Visits per 10,000 Age/Gender Standardized Population by Region

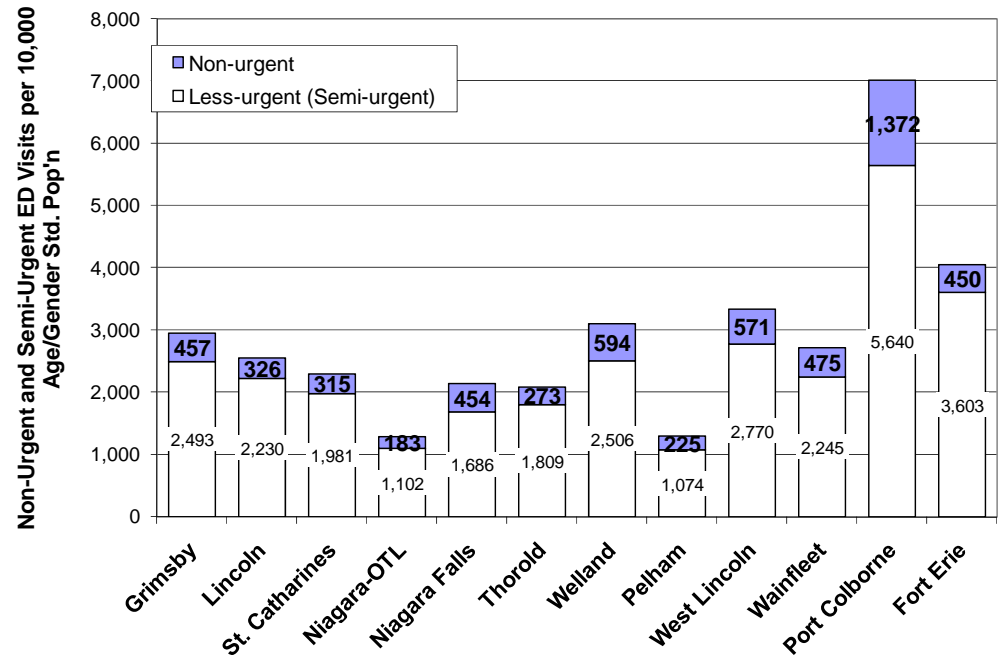


Very High Rates of ED Visits for Less-Urgent Cases for Residents of Port Colborne and Fort Erie

Within the Niagara region, only residents of Niagara-on-the-Lake and Pelham have ED visits rates for less- and non-urgent patients below the Ontario average. Residents of Port Colborne have exceptionally high ED

visit rates per 10,000 population for both less- and non-urgent visits. Residents of Fort Erie have very high ED visits rates for less-urgent visits.

Exhibit 15: CTAS 4/5 (Less Urgent and Non Urgent) ED Visits per 10,000 Age/Gender Standardized Population by Niagara Municipality



Need for Improved Primary Care in Port Colborne and Fort Erie

The results for Port Colborne and Fort Erie point to a need for improved access to primary care in these communities.

5.1 NHS Inpatient Beds by Site

The following table shows the average number of beds staffed and operated by the NHS by site during fiscal year 2007/08. The NHS has no children's mental health inpatient beds and no inpatient rehabilitation beds. Enhancing children's mental health services was one of the initial priorities of the HNHB LHIN. The NHS is one of the few large community hospital organizations in Ontario that does not have inpatient rehabilitation beds.

Exhibit 16: NHS 2007/08 Inpatient Beds by Type of Bed

Average Beds by NHS Site 2007/08 (MOHLTC Daily Census Summary Report)												
NHS Site	Type of Bed											Total Beds
	Med.	Surg.	Comb. Med/ Surg	ICU	Obstet.	Paeds	Child. Mental Health	Total Acute Care	Adult Mental Health	Rehab.	Chronic	
Douglas Memorial, Fort Erie	0	0	32	0	0	0	0	32	0	0	24	56
Greater Niagara	49	33	0	14	10	9	0	115	18	0	53	186
Niagara on the Lake	0	0	9	0	0	0	0	9	0	0	13	22
Port Colborne General	0	0	32	1	0	0	0	33	0	0	24	57
St. Catharines General	86	60	34	24	12	10	0	226	24	0	0	250
Welland County	60	29	0	16	10	7	0	122	16	0	56	194
Total	195	122	107	55	32	26	0	537	58	0	170	765

The ICU bed shown at Port Colborne was a telemetry bed (not currently monitored) that would not normally be categorized as an ICU bed in other hospitals.

A large portion (64%) of the 170 chronic beds are currently used as ALC beds rather than for the complex continuing care, palliation, and respite patients for which there were intended.

5.2 NHS Acute and Day Surgery Activity by Site

The overall volume of acute care inpatient and day surgery activity in the NHS hospital sites in 2006/07 is shown in the following table. Most adult mental health activity is excluded from the table, since it is based on the discharge abstract data reported to CIHI, and adult mental health activity is not included in that data. The average acute care (i.e. excluding ALC days) length of stay (LOS) for NHS inpatients was 5.36 days. In 2006/07 24.0% of all inpatient days in acute care beds were ALC days.

Exhibit 17: 2006/07 NHS Acute Care Inpatient and Day Surgery Activity by Program

Program	2006/07 NHS Actual										
	IP Cases	IP Days	Acute LOS	ALC Days	% ALC	SDS Cases	IP RIW	Avg. IP RIW	SDS RIW	Avg. SDS RIW	Total RIW
Medicine	13,741	110,160	5.56	33,791	30.7%	12,832	18,823	1.37	1,148	0.09	19,971
Mental Health	205	1,527	4.91	520	34.1%	0	258	1.26	0	0.00	258
Neonates	3,218	8,334	2.59	2	0.0%	0	1,135	0.35	0	0.00	1,135
Paed MH	63	164	2.60	0	0.0%	0	52	0.82	0	0.00	52
Paediatrics	1,927	4,594	2.36	51	1.1%	1,839	1,050	0.54	322	0.18	1,372
Obstetrics	3,469	7,813	2.25	0	0.0%	2,293	2,238	0.65	328	0.14	2,566
Surgery	8,800	58,631	5.36	11,436	19.5%	22,782	15,221	1.73	3,314	0.15	18,535
Grand Total	31,423	191,223	4.63	45,800	24.0%	39,746	38,777	1.23	5,112	0.13	43,889

Medicine and Surgery inpatients had the longest average lengths of stay (more than 5 days), and Obstetrics, Neonates, and Paediatric inpatients all stayed an average of less than 3 days.

***Resource Intensity Weights
(RIWs) Used to Measure
Relative Case Costs***

Resource Intensity Weights (RIWs) are measures of the relative cost of providing care for inpatient and day surgery patients. Each inpatient case is assigned an RIW value (using a methodology developed and maintained by CIHI) based on the patient age, the patient diagnosis and procedure, and the presence of additional “comorbid” disease. SDS cases are assigned RIW values on the basis of the procedure performed for the patient. Inpatient surgery cases have the highest average RIW values, reflecting the high costs of OR time, expensive implants and surgical supplies, recovery room time, and convalescence. Neonates have the lowest average RIW values because of their short length of stay and the usual practice of having the baby stay with the mother after birth.

***More Day Surgery Cases in
NHS than Inpatient Cases***

There were more day surgery (SDS) cases in the NHS hospitals in 2006/07 than there were inpatient admissions. While most of the SDS cases are in the Surgery program, there are also many day procedures (such as endoscopy procedures) that are the responsibility of the Medicine or Obstetrics program.

***MOHLTC “Program Cluster
Categories” (PCCs) Used to
Present Data***

The following exhibit shows the distribution of the SDS cases in the NHS hospitals in 2006/07 by “Program Cluster Category” (PCC). The PCCs were created by the Ontario MOHLTC as a mechanism to group acute care activity by medical specialty. While the PCCs are normally applied only to inpatient cases, the following table is based on the assignment of SDS cases to PCC on the basis of the procedure performed and the medical specialty that would normally assume responsibility for the care of the patient.

**Exhibit 18: 2006/07 Same Day Surgery Cases
by Program Cluster Category by NHS Hospital Site**

Program Cluster Category	SCGH	GNGH	WCH	DMH	PCGH	OSS	Total
Gastro/Hepatobiliary	2,303	4,187	2,250	95	175	3,231	12,241
Urology	114	1,288	1,706	101	334	3,286	6,829
Ophthalmology	4	777	1,122	795	399	2,472	5,569
Plastic Surgery	326	284	2,047	5	2	230	2,894
Orthopaedics	824	1,178	589	39	1	42	2,673
Obstetrics	933	803	499	58	0	0	2,293
General Surgery	777	621	421	9	1	144	1,973
Otolaryngology	919	386	394	0	4	8	1,711
Dental/Oral Surgery	339	308	51	14	44	173	929
Gynaecology	271	107	542	5	0	0	925
Ungroupable	148	94	113	1	3	58	417
Neurosurgery	22	171	113	12	0	28	346
Vascular Surgery	152	36	33	0	0	90	311
Pulmonary	212	5	20	0	0	0	237
Haematology	106	9	54	0	0	2	171
Cardiology	56	21	17	0	0	0	94
General Medicine	3	3	37	0	0	8	51
Oncology	1	1	16	0	0	18	36
Endocrinology	0	0	36	0	0	0	36
Neurology	1	0	4	0	0	4	9
Grand Total	7,511	10,279	10,064	1,134	963	9,794	39,745

The three highest volume PCCs (Gastro/Hepatobiliary, Urology, and Ophthalmology) account for 62% of all NHS SDS activity. The GNGH, WCH, and OSS sites each had approximately 10,000 SDS cases in 2006/07. DMH had more than 1,000 SDS cases, most of which were Ophthalmology cases. PCGH had just less than 1,000 SDS cases, 60% of which were Ophthalmology or Urology cases.

***Longer LOS at Small Sites
Because of High ALC Days***

The following table shows the inpatient activity in 2006/07 for each of the NHS sites with acute care beds (i.e. all of the sites except OSS). The average inpatient length of stay in the 3 large sites was less than 6 days. The average length of stay in the 3 smaller sites was more than 8 days (and more than 18 days at NOTL). The long length of stay at the 3 small sites is reflective of the high percent of ALC days.

Exhibit 19: 2006/07 Inpatient Activity by NHS Hospital Site

NHS Hospital Site	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW	Avg. RIW per Day
St. Catharines General	13,912	82,809	5.95	15.4%	17,571	1.26	0.212
Greater Niagara GH	7,723	40,622	5.26	24.4%	8,625	1.12	0.212
Welland County Hospital	7,442	44,115	5.93	25.9%	8,981	1.21	0.204
Douglas Memorial	1,179	9,553	8.10	41.2%	1,430	1.21	0.150
Port Colborne GH	988	10,879	11.01	50.4%	1,658	1.68	0.152
Niagara on the Lake	179	3,245	18.13	70.2%	512	2.86	0.158
Grand Total	31,423	191,223	6.09	24.0%	38,777	1.23	0.203

***Average RIW per Day Much
Higher at Large Sites than
Small Sites***

The average RIW per case is highest at the PCGH and NOTL sites. This high relative cost is not because of the complexity of the inpatients at these two sites, but rather is because of the very long average length of stay of the patients. When case complexity is measured using the average RIW per day (i.e. the average relative cost of providing care per day), the 3 large sites clearly have a more complex (and costly) patient population than the 3 small sites.

***NOTL Acute Beds are
actually used for Non-Acute
Care***

The following table shows the breakdown of NOTL inpatients by PCC. Most of the NOTL inpatients are General Medicine ALC patients. While the 9 inpatient beds at NOTL are formally designated as acute care beds by the MOHLTC, they are instead used as non-acute ALC beds.

Exhibit 20: 2006/07 Inpatient Activity by Program Cluster Category for the Niagara-on-the-Lake Site

Niagara Health System-Niag-On-The-Lake						
Program Cluster Category	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW
General Medicine	114	2,544	22.32	76.8%	388	3.41
Cardiology	16	65	4.06	27.7%	17	1.09
Gastro/Hepatobiliary	14	178	12.71	38.2%	27	1.95
Pulmonary	10	79	7.90	25.3%	17	1.75
Endocrinology	6	28	4.67	39.3%	6	0.98
Orthopaedics	5	117	23.40	65.8%	17	3.34
Psychiatry	2	25	12.50	20.0%	4	1.87
Rehabilitation	2	30	15.00	10.0%	3	1.56
Urology	2	3	1.50	0.0%	2	0.79
Neurology	2	36	18.00	61.1%	6	2.97
Oncology	2	109	54.50	69.7%	18	8.99
Haematology	1	1	1.00	0.0%	1	0.58
Rheumatology	1	1	1.00	0.0%	1	0.98
General Surgery	1	18	18.00	100.0%	4	3.97
Otolaryngology	1	11	11.00	63.6%	2	1.50
Grand Total	179	3,245	18.13	70.2%	512	2.86

The following table shows the 2006/07 inpatient activity for the St. Catharines General Hospital. While two PCCs (Obstetrics and Neonatology) have the highest volume of inpatient cases, the patients in these PCCs have very short lengths of stay, no ALC days, and low average RIW values. The highest cost inpatients at SCGH are General Surgery, Cardio/Thoracic, and Vascular Surgery patients. The SCGH site has the lowest overall percent ALC days at 15.4%. General Medicine, Neurology, and Oncology inpatients all spent more than one quarter of their inpatient stay (on average) as ALC.

Exhibit 21: 2006/07 Inpatient Activity by Program Cluster Category for the St. Catharines General Site

Niagara Health System-St Catharines Gen						
Program Cluster Category	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW
Obstetrics	1,562	3,421	2.19	0.0%	991	0.63
Neonatology	1,418	4,039	2.85	0.0%	564	0.40
Pulmonary	1,317	9,187	6.98	14.0%	1,742	1.32
Cardiology	1,263	7,633	6.04	12.2%	1,518	1.20
Gastro/Hepatobiliary	1,190	6,436	5.41	9.6%	1,031	0.87
General Surgery	1,099	9,714	8.84	10.7%	2,403	2.19
General Medicine	1,011	7,754	7.67	25.8%	1,475	1.46
Trauma	785	5,443	6.93	20.4%	1,263	1.61
Orthopaedics	778	4,904	6.30	16.2%	1,413	1.82
Urology	547	2,760	5.05	13.5%	578	1.06
Neurology	500	3,940	7.88	33.5%	704	1.41
Gynaecology	415	1,092	2.63	0.0%	376	0.91
Oncology	368	4,609	12.52	28.9%	726	1.97
Endocrinology	322	1,970	6.12	18.0%	321	1.00
Cardio/ Thoracic	268	2,093	7.81	4.6%	767	2.86
Haematology	229	1,308	5.71	9.7%	234	1.02
Vascular Surgery	217	2,946	13.58	22.5%	747	3.44
Nephrology	162	1,257	7.76	18.3%	241	1.49
Otolaryngology	157	468	2.98	10.0%	102	0.65
Psychiatry	102	707	6.93	29.7%	132	1.29
Plastic Surgery	51	353	6.92	30.0%	86	1.68
Rheumatology	35	257	7.34	16.3%	42	1.19
Dermatology	30	257	8.57	29.6%	39	1.31
Neurosurgery	30	93	3.10	0.0%	51	1.70
Not Generally Hosp.	27	39	1.44	0.0%	3	0.12
Ophthalmology	20	108	5.40	28.7%	18	0.90
Dental/Oral Surgery	4	9	2.25	0.0%	3	0.71
Ungroupable	4	7	1.75	0.0%	1	0.16
Rehabilitation	1	5	5.00	0.0%	2	1.56
Grand Total	13,912	82,809	5.95	15.4%	17,571	1.26

The average percent of ALC days at the GNGH site is higher than at SCGH partially because of the lower volume of Obstetrics and Neonatology cases. Almost half of the inpatient days at GNGH for General Medicine and Oncology patients are spent as ALC.

Exhibit 22: 2006/07 Inpatient Activity by Program Cluster Category for the Greater Niagara General Hospital Site

Niagara Health System-Greater Niagara						
Program Cluster Category	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW
Obstetrics	1,080	2,384	2.21	0.0%	692	0.64
Neonatology	1,022	2,176	2.13	0.0%	314	0.31
Gastro/Hepatobiliary	689	3,221	4.67	11.8%	528	0.77
Cardiology	647	4,291	6.63	22.1%	804	1.24
Pulmonary	617	4,067	6.59	23.2%	738	1.20
Orthopaedics	595	2,766	4.65	13.2%	1,003	1.69
General Surgery	509	4,591	9.02	22.1%	1,021	2.01
General Medicine	497	4,153	8.36	49.0%	696	1.40
Trauma	396	2,087	5.27	27.6%	543	1.37
Neurology	286	2,713	9.49	45.0%	432	1.51
Urology	276	1,050	3.80	20.9%	280	1.02
Gynaecology	260	696	2.68	0.3%	233	0.90
Oncology	173	2,294	13.26	49.3%	369	2.13
Endocrinology	156	1,021	6.54	24.4%	150	0.96
Cardio/ Thoracic	116	725	6.25	10.6%	342	2.95
Nephrology	85	633	7.45	25.3%	113	1.33
Otolaryngology	75	225	3.00	24.0%	63	0.84
Plastic Surgery	71	85	1.20	0.0%	55	0.77
Psychiatry	58	382	6.59	38.0%	74	1.27
Haematology	51	342	6.71	22.2%	46	0.91
Vascular Surgery	29	402	13.86	37.3%	93	3.22
Not Generally Hosp.	10	14	1.40	0.0%	1	0.12
Rheumatology	9	113	12.56	53.1%	13	1.45
Ophthalmology	8	38	4.75	50.0%	9	1.10
Dermatology	8	153	19.13	55.6%	14	1.72
Grand Total	7,723	40,622	5.26	24.4%	8,625	1.12

More than one quarter of the inpatient days at the WCH site are ALC days. Many of the same low case volume and high RIW PCCs found at the SCGH site and the GNGH site are also present at the WCH site (e.g. Cardio/Thoracic, Vascular Surgery).

Exhibit 23: 2006/07 Inpatient Activity by Program Cluster Category for the Welland County Hospital Site

Niagara Health System-Welland County						
Program Cluster Category	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW
Obstetrics	825	2,005	2.43	0.0%	554	0.67
Neonatology	778	2,119	2.72	0.1%	258	0.33
Cardiology	769	4,727	6.15	18.6%	902	1.17
Gastro/Hepatobiliary	681	3,188	4.68	16.8%	530	0.78
Pulmonary	663	4,444	6.70	24.9%	855	1.29
General Medicine	568	4,640	8.17	44.2%	876	1.54
General Surgery	564	4,497	7.97	25.0%	1,098	1.95
Orthopaedics	470	2,815	5.99	24.8%	804	1.71
Trauma	398	2,495	6.27	28.8%	540	1.36
Urology	395	1,675	4.24	21.1%	432	1.09
Neurology	288	2,913	10.11	44.3%	437	1.52
Gynaecology	216	717	3.32	0.0%	196	0.91
Endocrinology	161	1,270	7.89	35.1%	195	1.21
Oncology	134	1,490	11.12	32.9%	249	1.86
Nephrology	122	1,712	14.03	48.8%	266	2.18
Cardio/ Thoracic	87	967	11.11	13.5%	354	4.07
Haematology	73	494	6.77	15.8%	90	1.23
Psychiatry	72	391	5.43	24.8%	69	0.96
Otolaryngology	71	208	2.93	11.1%	40	0.56
Rheumatology	29	275	9.48	33.8%	47	1.64
Plastic Surgery	27	231	8.56	38.5%	43	1.59
Vascular Surgery	20	601	30.05	45.6%	109	5.45
Dermatology	13	129	9.92	32.6%	16	1.23
Ophthalmology	8	21	2.63	0.0%	7	0.81
Rehabilitation	4	59	14.75	100.0%	7	1.78
Ungroupable	3	6	2.00	0.0%	1	0.19
Neurosurgery	2	19	9.50	0.0%	5	2.67
Not Generally Hosp.	1	7	7.00	0.0%	0	0.27
Grand Total	7,442	44,115	5.93	25.9%	8,981	1.21

More than 40% of inpatient days at the DMH site were ALC days. Almost three quarters of the stay for General Medicine patients is spent as ALC.

Exhibit 24: 2006/07 Inpatient Activity by Program Cluster Category for the Douglas Memorial Hospital Site

Niagara Health System-Douglas Mem Fort E						
Program Cluster Category	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW
Cardiology	258	1,445	5.60	18.3%	249	0.97
General Medicine	185	2,367	12.79	73.3%	324	1.75
Pulmonary	167	1,282	7.68	16.7%	198	1.19
Gastro/Hepatobiliary	166	965	5.81	18.3%	140	0.85
Neurology	69	606	8.78	35.5%	91	1.31
Orthopaedics	67	717	10.70	59.8%	104	1.55
Oncology	50	554	11.08	37.0%	76	1.53
Endocrinology	41	222	5.41	7.2%	33	0.81
General Surgery	37	448	12.11	67.0%	66	1.78
Psychiatry	29	141	4.86	29.8%	27	0.93
Trauma	23	167	7.26	34.7%	24	1.06
Urology	16	94	5.88	25.5%	14	0.87
Rehabilitation	13	140	10.77	100.0%	19	1.44
Nephrology	10	65	6.50	46.2%	10	0.97
Haematology	10	98	9.80	38.8%	15	1.48
Rheumatology	9	79	8.78	40.5%	9	1.03
Cardio/ Thoracic	9	84	9.33	7.1%	17	1.86
Ophthalmology	8	41	5.13	0.0%	9	1.12
Otolaryngology	6	25	4.17	36.0%	3	0.48
Gynaecology	4	10	2.50	0.0%	2	0.40
Obstetrics	2	3	1.50	0.0%	1	0.38
Grand Total	1,179	9,553	8.10	41.2%	1,430	1.21

Half of all inpatient days at the PCGH site, and more than three quarters of General Medicine inpatient days, are ALC days.

Exhibit 25: 2006/07 Inpatient Activity by Program Cluster Category for the Port Colborne General Hospital Site

Niagara Health System-Port Colborne Site						
Program Cluster Category	IP Cases	IP Days	Avg. LOS	% ALC	RIW Wtd. Cases	Avg. RIW
General Medicine	242	4,381	18.10	76.6%	636	2.63
Cardiology	207	1,359	6.57	24.4%	251	1.21
Pulmonary	157	1,459	9.29	27.1%	224	1.43
Gastro/Hepatobiliary	149	761	5.11	1.1%	117	0.78
Oncology	35	600	17.14	44.3%	89	2.54
Neurology	34	641	18.85	73.3%	82	2.41
Urology	34	159	4.68	19.5%	29	0.84
Endocrinology	23	185	8.04	32.4%	25	1.10
General Surgery	23	451	19.61	36.1%	81	3.54
Haematology	19	111	5.84	6.3%	19	0.99
Trauma	14	182	13.00	74.2%	20	1.42
Nephrology	13	238	18.31	59.2%	36	2.74
Orthopaedics	9	117	13.00	39.3%	12	1.28
Otolaryngology	8	19	2.38	0.0%	4	0.51
Cardio/ Thoracic	7	54	7.71	0.0%	12	1.77
Psychiatry	5	45	9.00	46.7%	4	0.86
Rheumatology	3	61	20.33	31.1%	6	1.97
Vascular Surgery	2	20	10.00	0.0%	7	3.43
Ophthalmology	1	5	5.00	0.0%	1	1.04
Dermatology	1	1	1.00	0.0%	1	0.52
Rehabilitation	1	29	29.00	100.0%	3	3.34
Not Generally Hosp.	1	1	1.00	0.0%	0	0.09
Grand Total	988	10,879	11.01	50.4%	1,658	1.68

5.3 NHS Emergency Department Visits by Site

Almost 200,000 ED Visits to NHS in 2006/07

In 2006/07 there were almost 200,000 visits to EDs at the NHS sites. The GNGH and SCGH sites had the highest volume of visits, and the PCGH and DMH sites had the lowest volumes. More than 10% of the ED patients at the three largest acute care sites were admitted as inpatients. Among the largest sites, ED visitors were most likely to be admitted as inpatients at the WCH site and least likely to be admitted at the GNGH site.

Majority of ED Patients at Small NHS Sites are Less Urgent or Non Urgent Patients

At the OSS, DMH, and PCGH sites, the majority of ED patients fall in the CTAS 4 (less urgent) or CTAS 5 (non urgent) categories. At the SCGH, GNGH, and WCH sites, the majority of ED patients fall in the CTAS 1 (resuscitation), CTAS 2 (emergent), or CTAS 3 (urgent) categories.

Exhibit 26: 2006/07 ED Visits and Percent of Visits Admitted or Transferred to Acute Care by CTAS Level and NHS ED Site

NHS ED Site	ED Visits by CTAS Triage Level						
	1- Resusc.	2 – Emergent	3 – Urgent	4 – Less- urgent	5 – Non- urgent	Grand Total	% CTAS 4 or 5
Fort Erie	42	615	7,241	10,107	1,107	19,112	58.7%
Greater Niagara	285	5,680	21,435	14,614	4,066	46,080	40.5%
Ontario Street	11	989	9,506	19,321	3,427	33,254	68.4%
Port Colborne	42	1,117	6,564	14,338	3,386	25,447	69.7%
St Catharines Gen	349	6,880	27,280	11,840	1,147	47,496	27.3%
Welland County	265	2,800	12,170	10,472	2,737	28,444	46.4%
Grand Total	994	18,081	84,196	80,692	15,870	199,833	48.3%

NHS ED Site	% of Visits Admitted or Transferred By CTAS Triage Category					
	1- Resusc.	2 – Emergent	3 – Urgent	4 – Less- urgent	5 – Non- urgent	Grand Total
Fort Erie	47.6%	41.6%	10.7%	1.3%	0.1%	6.2%
Greater Niagara	61.1%	28.4%	12.3%	3.0%	1.2%	10.6%
Ontario Street	45.5%	18.7%	4.0%	0.8%	0.4%	2.2%
Port Colborne	59.5%	29.5%	10.1%	1.0%	0.4%	4.6%
St Catharines Gen	60.2%	37.5%	19.2%	5.2%	1.9%	18.3%
Welland County	62.6%	41.6%	20.6%	6.1%	3.2%	16.1%
Grand Total	60.4%	33.9%	14.5%	2.6%	1.2%	10.6%

During the day shift (0800 to 1600 hours) the GNGH, SCGH, and OSS sites each have an average of 55 ED visits per shift. For the evening shift (1600 to midnight), the visit volumes drop to just below 50 at SCGH and GNGH. On the night shift (midnight to 0800 hours), DMH and PCGH have approximately 6 patients visit per shift.

Exhibit 27: 2006/07 ED Visits by Shift and NHS ED Site (all CTAS Categories Combined)

NHS Site	Average CTAS (All) Visits per Day by Shift			
	Day	Eve.	Night	Total
Fort Erie	26.8	19.7	5.9	52.4
Greater Niagara	55.8	49.3	21.1	126.2
Ontario Street	55.4	35.6	0.1	91.1
Port Colborne	35.5	27.5	6.6	69.7
St Catharines Gen	55.2	49.5	25.4	130.1
Welland County	38.1	28.1	11.7	77.9
Grand Total	266.9	209.7	70.9	547.5

Very Few ED Visits to PCGH and DMH on the Night Shift

The following bar charts show the average number of ED patients arriving at PCGH and DMH by hour (based on triage time), broken down by CTAS triage level. After midnight the average number of ED patients arriving at the PCGH and DMH EDs is less than one per hour, and the vast majority of these ED patients are CTAS 4 (less urgent) or CTAS 5 (non urgent) patients.

Exhibit 28: 2006/07 Visits to the PCGH ED by Hour (Triage Time) and CTAS Triage Category

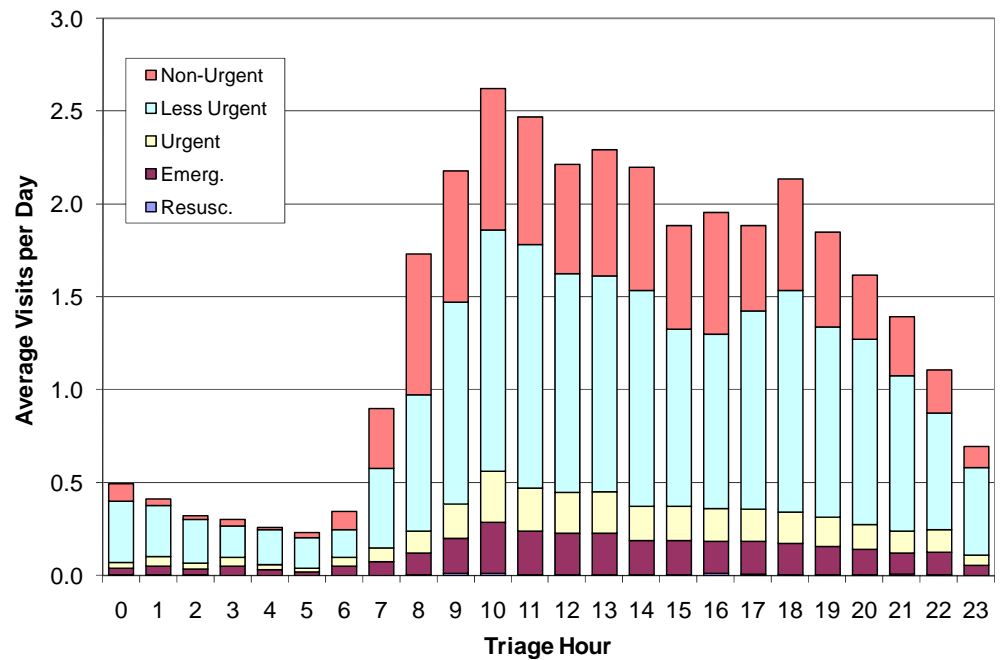
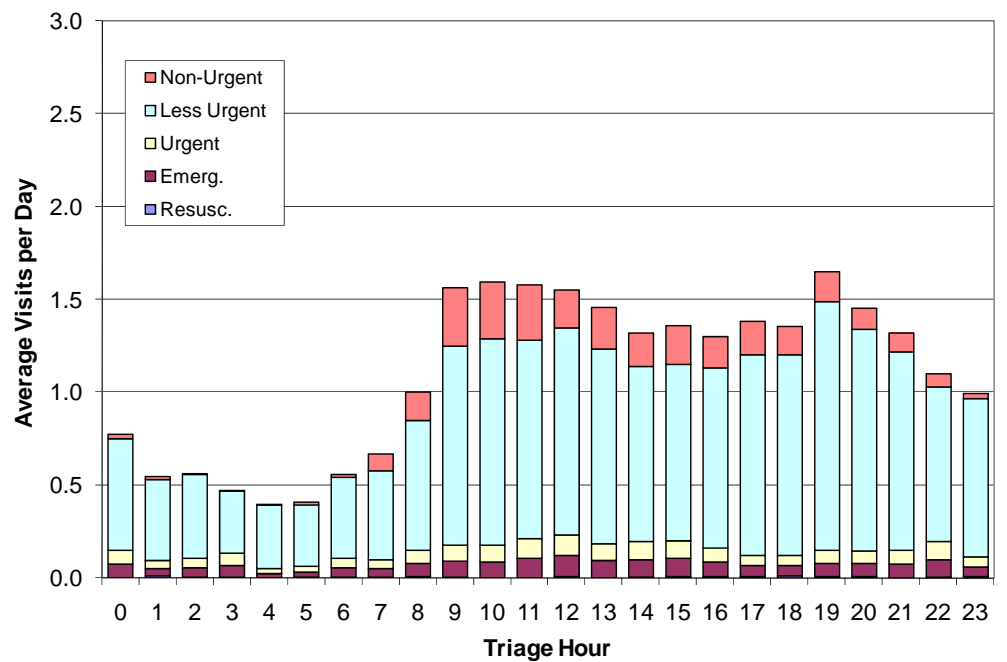


Exhibit 29: 2006/07 Visits to the DMH ED by Hour (Triage Time) and CTAS Triage Category



5.4 NHS Ambulatory Clinic Activity by Site

The following table shows the number of outpatient visits to each NHS site in 2007/08 by program. More than two thirds of all NHS outpatient visits are for the Surgery program.

Exhibit 30: 2007/08 Outpatient Visits by NHS Hospital Site and Program

NHS Hospital Site	Medicine	Oncology	Dialysis	Surgery	Mat-Child	Complex Cont. Care	Total
St. Catharines Gen.	7,167	5,060	0	24,680	3,918	25	40,850
Greater Niagara	2,063	852	0	18,913	1,568	645	24,041
Welland County	815	1,343	174	16,017	2,165	28	20,542
Ontario Street	0	0	3,210	5,239	0	0	8,449
Niagara on the Lake	4,355	0	0	0	0	0	4,355
Douglas Memorial	164	0	0	3,951	9		4,124
Port Colborne GH	493	0	0	3,043	0	0	3,536
NHS Total	15,057	7,255	3,384	71,843	7,660	698	105,897

5.5 NHS Market Share

The CIHI 2006/07 data for inpatient acute care, day surgery, and ED visits includes records for all Ontario hospitals and can be used to analyze the residence of the patients treated at NHS sites and to examine where the residents of the municipalities within the Niagara region go for their hospital care.

5.5.1 Acute Care Market Share

Inpatient Care

Only 1.6% of NHS Inpatients Live Outside Niagara Region

The following table shows the percent of the inpatients admitted to each NHS site who come from each Niagara municipality or from outside the Niagara region. Overall, only 1.6% of NHS inpatients live outside Niagara.

Exhibit 31: Percent Distribution of the Inpatients at Each NHS Site by Patient Residence (2006/07 Data)

Hospital	Elsewhere	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara-On-The-Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln
NHS - Douglas Mem Fort E	1.4%	89.3%	0.0%	0.2%	1.7%	0.2%	0.0%	1.2%	4.4%	0.3%	0.3%	1.0%	0.0%
NHS - Greater Niagara	2.6%	11.0%	0.1%	0.2%	69.8%	3.5%	0.6%	1.8%	5.3%	1.7%	0.2%	3.0%	0.1%
NHS - Niag-On-The-Lake	1.7%	0.0%	0.6%	0.6%	3.4%	59.2%	0.0%	0.0%	33.0%	1.7%	0.0%	0.0%	0.0%
NHS - Port Colborne Site	0.9%	2.2%	0.0%	0.0%	0.4%	0.0%	0.4%	84.1%	1.1%	0.2%	4.9%	5.8%	0.0%
NHS - St Catharines Gen	1.3%	1.6%	0.5%	2.1%	5.5%	4.6%	1.3%	1.1%	71.0%	7.1%	0.1%	3.4%	0.3%
NHS - Welland County	3.1%	7.8%	0.1%	0.2%	2.5%	0.2%	6.1%	12.0%	4.3%	1.6%	1.5%	59.5%	1.0%
Grand Total	1.6%	7.5%	4.7%	4.3%	18.0%	3.2%	2.3%	5.6%	31.2%	3.7%	0.7%	14.5%	2.7%

The WCH site has the highest percent of inpatients (3.1%) who live outside the Niagara region, and PCGH the lowest percent (0.9%). For each NHS hospital site, the majority of inpatients live in the same municipality in which the hospital site is located.

The table below shows the hospital that the residents of each Niagara municipality rely on for their inpatient care. Just over 75% of all hospitalizations of Niagara residents are provided by NHS hospitals. Residents of three Niagara municipalities rely primarily on non-NHS hospitals for their acute inpatient care:

Residents of Grimsby, West Lincoln, and Lincoln Rely Mainly on Non-NHS Hospitals

- Grimsby – 95.5% of hospitalizations outside NHS
- West Lincoln – 88.8%
- Lincoln – 81.3%

Exhibit 32: Percent of Inpatient Admissions for Niagara Residents Provided by Each Hospital (2006/07)

What Hospital Do Residents of Niagara Go To?	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara-On-The-Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln	Grand Total
All Other Facilities	12.3%	95.5%	81.3%	14.5%	20.7%	28.6%	13.4%	17.0%	19.3%	33.7%	13.2%	88.8%	24.1%
NHS - Douglas Mem Fort E	33.7%	0.0%	0.1%	0.3%	0.2%	0.0%	0.6%	0.4%	0.3%	1.0%	0.2%	0.0%	2.8%
NHS - Greater Niagara	27.3%	0.5%	1.0%	72.4%	20.7%	5.0%	5.9%	3.2%	8.6%	4.0%	3.9%	1.0%	18.6%
NHS - Niag-On-The-Lake	0.0%	0.1%	0.1%	0.1%	8.1%	0.0%	0.0%	0.5%	0.2%	0.0%	0.0%	0.0%	0.4%
NHS - Port Colborne Site	0.7%	0.0%	0.0%	0.1%	0.0%	0.4%	35.5%	0.1%	0.1%	16.2%	1.0%	0.0%	2.4%
NHS - St Catharines Gen	7.3%	3.5%	16.6%	10.2%	49.3%	19.0%	6.5%	76.4%	63.9%	6.4%	8.0%	3.3%	33.6%
NHS - Welland County	18.7%	0.5%	0.9%	2.5%	1.1%	47.0%	38.1%	2.5%	7.6%	38.7%	73.8%	6.9%	18.0%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Fort Erie and Port Colborne Residents Have One Third of Inpatient Stays at Local Hospital

Residents of Fort Erie and Port Colborne have about one third of their inpatient hospitalizations at their local hospital. Residents of Niagara-on-the-Lake have one in five hospitalizations at their local hospital, but rely on SCGH for half of their inpatient hospitalizations. Residents of St. Catharines, Niagara Falls, and Welland all have more than 70% of their inpatient hospitalizations at their local hospital. Residents of the other municipalities with no local hospital (Pelham, Thorold, and Wainfleet) rely mainly on NHS hospitals.

Day Surgery

Less Than 2% of NHS SDS Patients Live Outside Niagara Region

The following table shows that only 1.9% of NHS day surgery patients live outside the Niagara region. PCGH, DMH, and WCH are most likely to provide day surgery for non-Niagara residents. The majority of day surgery patients at each site live in the same municipality as the hospital, except for NOTL patients who are more likely to be St. Catharines residents, and WCH patients who come from across the region.

Exhibit 33: Percent Distribution of the Day Surgery Patients at Each NHS Site by Patient Residence (2006/07 Data)

Hospital	Elsewhere	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara-On-The-Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln
NHS - Douglas Mem Fort E	4.3%	57.3%	0.3%	0.3%	6.7%	0.8%	1.2%	12.3%	3.9%	0.9%	1.3%	10.3%	0.4%
NHS - Greater Niagara	1.1%	11.7%	0.1%	0.2%	66.3%	4.8%	0.6%	1.8%	6.8%	1.7%	0.3%	4.4%	0.1%
NHS - Niag-On-The-Lake	1.7%	1.6%	0.9%	3.2%	5.7%	5.2%	2.3%	1.2%	64.9%	7.4%	0.2%	5.0%	0.5%
NHS - Port Colborne Site	5.3%	7.7%	0.5%	0.3%	4.5%	0.2%	3.7%	49.3%	4.4%	0.5%	4.0%	19.4%	0.1%
NHS - St Catharines Gen	1.5%	2.3%	0.8%	2.5%	6.7%	4.9%	2.3%	1.7%	62.8%	7.3%	0.3%	6.3%	0.6%
NHS - Welland County	4.5%	7.9%	0.8%	0.9%	2.5%	0.3%	7.6%	14.1%	7.6%	1.5%	2.2%	48.9%	1.0%
Grand Total	1.9%	6.8%	5.0%	4.0%	18.7%	3.4%	3.3%	5.6%	29.3%	3.8%	0.9%	15.0%	2.5%

Grimsby, Lincoln, and West Lincoln residents are also more reliant on non-NHS hospitals for most of their day surgery. One in five (20.5%) of Niagara region residents use a non-NHS hospital for their day surgery. Fort Erie residents rely on GNGH or WCH for 60% of their day surgery. Port Colborne residents rely on WCH for 51% of their day surgery. St. Catharines residents get more of their day surgery at NOTL (38.3%) than they do at SCGH (32.3%).

Exhibit 34: Percent of Day Surgery Cases for Niagara Residents Provided by Each Hospital (2006/07)

What Hospital Do Residents of Niagara Go To?	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara-On-The-Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln	Grand Total
All Other Facilities	9.7%	89.9%	68.6%	11.8%	16.6%	22.7%	11.3%	13.6%	14.6%	19.5%	11.5%	83.2%	20.5%
NHS - Douglas Mem Fort E	19.1%	0.1%	0.2%	0.8%	0.5%	0.8%	5.0%	0.3%	0.5%	3.5%	1.5%	0.4%	2.3%
NHS - Greater Niagara	35.6%	0.3%	1.1%	72.8%	29.1%	3.9%	6.8%	4.8%	9.1%	6.8%	6.1%	0.8%	20.5%
NHS - Niag-On-The-Lake	4.7%	3.7%	15.9%	6.0%	30.2%	13.6%	4.3%	43.5%	38.3%	4.7%	6.6%	3.7%	19.6%
NHS - Port Colborne Site	2.2%	0.2%	0.2%	0.5%	0.1%	2.2%	17.1%	0.3%	0.3%	9.2%	2.5%	0.1%	1.9%
NHS - St Catharines Gen	5.1%	2.3%	9.4%	5.4%	21.5%	10.6%	4.5%	32.3%	29.1%	5.2%	6.3%	3.8%	15.0%
NHS - Welland County	23.6%	3.4%	4.7%	2.7%	2.0%	46.3%	51.0%	5.2%	8.1%	51.2%	65.5%	7.9%	20.1%

5.5.2 Emergency Department Visit Market Share

2.5% of NHS ED Patients Live Outside Niagara Region

Only 2.5% of NHS ED patients live outside the Niagara region. 90.3% of DMH ED patients are Fort Erie residents. 65.8% of PCGH ED patients are Port Colborne residents, and a further 20.1% are residents of Welland.

Exhibit 35: Percent Distribution of the ED Patients at Each NHS Site by Patient Residence (2006/07 Data)

Hospital	Elsewhere	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara-On-The-Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln
NHS - Douglas Mem Fort E	2.4%	90.3%	0.0%	0.0%	3.0%	0.1%	0.0%	1.5%	1.1%	0.3%	0.2%	1.1%	0.0%
NHS - Greater Niagara	4.7%	4.1%	0.1%	0.1%	80.0%	2.9%	0.3%	0.7%	3.7%	1.5%	0.1%	1.7%	0.1%
NHS - Ontario Street	2.5%	0.5%	0.3%	1.9%	3.1%	2.8%	1.0%	0.3%	77.1%	8.3%	0.0%	2.0%	0.2%
NHS - Port Colborne Site	2.5%	2.7%	0.0%	0.0%	0.8%	0.0%	1.5%	65.8%	1.0%	0.4%	4.9%	20.1%	0.3%
NHS - St Catharines Gen	2.6%	0.9%	0.4%	1.6%	4.1%	4.3%	1.0%	0.5%	73.3%	8.9%	0.1%	2.1%	0.2%
NHS - Welland County	2.2%	2.2%	0.1%	0.2%	1.6%	0.1%	7.7%	5.0%	3.7%	1.5%	1.4%	73.5%	0.8%
Grand Total	2.5%	9.2%	4.7%	3.9%	18.0%	2.0%	1.8%	8.4%	28.8%	3.8%	1.1%	12.8%	2.9%

Residents of Grimsby, Lincoln, and West Lincoln get most of their emergency care outside the NHS. Residents of all other Niagara municipalities make at least 85% of their ED visits to NHS EDs.

Exhibit 36: Percent of Emergency Department Visits for Niagara Residents Provided by Each Hospital (2006/07)

What Hospital Do Residents of Niagara Go To?	Fort Erie	Grimsby	Lincoln	Niagara Falls	Niagara-On-The-Lake	Pelham	Port Colborne	St. Catharines	Thorold	Wainfleet	Welland	West Lincoln	Grand Total
All Other Facilities	2.4%	96.8%	83.5%	3.9%	7.2%	13.9%	2.4%	5.3%	5.4%	32.5%	4.2%	92.5%	14.7%
NHS - Douglas Mem Fort E	79.9%	0.0%	0.1%	1.3%	0.5%	0.2%	1.4%	0.3%	0.6%	1.5%	0.7%	0.1%	8.2%
NHS - Greater Niagara	8.7%	0.3%	0.5%	86.1%	28.2%	3.7%	1.5%	2.5%	8.0%	1.2%	2.5%	0.5%	19.4%
NHS - Ontario Street	0.8%	0.8%	7.0%	2.5%	19.7%	7.9%	0.5%	38.1%	31.5%	0.5%	2.2%	0.9%	14.3%
NHS - Port Colborne Site	3.2%	0.0%	0.1%	0.5%	0.1%	9.1%	85.8%	0.4%	1.1%	47.5%	17.0%	1.0%	10.9%
NHS - St Catharines Gen	2.0%	1.8%	8.3%	4.6%	43.4%	11.4%	1.2%	51.8%	48.4%	1.6%	3.3%	1.6%	20.4%
NHS - Welland County	2.9%	0.2%	0.5%	1.1%	0.8%	53.6%	7.2%	1.6%	5.0%	15.3%	69.9%	3.4%	12.2%
Grand Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Residents of Fort Erie and Port Colborne Rely on Their Local ED for 80% of ED Visits

Residents of Fort Erie make 79.9% of their ED visits to the DMH ED. Residents of Port Colborne make 85.8% of their ED visits to the PCGH. 47.5% of ED visits for Wainfleet residents are also made to the PCGH ED, as are 17.0% of ED visits for Welland residents. Residents of Thorold rely on St. Catharines EDs (including the OSS prompt care centre). Residents of Pelham rely mainly on the WCH ED.

6.0 NHS Community Engagement

6.1 Community Engagement

6.1.1 Background

Community engagement speaks to an open dialogue where all stakeholders share an equal ability to participate and be heard. Community engagement and consultation can facilitate public and stakeholder education and facilitate public and stakeholder participation. NHS embraces community engagement and consultation and is committed to its stakeholders who have an interest in or will be impacted by its actions.

6.1.2 NHS's Approach to Community Engagement

The following principles have guided NHS in its community engagement and consultation activities:

- Inclusive*** We will engage with the full range of healthcare consumers, providers and communities that have a stake in or are influenced by our plans;
- Appropriate*** We will use a variety of communications methods responsive to our stakeholders while at the same time being responsive in our use of resources;
- Accessible*** We will provide clear, accessible and comprehensive information striving to eliminate the barriers of language, culture, literacy and disability;
- Responsive*** We will be respectful of and responsive to stakeholder input;
- Transparent*** We will engage with stakeholders openly and will be transparent in our purpose, goals, accountabilities, expectations and constraints on how stakeholder engagement will be used in decision making;
- Timely*** We will endeavour to share information and involve stakeholders in a timely and responsive manner;
- Accountable*** We will monitor the effectiveness of our stakeholder engagement strategies and be accountable to our principles and the processes we undertake.

While the community engagement/consultation field continues to emerge in Canadian healthcare planning and health policy development, best practice guidelines have evolved largely out of the United Kingdom where community engagement processes have been incorporated into health planning and policy development for some time.

Since its amalgamation, NHS has conducted community engagement through a variety of tactics/mechanisms across the engagement spectrum of informing/educating; gathering input; consulting and involving stakeholders. These include hosting community information open houses; development of

a robust and informative website; a responsive media relations service; the conduct of focus groups for specific program or service initiatives; ; and hosting community forums.

The NHS also receives regular feedback through its Patient Satisfaction Surveys and through the Compliments/Complaints process.

6.1.3 Community Engagement and NHS HIP Development

The community engagement plan developed by NHS for the HIP has been influenced by these guidelines which include: be clear as to who is being consulted, about what and for what specific purpose; ensure that the information for the consultation is as simple and concise as possible distribute information as widely as possible using electronic means (but not at the exclusion of others); make sure all responses are carefully and open-mindedly analyzed; and, the results made widely available, with an account of the views expressed and the reasons for decisions finally taken.

To best engage stakeholders in a meaningful way, the community engagement plan for the HIP has been developed into two phases:

- Phase One – June 2 to July 15, 2008 – education and stakeholder input to inform the development of the HIP;
- Phase Two – July 16 to July 31, 2008 – education and stakeholder input and response to the recommendations outlined in the HIP.

6.1.3.1 Phase One HIP Consultation

Tactics to Reach Out to and Engage Internal Stakeholders

Communications to Internal Stakeholders

Significant efforts have been made by NHS to inform its more than 6,000 individual internal stakeholders – namely employees, medical staff and volunteers – of the HIP process. A series of four Joint Communiqués authored by the Board chair, CEO and Chief of Staff were published and distributed to stakeholders across all sites on June 3, 4, 16, and 26, 2008.

Key stakeholder group meetings were held following the June 2, 2008 to HNHB LHIN notification to develop the HIP. Individual briefing meetings were held with: regional directors; hospital site leadership committees; union leadership; standing committees (Fort Erie, Niagara-on-the-Lake, Port Colborne); site medical leadership committees; regional and local hospital foundations.

Dedicated HIP Section on NHS Intranet

A dedicated HIP web- section on Source-net – the organization’s intranet was also created to share information and engage internal stakeholders - employees, medical staff and volunteers and a dedicated email address was established to receive feedback to inform the HIP. This dedicated internal website section hosts background information on the HIP process including all joint communiqués and Question and Answer documents.

6.1.3.2 Phase One HIP Consultation

Tactics to Reach Out to and Engage Community Stakeholders

NHS officials held a person to person briefing meeting with local municipal mayors and Region of Niagara Chairman on June 25, 2008 to dialogue on the HIP process and to provide information on community consultation.

NHS launched its formal community consultation for the HIP on June 26, 2008.

Comprehensive HIP Website Launched on June 26

A comprehensive website or micro-site for the HIP was created and launched on June 26, 2008. Information hosted on the micro-site was made available in English and French languages and streamed into five main chapters.

Five main navigation sections were developed:

- Welcome section housing subsections on introduction to the site; case for change; quality of care; financial pressures; factors driving change; how we can change and NHS facts and statistics at a glance;
- About Hospital Improvement Plan section housing subsections on Better Ways of Delivering Care and Questions and Answers
- Background section housing subsections on Niagara's population and health status; national trends and issues in health-care; shortage of health-care professionals; disease prevalence in Niagara; primary healthcare needs in Niagara; hospitalization trends and more;
- Video Briefing section – to be populated with HIP report summaries following public release on July 17, 2008;
- Your Input Questionnaire section, featuring six open ended questions and a demographic profile section.

For ease of access the micro-site was posted as a link on the front page of the health system's main web site www.niagarahealth.on.ca.

Advertisements in Daily and Weekly Newspapers

A series of advertisements were also published in daily and weekly newspapers June 26, 2008 to July 2, 2008 inviting members of the public to provide input. Request for input was also solicited through six area chambers of commerce and their memberships and through social service and community agencies via Information Niagara, a not-for-profit agency that provides email and fax news blasts to a comprehensive region-wide listing of community and social service agencies and contacts.

Dedicated HIP Telephone Line

A dedicated telephone line was established for the HIP, for those residents who did not have access to Internet, to be able to call and request copies of background information and printed booklet questionnaires.

News Releases

To promote the consultation and profile the micro-site NHS issued a news release and undertook a number of news media interviews with extensive news media coverage resulting. From June 2 to July 10, 2008, 15 newspaper articles have been published along with three positive editorials and one letter to the editor. Radio news reported on the June 26, 2008 news release and broadcasted one live five minute interview with repeated excerpts throughout the day on July 4, 2008

794 Website Visitors

As of July 14th at 0000 hours, 794 website visitors had visited the micro-site from 534 unique email addresses, viewing 4,501 pages with 175 visitors completing and submitting the questionnaire online.

What We Have Heard from Internal Stakeholders

Since launching the dedicated HIP email address on June 4, 2008 internal stakeholders - staff, medical staff and volunteers have provided 170 individual suggestions (as of July 14) through the HIP email channel.

Feedback through the HIP email has been themed into four main categories:

- Comments/suggestions regarding patient care – 65
- Comments/suggestions related to efficiency and cost savings - 81
- Comments related to infection prevention- 4
- Comments/suggestions related to equipment and capital- 11
- Miscellaneous comments/suggestions– 9

Overwhelmingly the feedback received through the internal HIP email channel has been insightful and constructive. Seventeen of the submissions identified changing the role of the small sites of Douglas Memorial, Port Colborne and Niagara-on-the-Lake to support non-acute hospital care.

With respect to cost savings, 12 suggestions spoke to reducing printed copying and increased use of technology. Themed reports of the feedback received through the HIP email have been shared with the senior executive team for review and follow-up actions.

What We Have Heard from Our Community Stakeholders

As of July 14, 2008 at 0000 hrs 175 individuals completed and submitted feedback to the Your Input questionnaire.

- 98.3% identified they were submitting their own response
- 1.7% identified they were submitting on behalf of an organization

Demographics of Respondents

With respect to age respondents identified they were:

- Under the age of 25 (6 of 175 total = 3.4%)

- 25-34 (9 of 175 total = 5.1%)
- 35-44 (22 of 175 total = 12.3%)
- 45-54 (49 of 175 total = 28.0%)
- 55-64 (50 of 175 total = 28.6%)
- 65-74 (25 of 175 total = 14.3%)
- 75 or over (10 of 175 total = 5.70%)
- Prefer not to say (2 of 175 total = 1.14%)
- Not applicable (2 of 175 total = 1.14%)

With respect to gender:

- 32.6% of respondents identified themselves as male
- 64.6% of respondents identified themselves as female
- 1.70% of respondents preferred not to say

94.3% of the respondents said that they had a family doctor.

For the past year respondents identified that they or a member of their family received medical treatment at an Emergency Department:

- One time (63 of 175 total = 36.0%)
- Two times (32 of 175 total = 18.3%)
- Three times (17 of 175 total = 9.7%)
- Four times (6 of 175 total = 3.4%)
- More than Five times (9 of 175 total = 5.1%)
- Not applicable (48 of 175 total = 27.4%)

Respondents identified the following when asked about their use or knowledge of prompt care services:

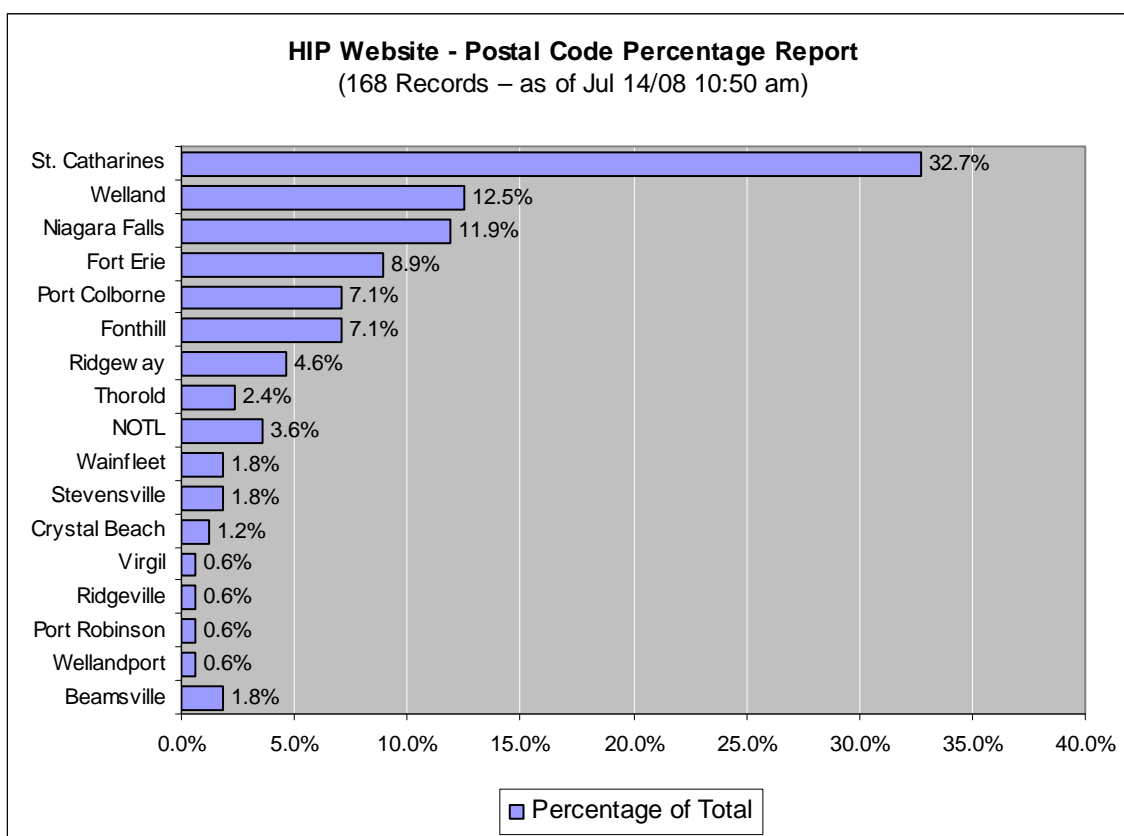
- Yes (70 of 175 total = 48.0%)
- No (57 of 175 total = 32.6%)
- Don't know what this is (41 of 175 total = 23.4%)
- Not applicable (7 of 175 total = 4.0%)

Respondents identified the following when asked about their use or knowledge of Telehealth:

- Yes (88 of 175 total = 50.3%)
- No (78 of 175 total = 44.6%)
- Don't know what Telehealth is (6 of 175 total = 3.4%)

- Not applicable (3 of 175 total = 1.7%)

Exhibit 37: Respondents Identified Residence By Postal Code



QUESTION ONE on Hospital Care

Respondents were asked:

Question One on Hospital Care

The way patient care is provided in hospitals has changed tremendously over the past decade. A number of factors have driven this change, among them:

- Advances in diagnostic technologies (MRI and CT) resulting in quicker diagnoses and less time for patients staying in hospital;
- More effective drug treatments and therapies resulting in less time for patients having to stay in hospital;
- Advancements in surgical procedures resulting in more surgeries being provided on an out-patient basis (such as appendix and gall bladder removals) and fewer surgical patients having to stay overnight in hospital;
- More health-care services being available in community settings outside of hospitals, such as home care services and day-clinics; and
- The increasing use by health care professionals of standardized approaches (evidenced-based treatment) for patient treatment.

While these advances have dramatically improved patient care, recovery and quality of life, they have also transformed the manner in which hospitals function. Through the last ten years, the number of in-patient hospitalizations has dropped and correspondingly, there has been a dramatic decrease in the number of days patients spend in hospital. At the same time there has been a dramatic increase in the number of procedures being performed on a day surgery basis.

Over the next ten to 20 years, we expect further major medical breakthroughs which will further evolve the way hospitals function. The acute care community hospital of the future will be very different from the acute care community hospital of today and yesterday with more technology-based services and equipment required by doctors and nurses to care for patients. Correspondingly we will see less intensive medical services being provided outside of hospitals in community settings.

Yet local hospitals are important cornerstones of their local communities. Many people are proud of and have a genuine loyalty to their local hospital.

And rightly so, as many local residents have supported their local hospitals as volunteers and by raising money to build new wings and to purchase patient care equipment.

The advancements in medical care that have reshaped and will continue to reshape our local hospitals have brought change that is sometimes at odds with loyalties people have to their local hospitals.

Based on the changing role of hospitals in delivering care, what is important to you in the delivery of hospital-based services in Niagara.

Summary of Responses to QUESTION ONE on Hospital Care

1.1 Reduction in Wait Times

Wait times in NHS hospitals was identified as a major issue for the majority of respondents, who noted that it was not uncommon to wait up to five to seven hours in the Emergency Room before being seen by a Doctor.

Several respondents complained of the lack of attention received upon his/her arrival to the Emergency Room.

Many noted that this lack of attentiveness on part of the triage and nursing staff jeopardized the state of their condition and caused them to lose faith in the hospital.

Prompt, professional and thorough triage assessment with appropriate priority assignment in emergency. Adequate physician coverage to see the number of ER patients and a place for ill, vomiting patients to lay down (not in waiting room as was our recent experience)! survey respondent.

Suggestions to fix this problem included:

- Develop a recruitment campaign, with incentives, for additional nursing and doctor staff;
- Initiate a local public awareness campaign focused on alternatives to the Emergency Room, such as clinics, etc., and
- Charge a fee to use the Emergency Room to deter people from visiting with minor medical issues that could be dealt with at a clinic.

1.2 Infection Prevention/Clean and Equipped Facilities

Several respondents raised concern about hospital cleanliness with regards to infection prevention and the risk of contracting illnesses and disease within the hospital.

“That one doesn't come in contact with e.g. VRE, C-dif, ext... one should not have to go to the hospital worrying about coming home with one of the above.... sanitary and cleanliness are important factors in proper care” survey respondent

“Safe Care. Safe in terms of free from infections and safe in terms of knowledgeable staff. Care, meaning that the staff cares about each and every patient and will go the extra mile. Care, meaning the NHS cares about it's employees, listens to their concerns and follows through with looking at solutions” survey respondent

It was suggested that the hospital invest additional funds in its maintenance to ensure the peace-of-mind of hospital visitors and patients and protect against preventable illnesses and disease.

The cleanliness of hospital facilities was a concern that was raised by several respondents. Many indicated that NHS sites were mundane, and used words like “depressing” and “drab” to describe their décor.

“The hospital environment doesn't have to be drab and ugly. I am embarrassed at the interior of both the General and Hotel Dieu Hospitals and cannot imagine how disappointing it is to work in an environment with such little appeal. I feel there should be a user-fee for use of emergency services to reduce the number of non-emergency cases,” survey respondent.

The attitude and helpfulness of hospital personnel was also flagged as a pitfall of the NHS hospital locations. Several respondents commented on hospital staff being overworked, and as a result, not helpful or attentive to their needs. This, felt the respondents, negatively influenced their experience and their overall perception of NHS as a caring, patient-driven system.

"Hospital personnel should be courteous and show a little more compassion for the patients. The patient is already in distress and shouldn't have to deal with rude people," survey respondent.

"What is important is proper patient care. We have lost compassion amongst our physicians and nurses. We act upon numbers only and there is no concern for the patients themselves." survey respondent.

1.3 Mental Health Care

Several survey respondents addressed the need for a stronger Mental Health System within the NHS, for both mental health patients and their families.

It was recommended that hospital staff participate in mental health education seminars to increase compassion and understanding of the illness and common stigmas concerning the illness.

The development of an individual facility focused on care for mental health patients was suggested by several respondents. Due to the nature of the illness, respondents felt that it would best be dealt with in isolation of other treatment facilities.

1.4 Improved Transportation

Transportation was identified as a concern by several respondents. Particularly, Niagara's aging population, many of whom are on fixed incomes, have difficulties, both physically and financially, in accessing the hospital, noted survey respondents.

1.5 Increased Doctor/Nurse Recruitment Tools and Initiatives

Shortages in doctor and nursing staff at NHS sites were a predominant concern of survey respondents.

This shortage, indicated survey respondents, is having a negative affect on the entire functionality of the hospitals and its quality of patient service.

"The problem is not a Niagara Health System problem. Also, until there is an acceptable number of family physicians in the region there will continue to be crowding of the emergency departments. It is crucial that the government direct more funding to the recruitment and retention of physicians in Niagara," survey respondent.

Question Two on Centres of Excellence

Respondents were asked:

Increasingly people are hearing the term "centres of excellence" when it comes to how hospital care can be provided in the future. But what is a "centre of excellence" and why is it important when it comes to the kind of hospital care people in Niagara receive?

While there isn't an exact definition of what a "centre of excellence" is or can be, typically key characteristics include a hospital or medical clinic setting where a pre-booked or pre-scheduled medical procedure or treatment for a specific medical specialty is provided.

Centres of excellence are seen as new ways to improve the quality of care provided to patients for a number of reasons. This is because centres of excellence enable:

- the right number and type of health-care professionals, (including physician specialists, specialized nurses and allied health professionals) required to perform a specialized medical service can be clustered together to work as a specialized team;
- increased patient volume (the numbers of treatments or procedures being done) by centralizing the specialty service in one location so health professionals working at the centre can do enough of a certain procedure to maintain and improve their skill and expertise;
- recruitment and retention of specialized health professionals who are looking for work environments where they have access to the medical team, latest technologies and tools they need to provide high quality patient care and enjoy a quality of work life;
- health-care organizations to manage the ongoing global shortage of doctors, nurses and other health-care professionals while at the same time continue to provide a service to the residents of their communities; and
- Investment in modern equipment and state-of-the-art technology and eliminate the need to duplicate expensive equipment in other hospital facilities that are not deemed as a centre of excellence in the field.

Centres of excellence are being developed across Canada, the United States and United Kingdom to provide patient care for procedures and treatments that are planned or pre-scheduled. One example of a future centre of excellence coming to Niagara is the Walker Family Cancer Centre which will be built at the new health-care complex in west St. Catharines.

Centres of excellence are proven ways to improve the quality of the care provided to patients. NHS is considering creating centres of excellence to provide specialized treatment for certain types of elective and scheduled patient care procedures.

This could mean that into the future local residents will have to travel outside their home communities to receive this kind of scheduled care in another Niagara community.

Looking at this from the viewpoint of patients, what do you think should be considered as we examine opportunities to develop centres of excellence for specialty care?

Summary of Responses to Centres of Excellence

2.1 Support for Centres of Excellence

The majority of respondents to this question supported the concept of Centres of Excellence, indicating that they thought these centres would fulfill a currently void gap in healthcare-related procedures and care.

"We need more Medical Clinics for Primary Care for things like broken bones, headaches, slivers etc. to take the burden away from hospitals and they are far cheaper to run. Presently hospitals are over run by patients," survey respondent.

Particular services, such as joint care, were noted as treatments and procedures that could be addressed in a Centre of Excellence.

Several survey respondents supported the concept of Centres of Excellence, but indicated that the Niagara Region needs "Champions" for the initiative to receive proper government attention and funding.

"My belief is that we need "Champions" for these Centres of Excellence. If we can attract leading specialists, then this will attract people with a keen interest in these specialized areas. I think the larger centres attract these individuals because of their association with a teaching institution i.e. Medical Schools. I think specialists want to work in an environment where they are supported professionally and academically. The area of Geriatric care is extremely lacking. As our population ages, it will affect all areas of care. In Niagara we don't have such a champion that would be able to build capacity and advocate for senior-related issues," survey respondent.

2.2 Centres of Excellence and Access

The locations of the proposed Centres of Excellence received much attention from survey respondents. Many expressed concern that the centres be centrally located so that seniors and those without a means of transportation can access the facilities.

"In my opinion, the most important factor is that the regional hospital be located at a central location in the Niagara Region in order to provide equitable access to care for all the citizens in Niagara on a consistent basis and in a sustainable way, particularly in areas of cardiac care, cancer care and mental health care, where chronic and long-term care requires frequent driving by the patient and family," survey respondent.

"It is hardly a centre of excellence if people cannot get there. There should be centre in every community where access is equal. Also

there should be a ward for stitches, a ward for sprains and breaks... at each hospital and quit wasting people's time. Time is money for everyone and waiting 8-10 hours because there is not enough staff is ludicrous,” survey respondent.

“I think you have to consider the fact that the Niagara population is aging and many of the residents are on a fixed income and do not drive. It may be difficult for them to travel to other areas of the Niagara Region for treatment,” survey respondent.

“Travelling a short distance to other communities in Niagara is reasonable, if the standard of care is high. The establishment of the proposed cancer centre and cardiac catheterization lab, will go a long way to assist the families of Niagara,” survey respondent.

Concern regarding transportation and access was the predominant theme in the responses to this question.

2.3 Non-Support of the Centres of Excellence

Some respondents were not in support of the Centres of Excellence concept. They felt that services should be delivered from hospital sites and that Niagara’s medical community does not currently have the capacity or ability to effectively operate and maintain Centres of Excellence.

“Niagara is too large to focus future centres within one locale. Two to three hospitals should have many to all possible services available. It is and will be a daunting task to implement these services, yet necessary as our population continues to age,” survey respondent.

“The concept of centres of excellence is not that appropriate to Niagara. By definition, high volumes of service mean that any such centres would have to be concentrated in key centres such as Hamilton or Toronto. It would be much better for the NHS to focus on providing excellence in community-based, preventive medicine and primary care,” survey respondent.

Question Three on Primary Care

Respondents were asked:

Prevention of disease is definitely better than a cure.

But one of our biggest societal challenges is keeping people healthy and well. The reality here in Niagara is that many people do not have a family doctor and lack regular and consistent access to primary health care – which is the kind of care people receive in settings such as doctors’ offices, or community clinics or health centres.

When people do not receive basic care like tests or check-ups for an early diagnosis and treatment of chronic conditions such as asthma, heart disease or diabetes, their conditions worsen and they often end up getting hospitalized.

Sometimes people will go to the Emergency Department (ED) because it is more convenient than having to make an office appointment. As well many people without family doctors commonly use hospital EDs as their main means for medical treatment.

When people who have non-urgent medical conditions – conditions that are routinely treated in a clinic or doctors office -- go to the ED, they often experience long waits before they are seen by the doctor and receive treatment. These types of patients are deemed as non-urgent patients in the ED and are not seen by the doctor until the more seriously or critically ill patients in the ED are treated.

People who have no other option but to go to an ED for routine care do not receive consistent care. For people with chronic illnesses or a persistent medical issue, this is not ideal when it comes to recovery or improving health.

What's important to you and your family when you need to access primary care (i.e. care available through your doctor's office or healthcare centre)?

What's important to you and your family when you need to access services at a hospital Emergency Department?

What are your thoughts on the types of investments that are required in primary care services in Niagara to keep people healthy well longer?

Summary of Responses to Primary Care Question:

3.1 Appropriate use of Emergency Departments

Several survey respondents indicated that they would like to see more family health clinics, with longer operating hours, in the Niagara region. Respondents expressed concerns over ensuring the appropriate use of emergency departments to reduce wait times with the EDs.

They indicated that if there were more clinics, those individuals who lack a family doctor would have another alternative to the ED when presented with medical issues.

“We desperately need more appropriate, accessible clinics for non-urgent matters that we can redirect people to,” survey respondent.

Those survey participants who do have a family doctor expressed relief over the fact as well as concern for those without.

"I do have an excellent family doctor and I feel for those without one. My waiting time for an appointment is minimal which is very important to me. If you offer a state-of-the-art hospital, I feel more doctors would be willing to settle here." survey respondent

3.2 Increase Recruitment Tools/Initiatives and Incentives to Attract Doctors and Nurses and Create more Family Doctors

Several respondents spoke to the matter of recruiting doctors and nursing staff through various campaigns and incentive programs would help to reduce ED waiting times and improve the quality of life of Niagara Region residents.

"There needs to be increased incentives for Family doctors by means of wages, tax exemptions, etc." survey respondent.

Other survey respondents indicated that foreign-trained doctors, with up-to-date credentials, should be hired to fill the current shortages.

"Bringing doctors in from other countries which have comparable education standards and allowing them to practice could assist with the shortage," survey respondent.

"There needs to be ways to encourage young people to want to become doctors, whether it is early in their high school studies or our governments instituting incentives for their interests in the above. Perhaps the high cost of their university studies and the length of these are a deterrent to many young people," survey respondent.

3.3 Engage in Public Health Awareness Campaigns

Awareness and education campaigns focusing on healthy habits and preventative measures to illnesses and disease were recommended by several survey participants.

Particularly, public awareness campaigns focusing on healthy eating and active living were suggested as a measure to educate the public about their day-to-day health in an attempt to eradicate the current volumes of patients in the ED.

"Public education on obesity/smoking/exercise--we need to keep going with these messages, it is getting through to people. I work in social services and people are slowly hearing these messages," survey respondent.

3.4 Increase Accountability of Family Doctors

Several survey respondents complained about the fact that, when they visit their family doctor, they do not feel that they are receiving the attention they deserve and are being treated as a number, as opposed to a patient.

Re-occurring issues that were raised in the survey regarding Family Doctor treatment included feeling of being rushed by their Family Doctor and not receiving adequate attention or time to explain symptoms and illness.

Question Four on Aging Population

Respondents were asked:

Niagara's population is older and rapidly aging. Niagara is home to one of the oldest populations in the country. As people age their need for health-care services dramatically increases. In Niagara a high percentage of elderly people end up in hospital because they become ill.

Although their hospital care and treatment phase may be over and they have recovered, many of our seniors are not capable of returning to their homes to live independently.

These seniors most often remain in hospital residing in a hospital bed for months at a time while they wait to be moved to a more appropriate setting in community, rehabilitation, long term care homes or other settings. At peak times seniors awaiting placement elsewhere in the community occupy nearly 40 per cent of all acute care hospital beds in Niagara.

Many believe that more resources should be spent on enabling seniors to stay healthy and live in their homes longer with more supportive services in home care. This provides seniors with the kind of care they need and at the same time could free-up acute care beds in hospitals increasing the availability of hospital beds for the very ill who require immediate hospitalization but are held in the Emergency Departments until an acute care bed becomes available. It could also reduce the reliance on in-patient hospital beds which are more costly to operate than care provided through other supportive services such as home care, or supportive housing.

Others believe that although not perfect, it is acceptable for seniors to stay in the hospital for months at a time while waiting for supportive housing or placement in a long-term care facility and that it is acceptable to hold patients requiring hospitalization in the ED.

What do you think? What role do you think hospitals should have in providing care for seniors? Do you think seniors would prefer to stay in a home-like setting with appropriate support or care as opposed to staying in hospital?

Summary of Responses to Question on Aging Population:

4.1 Support for Aging at Home Strategies

Providing comprehensive at home supports and accessible in-home care for seniors was recommended by the majority of survey participants as a means to maintain seniors' independence while continuing to meet their health-care

needs. Few respondents disagreed with the notion of supporting seniors to age healthy at home.

“There needs to be adequate funding for staged housing to keep people independent, involved, and invested in the community as long as possible,” survey respondent.

“Most seniors would prefer the visiting nurse concept. Seniors much prefer their own home. We must hire more nurses and there are many qualified nurses not getting a license. They can do house calls, a concept long forgotten,” survey respondent.

“I believe seniors would like to stay independent in their own homes for as long as possible, in most cases. This however, should NOT become an excuse to not provide necessary health care. Again, there needs to be public transportation at an affordable price for families to visit once seniors are moved from their homes to a long term care facility,” survey respondent.

4.1 Increase Resources for Long-Term Care

Survey participants indicated that there is a drastic need for additional Long-Term Care facilities in the Niagara Region to accommodate its aging population.

Hospitals, noted numerous survey respondents, should not act as an alternative to Long-Term Senior Care Centres, as it contributes to the backlog in hospital wait times and bed space available.

This also does not provide seniors with the care and environment they would otherwise experience in a more appropriate setting.

“I think that more resources are needed regarding Long-Term homes for the elderly. Perhaps the government needs to consider the amount of aging population and ensure that there are facilities built to support the aging population so the waiting times for these facilities are decreased.”

“I do not feel that the elderly should be staying in the hospital for months. Not only is this uncomfortable for the senior who is required to stay, I would think that this is not the healthy way of living considering hospitals would have higher air borne germs,” survey respondent.

4.2 Public Awareness Campaigns for Seniors

Increasing public awareness about the options available to seniors for long-term care was identified as a measure to consider.

By educating seniors and their care-givers as to their available options of long-term care, seniors can prepare in advance of an emergency or critical situation as to what option they prefer. In doing so, seniors can organize their long-term care in advance to an emergency.

"We need more info for the public on the processes required to plan for seniors' care. They need to know what services are available or not available, how long it takes to access services, monies involved, who is Power of Attorney or substitute decision maker, etc. The public needs to know this before a crisis is reached in a senior's life and a hospital seems the only option," survey respondent.

Question Five on Change

Respondents were asked:

The status quo in hospital care is no longer an option for the NHS if we are going to live up to our commitment to provide quality healthcare in an affordable manner into the future.

We believe these are the main reasons why change is needed across the Niagara Health System:

- to improve Niagarans health
- to meet Niagarans expectations
- to recognize differences in health status needs and resources across the region
- to recognize that hospitals are not always the best places to receive health-care
- to provide specialized care
- to effectively utilize our health-care providers and professionals buildings and equipment
- to make the best use of taxpayers' money

In the submission we make to the Local Health Integration Network (LHIN) on July 15, we will outline recommendations for change based on the following:

- it ensures the provision of quality of care that is effective, efficient, equitable, safe, humane, and timely;
- is compliant with NHS, Ministry of Health and Long-term Care, and LHIN policy
- makes the most of our health professional resource pool
- recognizes changing community needs based on age and demographics of each community served by the NHS

- supports our ability to advance health-care [e.g., introduction of new technology]
- makes appropriate use of our physical buildings and facilities
- Do you agree or disagree with our reasons for change? Please provide comments.

Summary of Responses on Change

5.1 Support for Reasons for Change

The majority of respondents support the reasoning identified for change. More than 30 per cent of respondents explicitly stated their agreement while less than 4 per cent stated they disagreed with the reasons for change.

“I do agree with the reasons. We need to reduce wait time for care. I feel the best use of our taxes is to increase investment in human resources - more doctors, nurses and other staff to provide more timely care. If specialized centres are to be effective, there needs to be accountability and assurances that this will provide the care we need and not result in patients waiting longer and ending up going elsewhere for care that should have been received in the region,”
survey respondent

5.2 Need for More Doctors and Support Staff

Several respondents re-iterated the need for additional doctor and nursing staff if conditions and service at NHS facilities are to change.

Various recruiting measures were again suggested as means in which NHS could attract these necessary staff.

5.2 Need for Specific Changes, Not Just Rhetoric

An *Action Plan* that outlines specific measures NHS plans to take to improve its facilities was requested by numerous survey participants.

The sentiment that there was much talk about change, but little action, was repeated throughout the survey and particularly in this last section.

Respondents noted that they wanted to have a say in the specific proponents of recommended improvements, as opposed to being continuously inundated with rhetoric.

“I agree, mostly, with your reasons for change, but I don't think you are actually doing anything about it. Niagara's population has been changing for years with many more seniors coming here to make their homes in our agreeable climate. It is not only the health-care that has closed their eyes to this obvious situation, but our city and

regional councillors have been so involved with tourism that their eyes have looked inward for years,” survey respondent.

“I agree with your reasons for change.... but honestly, without the money to back it up, there can be no significant changes... change needs to start at the top... cutting out unnecessarily highly paid fluff management. Put that money directly into frontline staff, and you will notice huge differences very quickly,” survey respondent.

Question Six – Any other comments

Respondents were asked if they had any other thoughts or suggestions they wished to share:

Response to this question was broad from sharing of individual experiences that have taken place in hospital to re-assertion of responses made in the prior questions. Here is a sampling of the comments shared:

“I feel frustrated that this survey will only be read by those who have their own interest at heart. As in the past, the suggestions of the general public will not make a difference,” survey respondent

“Each major department or institution should strive for ISO 9000 certification. Quality serves people and saves money!” survey respondent

“As a strategy for the future the elementary and high school curricula should be reviewed and modified as required to include courses on self-responsibility for personal health with knowledge of the current health system, how it is accessed, how it is paid for and what can be done to get and stay healthy for life. Involve the students in the healthcare system! It usually takes a generation for these kind of attitudinal changes to take place.” survey respondent

“Make the best use of resources that are available at each site. Recruit and keep health care professionals in the sites.” survey respondent

“Education on keeping healthy is the best way to prevent a lot of problems!” survey respondent

“I am glad to have not had to go to the hospital much in my lifetime, but I am glad it is public and available. I am lucky to be healthy, and the system should take that approach first. Prevention first, treatment second. Keep up the good work.” survey respondent

Phase Two Consultation July 16 to July 31, 2008

Plans for Further Consultation after HIP Submission

Upon submission of the HIP to the HNHB LHIN on July 15, NHS will commence a comprehensive roll-out of information meetings, documents and website to share and inform its stakeholders of the recommendations contained within the submission.

NHS will demonstrate transparency and accountability in this rollout and will to every extent possible, endeavour to disclose and share information about the HIP process, recommendations, decisions and related issues in a timely and responsible manner taking into account the individual needs of various stakeholders.

Significant outreach efforts will be made through July 16, 17 and 18th to inform, engage with and respond to both internal and external stakeholders. These efforts will continue through the course of the following two weeks as priority for the NHS leadership team. A series of follow-up meetings will be held for key stakeholder groups following release of the plan to provide opportunity the stakeholders to review the document.

NHS will publicly share its HIP submission through posting on website and making printed copies available for reading through its sites.

A second set of consultation questions will be posted from July 17 to July 31st on the micro-site for public input. These questions will ask for comment on the recommendations that have been contained in the HIP submission. The input to these questions will be provided to the NHS Board of Trustees, as well as to the HNHB LHIN and its Advisor.

7.0 The Case for Change and the Proposed Vision for Hospital Services in the NHS

7.1 The Case for Change

The Niagara Health System was created on March 8, 2000, the result of the amalgamation of eight hospital sites in Niagara, amidst much controversy to maintain the status quo. Since that time, the Niagara Health System has strived to maintain a balanced budget through efficiency improvements which have primarily been focused in administrative, support and clinical support areas. The provision of clinical services at individual sites has remained relatively constant since amalgamation.

*HIP about Quality
Improvement as Well as
Cost Savings*

Although the request for a Hospital Improvement Plan (HIP) by the HNHB LHIN was made as a consequence of the inability of the NHS to balance its budget for the year ended March 31, 2008, the HIP being submitted by the NHS is more about quality improvement than financial reductions.

Status Quo Not Sustainable

Maintaining the status quo in the provision of acute hospital services in Niagara is no longer sustainable for more than just financial reasons. There are significant opportunities to enhance the quality of service provided to Niagarans by providing services differently across our sites. The request for the HIP has afforded an opportunity to reconsider how services are offered across NHS sites to improve quality.

7.1.1 Describing the Current State of Quality of Acute Care Services in Niagara

*NHS Board Framework for
Quality Measurement*

The Board of Trustees of the Niagara Hospital has adopted a framework for measuring quality of services provided within the NHS, based on definitions used by the Institute of Medicine (IOM) and Accreditation Canada. The NHS is defining quality based on nine domains:

1. Effective – Providing health services to patients that are proven through scientific knowledge as effective
2. Efficient – Making the best use of resources and avoiding waste, including waste of equipment, supplies, ideas, and energy
3. Equitable - Providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socio-economic status
4. Safe - Keeping people safe
5. Patient Centred – Putting clients and families first
6. Timely - Reducing waits for both those who receive and those who give care

7. Work life focus – Supporting wellness in the work environment
8. Population focus – Working with communities to anticipate and meet needs
9. Continuity of Service Focus – Experiencing coordinated and seamless services

This definition of quality has been included in the evaluation criteria (Section 8) as a means of evaluating the current state of quality provided by each program offered within the NHS compared to the proposed model of care.

As a starting point, the below describes the overarching case for change in quality improvement for the Niagara Health System using the same nine domains that define quality.

Effective

Institute of Medicine Definition of Effectiveness

Effectiveness is defined (Crossing the Quality Chasm, a New Health System for the 21st Century, Committee on Quality of Health Care in America, Institute of Medicine, 2001) as care that is based on the use of systematically acquired evidence to determine whether an intervention such as a preventive service, diagnostic test, or therapy, produces better outcomes than alternatives, including the alternative of doing nothing. Evidence based practice requires that those who give care consistently avoid both underuse of effective care and overuse of ineffective care that is more likely to harm than help the patient.

Evidence based practice has been defined by Sackett et al as the integration of best research evidence with clinical expertise and patient values. The IOM goes on to state “the health system today is too tolerant of mismatches between knowledge and action; that is, it is too accepting of both omission and waste. As a result, care is too often unreliable, advice and answers inconsistent, and clinical practice varies without well founded rationale. The new rule calls for standardization around best practices as appropriate for a given patient or the sub-population to which a patient belongs.”

The IOM then takes this discussion to the next level when it asserts the need to “facilitate the organization of care around the patient’s perspective and needs rather than, as in the current system, around types of professionals and organizations”. The IOM describes various approaches in this regard but the focus is on two, Disease Management Programs and Centres of Excellence. Both the Accreditation Canada definition of effective (doing the right thing to achieve the best possible result) and the IOM definition are central components of the definition for Quality that has been adopted by the NHS.

Challenge for NHS to Optimize Service Delivery

Given the above definitions and criteria, the challenge for the NHS is to optimize the alignment of service delivery models in its unique multi-site platform with the objective being to create environments most conducive to

the application of evidence based decision making in a consistent manner. In this regard, themes of patient clustering, physical plant optimization, along with functional supports such as clinical guidelines, protocols, directives, and algorithms become central to this discussion.

***Examples of Opportunities
to Improve Service
Effectiveness in Obstetrical
Care, Cataract Surgery, and
Urology***

A myriad of examples demonstrate this concept. There is abundant literature and evidence to address the theme of use of C-section in Obstetric practice with particular focus on the physical relationships of the labour and delivery framework. The current three Obstetrical units have three different physical configurations with inevitable and unavoidable differences in management. From another perspective, the performance of cataract surgery across four sites inevitably leads to variable approaches to anaesthetic/analgesic practices. Yet another example of the case for change is the almost continuous evolution of technologies (requiring ever increasing and different Health Professional skill sets) in the management of Urological disease. The need to move to laparoscopic technologies as the evidence based norm has created enormous challenges in terms of consistency of approach across our current three sites undertaking Urological care for similar conditions.

***Monitoring and
Improvement of NHS
Hospital Standardized
Mortality Ratio***

The NHS has adopted the Hospital Standardized Mortality Ratio (HSMR) as a “Whole System Metric” (WSM) to monitor effectiveness of care. This specific WSM is part of a small set of high level system-wide measures which complement the traditional large set of highly specific measures that reflect the performance of discreet aspects (micro level performance) of a health system. The NHS has been aggressively dealing with its HSMR results focusing on elements over which the Hospital System has control (recognizing there are many over which it has only an indirect influence, e.g., community based primary care). Most of these key themes have been articulated previously and centre on standardization of care driven by best evidence. These initiatives include introduction of the Hospitalist model (geographic full time hospital based physicians) across four of our sites, introduction of a series of new standardized protocols for patient care and treatment in ICU, Medical, and surgical floors, introduction of increased numbers of standardized medical directives, and specific disease management protocols (e.g. AMI and diabetes). However, all of this is occurring on a service delivery platform which, is in need of substantial optimization in order to facilitate and leverage all of the best evidence based standardization initiatives to their maximum potential. This again speaks to the theme of clustering patient sub-populations in order to leverage innovations to optimize care. This very specifically addresses a well recognized enabler of optimizing care and thus the HSMR, i.e. concentrating appropriately trained health professionals working in team environments to deal with specific patient sub-populations (e.g. obstetrics, paediatrics, joint replacement, dialysis, critical care, complex continuing care, stroke).

***“Standardizing for
Excellence”***

The NHS’s commitment to “Standardizing to Excellence” is exemplified by current initiatives to address HSMR issues (our chosen WSM for effective

care). However, those initiatives can only achieve their full potential, and our ability to actualize the Vision of “Standardizing to Excellence” accomplished, when there is a fundamental comprehensive, and multidimensional realignment of the entire six site NHS service delivery platform.

Efficient

Efficiency is defined as making the best use of resources – operating, capital and human.

Operating Resource Efficiency

In terms of operating efficiency measures, a commonly used measure by the hospital system is comparing the actual cost of providing a standard patient case to an expected cost of providing that patient case. Since amalgamation, the NHS has been considered efficient with its actual cost per case running very close to expected cost.

HCM Review Described NHS as Efficient Corporation and High Performer Compared to Peers

In a recent third party efficiency review conducted by HCM [The Health Care Management Group], it was confirmed that the NHS was an efficient corporation and a high performer compared to its peers. Contrary to feedback heard consistently in the Niagara community that the NHS spends too much in administration and support costs, the NHS is a top performer compared to peers, being the top quartile of hospital performers in terms of lower costs in administration and support areas.

NHS Ended 2007/08 With \$17.9 Million Deficit

Despite its positive performance on recognized efficiency measures, the NHS ended the year March 31, 2008 with a deficit of \$17.9 million on a budget of \$360 million. This is not sustainable. Further, the NHS utilizes an operating line of credit to cover these deficits and therefore, interest costs are increasing. The NHS currently spends \$1.5 million on interest costs that should be spent on patient services.

NHS LOS Performance is Better than Ontario 50th Percentile Benchmarks

Another measure of efficiency is the length of stay for patients compared to best practice provincial benchmarks. The NHS has significantly improved utilization and length of stay over the last four years and is currently performing better than the 50th percentile.

Although the NHS average length of stay for all clinical services was below the 50th percentile in 2006/07, there were still opportunities to improve the length of stays for our patient while in hospital and these opportunities have been considered in the development of the Hospital Improvement Plan in the sizing of future bed requirements for Niagara.

Capital Resource Efficiency

In terms of making the best use of capital resources (equipment and infrastructure), the NHS has not been able to keep pace with the replacement of equipment and upgrading of infrastructure due to the inability to operate with a balanced budget. The Ministry of Health and Long Term Care (MOHLTC) requires that hospitals pay for 100% of new and replacement

equipment (with few exceptions) and 10% of major capital infrastructure projects.

***Needs for Replacement
Equipment Greatly Exceed
Resources Available
Through Fundraising***

Due to its inability to balance, the NHS has been relying on exclusively on local foundations and auxiliaries through fundraising to replace equipment and infrastructure. On an annual basis, the equipment that needs replacement far exceeds the ability of local foundations and auxiliaries to fundraise. The annual listing of equipment needs approximates \$15 million compared with existing annual fundraising capacity of approximately \$5 million. Therefore, the NHS is consistently delaying the purchase of replacement equipment and using equipment well beyond its useful life. The delayed purchase of equipment increases the burden on the operating budget through increased repairs and maintenance expense, with the NHS being higher than its peers in this cost category.

***Unavailability of Current
Technologies Impact Ability
to Recruit and Retain
Healthcare Professionals***

If the NHS is not able to offer access to the latest technology, not only does it potentially impact the quality of diagnosis and treatment of our patients but also negatively impacts our ability to recruit and retain healthcare professionals who expect access to appropriate medical equipment with which to deliver care. If the NHS were able to balance its operating budget, cash would be generated from operations (through covering of non-cash expenses such as depreciation) to assist with equipment and infrastructure replacement, offering enhanced quality of care and improvement patient and healthcare provider satisfaction.

***Health Human Resources
Efficiency***

In the area of health human resources, the NHS has been struggling particularly over the last few years with the availability of health human resources. The NHS is not alone in this regard. If sufficient healthcare professionals are not available, safe care cannot be provided and as a result, services must be curtailed to match the availability of staff. Over the last few years, the NHS has experienced the need to curtail services, close beds temporarily or transfer patients to other sites who have sufficient staffing to provide safe care.

***More Than \$5 Million Per
Year Spent on Overtime
Premiums***

Further, with the level of vacancies being experienced by the NHS, overtime costs have been increasing at an alarming rate. The NHS currently spends in excess of \$5 million on overtime premium costs. Not only does this compound the financial pressures but more importantly, causes a strain on our existing healthcare professional workforce. Excessive overtime causes increase sick time, burnout, and lack of home/work life balance. Often staff are not able to take their booked vacation or statutory holidays because of being called in to work overtime. It can also be unsafe if healthcare professionals are working excessive hours. This is evidenced through an employee satisfaction survey conducted by NHS where workload was cited as a major source of dissatisfaction by NHS staff. This is also another major contributing factor to the censure by the Ontario Nurses Association. With impending health human resource shortages and looming retirements, the

NHS needs to reorganize services differently and focus primarily on acute care services to optimize the use of health human resources.

Equitable

Institute of Medicine Definition of Equity

The Institute of Medicine's definition of equity can be paraphrased to reflect the Niagara reality:

“A statement of purpose for the Health System: to continually reduce the burden of illness, injury, and, disability, and to improve the health and functioning of the people of Niagara. The aim of equity is to secure these benefits for all the people of Niagara. This aim has two dimensions; equity at the level of the population and equity at the level of the individual. At the population level, the goal of a health care system is to improve health status and to do so in a manner that reduces health disparities among particular sub-groups. With regard to equity in care giving, all individuals rightly expect to be treated fairly by social institutions, including health care organizations”.

One of the key themes in any discussion of equity is the need to balance the aim of equity as applied to the population with achievement of other aims at the level of the individual.

It should be noted that the domain of “equity” as described above, and the domain of “timely”, when combined (as they have been by Accreditation Canada in their description of Quality) represent the definition for “access”, with the nuance of access both at the level of the population as well as individual.

Within the framework of this domain, there is again the opportunity to leverage the system and the service delivery platform through appropriate realignments to optimize equity and timeliness, i.e. access.

Safe

Definition of Patient Safety

A key component of providing quality patient care is providing safe patient care. Patient safety is “working to avoid, manage and treat unsafe acts within the healthcare system” (Canadian Patient Safety Dictionary). Unsafe acts can also be characterized as “adverse events” which are defined as unintended injury or complication which results in disability, death or prolonged hospital stay and is caused by healthcare management (Wilson et al.)

Healthcare is considered to be one of the most dangerous industries in the world. It is estimated that approximately 1 in 10 patients suffer an adverse event during their hospitalization. In Canada, the research demonstrates adverse events are occurring at a rate of 8% in community hospitals (CMAJ, Baker and Norton).

Why is this? Healthcare has distinct features compared to other industries:

Factors Impacting Patient Safety in Healthcare

- Many diverse activities happen in hospitals which require different skills, different training and different equipment
- Health care is primarily hands on with little automation in the direct delivery of care, compared to the airline industry which primarily relies on the use of 'automated pilot' to fly planes. Therefore, with more human intervention, there is more opportunity for error
- Uncertainty and incomplete knowledge in diagnosing and treating all symptoms
- Use of potentially dangerous procedures and drugs if not administered properly or in the right dosage
- Reaction to medications administered if medication history of patient not fully known to healthcare professionals
- The increasing prevalence of infectious diseases called Antibiotic Resistant Organisms (VRE, C-Diff, MRSA)
- A culture that embraces patient safety issues and works to report, respond justly while being flexible and adopting a learning philosophy organization wide.

Therefore, in healthcare, with heavy reliance on healthcare professionals to properly diagnosis and treat patients, it is paramount to have:

Requirements for Healthcare Safety

- Adequate healthcare professionals (to provide proper safe staffing levels as well as to avoid unnecessary overtime which can fatigue healthcare professionals and cause error)
- Properly trained healthcare professionals
- Necessary resources to provide sufficient ongoing training to staff on best practice in care delivery
- Adequate access to appropriate equipment that is properly maintained and operated within its useful life
- Access to hospital infrastructure that is designed based on the latest standards in healthcare design which promotes healthy and safe patient care. A few of these standards include privacy in room design, air quality to support containment of infectious diseases, access to light and outdoors to promote healing, and proper security.
- Automation and integration of information systems between hospital and community providers to enhance access to history of patients for better treatment and potentially avoidance of duplicate testing

*NHS Participates in
Accreditation Canada
Patient Safety Culture
Survey*

The NHS has taken a proactive approach to developing a culture of patient safety. Recognizing the value and importance of education and engagement of our valued health professionals, the NHS has undertaken to participate in Accreditation Canada's online Patient Safety Culture Survey. This will provide us with baseline information on our current environment and culture when it comes to our attitudes towards patient safety.

There are a number of challenges facing the NHS which can contribute to safety related issues:

*Patient Safety Challenges in
the NHS*

- Lack of appropriate levels of healthcare professionals at times to support safe patient care
- Insufficient resources to support ongoing training and support to our healthcare professionals
- Insufficient resources to support the implementation of best practices and initiatives known to improve patient safety and quality of care (systems, equipment and staff support)
- Aging equipment, often used beyond its useful life
- Aging infrastructure not designed to today's standards – the average age of hospital buildings in Niagara is at least 60 years, with parts of some hospitals more than 100 years old

The HIP has afforded an opportunity to look at how care can be reorganized to improve and enhance the provision of safe patient care.

Patient Centred

Patient centred care is “an approach in which clients are viewed as whole persons; it is not merely about delivering services where the client is located. It involves advocacy, empowerment, and respecting clients' autonomy, voice, self-determination, and participation in decision-making. (RNAO 2002)

*Patient Satisfaction as
Measure of Patient Centred
Care*

One means of monitoring whether an organization is providing patient centred care is to measure whether or not patients are satisfied with the care they were provided/experienced. Patient satisfaction can be defined as the percentage of recently discharged patients who give the hospital the highest possible quality rating (i.e., the rating that indicates the highest level of assessment) on standard overall evaluation items of hospital quality as perceived by the patient. Complaints (or dissatisfaction) can be defined as an expression of concern or dissatisfaction by the patient and are also potentially markers or indicators of systems or processes that may not be functioning effectively. It is important to complete the appropriate trend analysis of the factors, which prompted complaints, in order to provide valuable insight into where improvements may be required. It is also important to collect and analyze compliments received as markers of

satisfaction and also as a means of monitor the success of quality/safety improvement initiatives implemented over time.

NHS Methods to Seek Feedback

The NHS uses a number of methods to seek feedback from patients and families as a means of quality improvement.

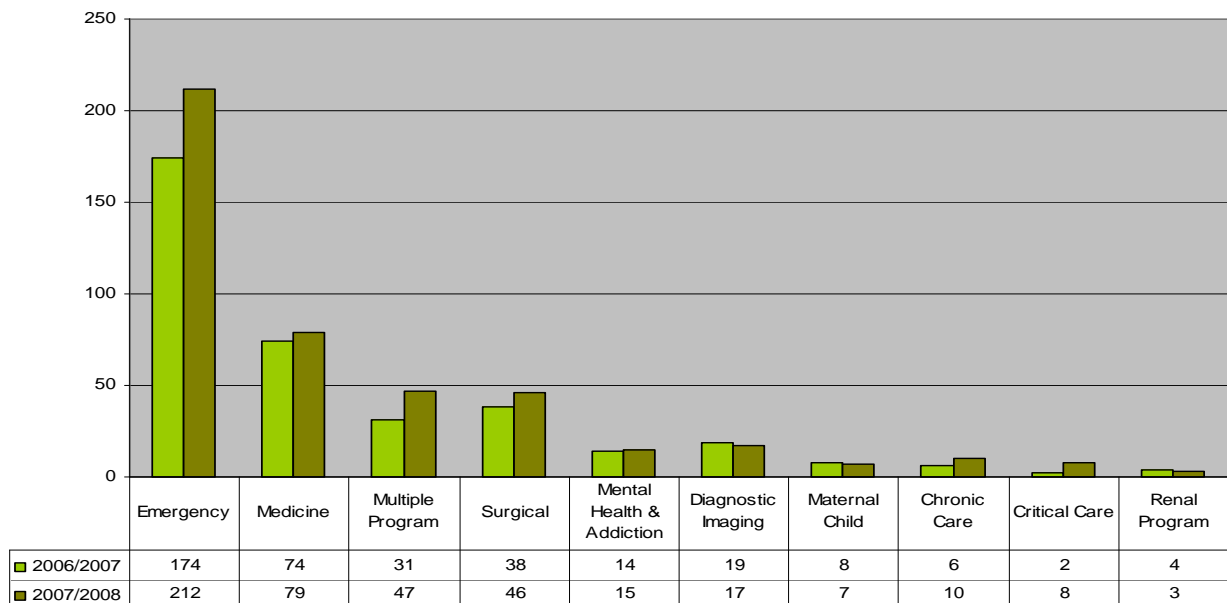
1. A formalized complaints and compliments process

The Niagara Health System has implemented a software program in order to collect, track and monitor statistics related to patient feedback. The following represents data trends by program for the last two fiscal years in comparison to total annualized visits/admissions. Benchmarking of the data to other organizations is difficult in terms of identifying organizations willing to share comparable data as well as differing policies and procedures in place across organizations however such efforts are underway at this time.

Largest Volume of Complaints re ED

As revealed below, the largest area of complaints for the NHS is in the area of emergency services receiving 212 complaints in 2007/08 (there were 197,369 visits to the NHS EDs during that time).

Exhibit 38: NHS Complaints by Program (2006/07 and 2007/08)



2. Regular surveying of patient satisfaction through NRC Picker The Niagara Health System has been monitoring patient satisfaction on an ongoing basis in an effort to continuously improve the care and services provided, while taking into account the patient's perspective. Participation in the Hospital Report Project has been analyzed over time and results in a number of areas continue to trend below the province.

Exhibit 39: NHS Acute Care, 2007 NRC Picker Patient Satisfaction Results

Indicator	NHS 05/06	Province 2006	NHS 2007	Province 2007	Community Hospital Average	LHIN 4	Comments
Overall Impressions	79.7	82.6	79.1	82.7	82.8	82.5	Below Province
Responsiveness	79.6	80	79.6	80	81	80.4	Below Province
Continuity and Transition	67.8	70.8	68.4	71.8	71.2		Below Province
Coordination of Care and Access	79.1	78.7	77.9	78.8	79.7		Below Province

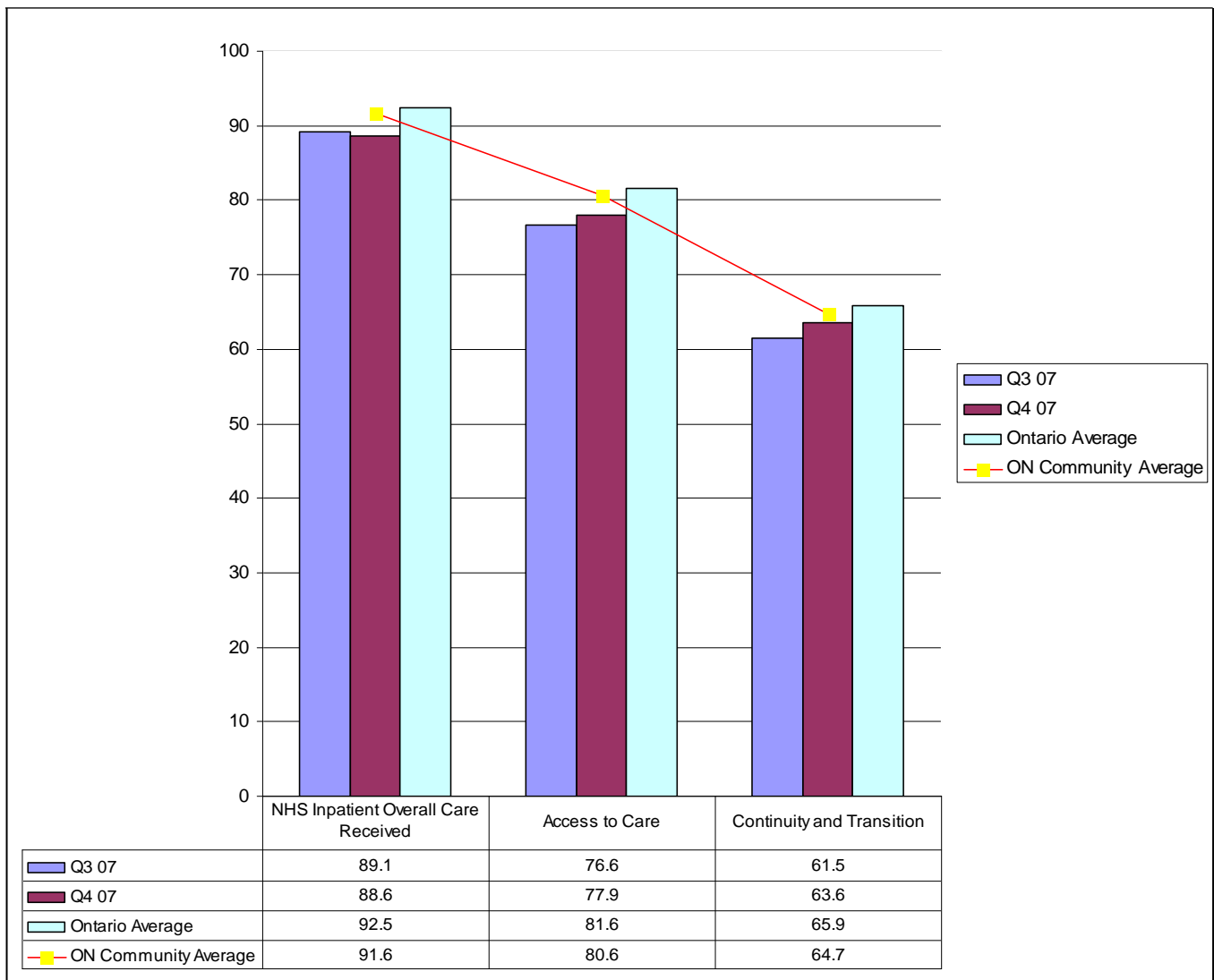
Exhibit 40: NHS Emergency, 2007 NRC Picker Patient Satisfaction Results

Indicator	NHS 2005	Province 2005	NHS 2007	Province 2007	Community Hospital Average	LHIN 4	Comments
Overall Impressions	71.9	73.3	70.1	74.4	73.5	72.7	Below Province
Responsiveness	63.8	65.9	63.1	65.4	64.7	64	Below Province
Continuity and Transition	60.4	62.5	58.3	61	60.2		Below Province
Coordination	68.8	69.5	65	65.3	64.8		Below Province

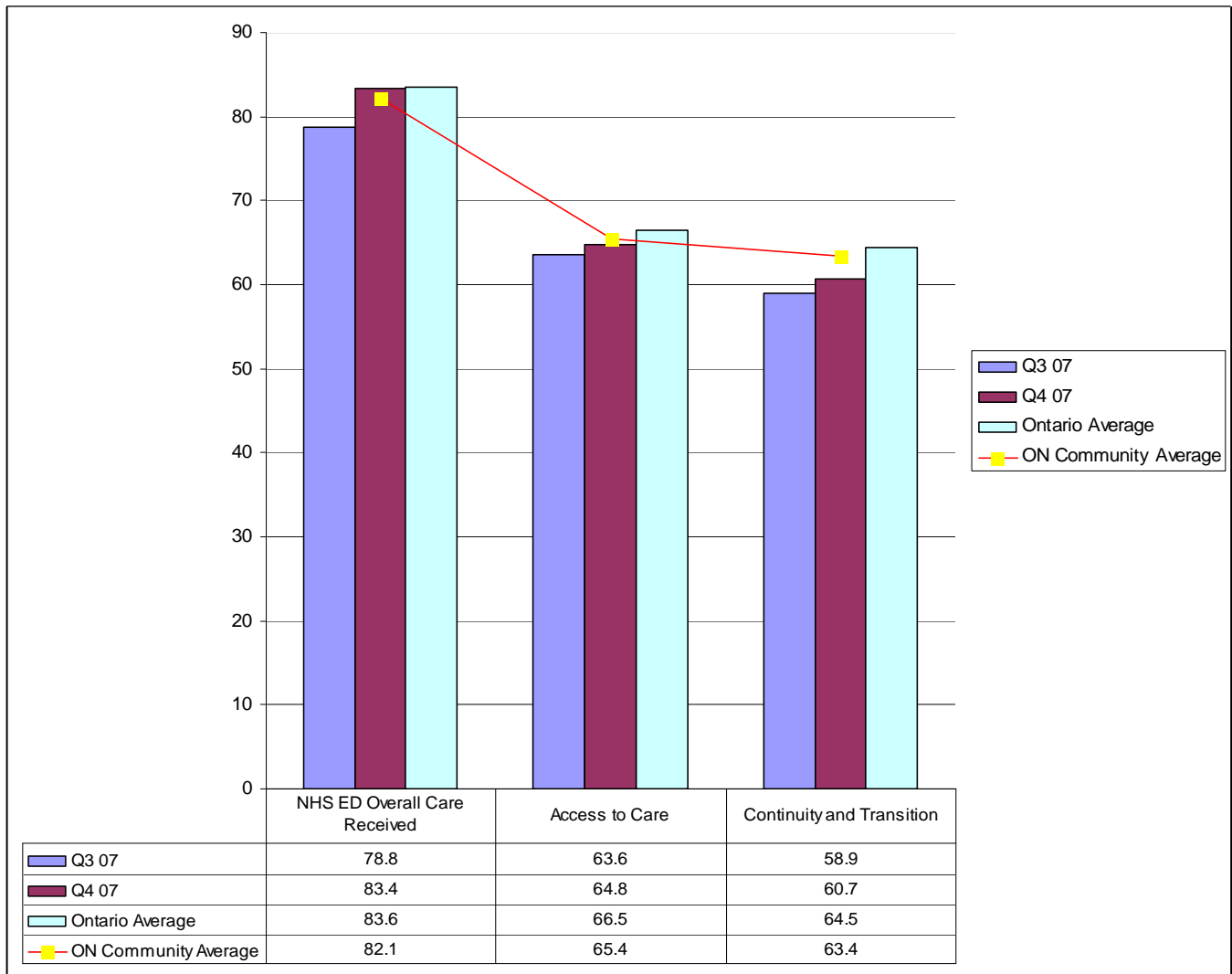
NRC + Picker Patient Satisfaction Results

Findings from our participation in the NRC + Picker Patient Satisfaction Surveys continue to trend below the provincial average over time. Of particular concern, relative to service provision, are the dimensions related to Access to Care (Inpatient), Continuity and Transition (Inpatient), Access to Care (Emergency) and Continuity and Transition (Emergency).

**Exhibit 41: NHS, Ontario, and Ontario Community Hospital
Average Inpatient Satisfaction Scores by Dimension**



**Exhibit 42: NHS, Ontario, and Ontario Community Hospital
Average Emergency Department Satisfaction Scores by Dimension**



Lower ED Patient Satisfaction Related to Lack of Primary Care and Increased Demands on EDs

Lower satisfaction in emergency departments is in direct correlation to lack of availability of acute care beds, causing patients to be admitted to beds in the emergency department and experience long waits in the emergency departments due to over-utilization of Niagara's emergency departments largely attributed to the lack of primary care resources in Niagara, described in more detail throughout this document.

NHS Below Provincial Benchmarks for Access and Continuity and Transition

Data for the two dimensions of Access and Continuity and Transition have been consistent over time for both the inpatient and emergency department patient satisfaction reports. The benchmarks for these two dimensions are taken from the Ontario Average and the Ontario Community Hospital Average. NHS has consistently remained below both benchmarks.

Exhibit 43: NHS Inpatient Access and Continuity/Transition Performance Over Time

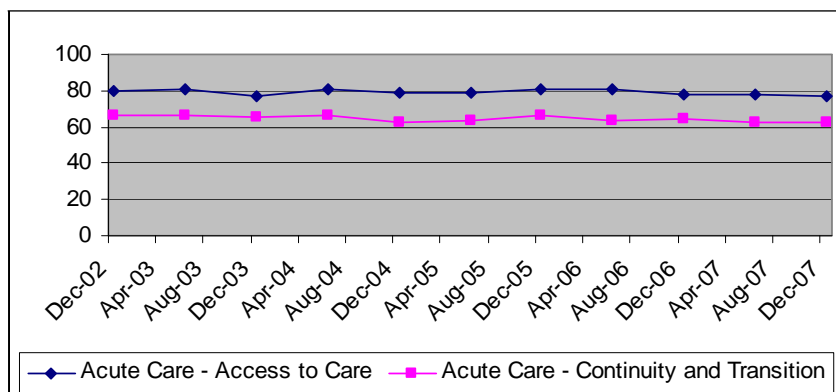
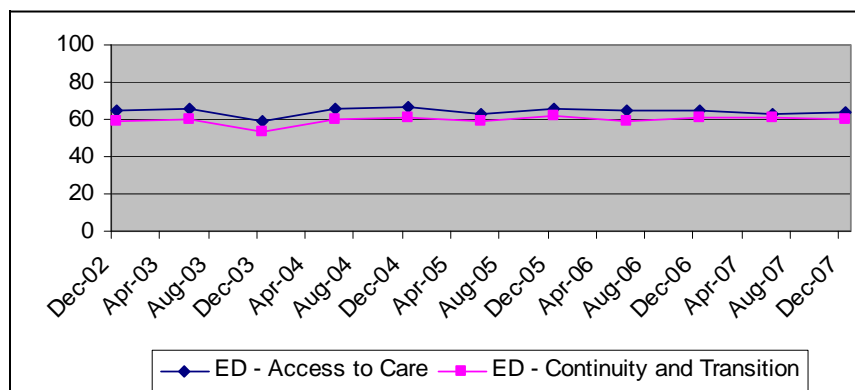


Exhibit 44: NHS ED Access and Continuity/Transition Performance Over Time



Further analysis of the data reveals that in particular, Access, Coordination and Continuity of Care, provide significant areas for improvement. In the last two quarters of 2007 NHS noted that the acute care report responses to the “Availability of Nurses” revealed percentage scores of 81.7 and 83.3 which are significantly below the Ontario average of 87.4 and below the Ontario Community hospital average of 86.7. Results on the patient perspective of “Wait too long to go to room” revealed scores of 68.2 and 68.5 in comparison to the Ontario average of 71.9 and the Ontario Community hospital average of 69.7.

Patient Dissatisfaction with Wait to See ED Physician

From the Emergency Department reports “Time Spent in the ED” scored at 55.2 and 58.1 versus the Ontario average of 60.7 and the Ontario Community hospital average of 58.3%. Patients scored the question “Waited too long to see ED Dr” extremely low at 41.4 and 42.4 respectively, with the Ontario average being significantly different at 48.2 and the Ontario Community hospital average at 46.2%.

There are multiple opportunities for improvement to consider in response to patient feedback regarding the access, responsiveness, continuity and coordination of care.

Philosophy of Patient/Client Centred Care

In keeping with the NHS's key success factors and in our efforts to improve the quality of care and safety, patient/client centred care has been adopted as the NHS's care delivery model. Defined as "consciously adopting the patient's perspective...about what matters" (Gerteis et al.), the model's key principles of respect, dignity, collaboration and participation in care complements the NHS's core values and mission.

Timely

Timely access to care is important to patients. Health and well being is fundamental to quality of life and delays in treatment can cause unnecessary stress to patients. As well, a delay in treatment could cause a condition to worsen without access to proper diagnosis and treatment and result in unnecessary hospitalization.

Timeliness in the provision of care can be measured in a number of ways:

Measures of Timeliness

- Wait time for appointment with a primary physician
- Wait time to see a specialist
- Wait time for a diagnostic appointment
- Wait time for Surgery
- Wait time in Emergency department (ED)
- Wait time from decision for admission from ED to admission to an inpatient bed

MOHLTC Investments in Wait Time Reduction

There have been significant dollars invested by the Ministry of Health and Long Term Care (MOHLTC) over the last four years to improve wait times in five key areas:

- Magnetic Resonance Imaging (MRI)
- Computerized Tomography (CT)
- Cancer Surgery
- Hip and Knee Replacements
- Cataract Surgery

The NHS has applied and benefited from additional dollars in all five areas and there has been significant improvement in wait times in most areas, with the exception of knee replacements.

Long Waits for Access to NHS Beds

However, the NHS continues to be significantly challenged with respect to wait time for beds (i.e. patient waiting long period of times in the Emergency department for a bed) as well as long waits for treatment within the Emergency department.

Impacts of Lack of Access to Primary Care

Further, due to the significant lack of primary care physicians in the community, not only are Niagara residents either waiting long periods of time to see a primary physician, some have no access to primary care and therefore, Niagara emergency departments become the ‘place of last resort’ for patients who require in many cases, primary care not emergency treatment. There are three statistics that support the fact that Niagara emergency departments are being utilized more, compared to our LHIN and Ontario, due to lack of services elsewhere in our community:

- Niagara has a higher usage of emergency departments
- Niagara has a higher rate of admission to hospital
- Niagara has a higher admission rate for ambulatory related conditions that could have been avoided with proper access to chronic disease management programs and primary care

One of the largest areas of complaints to the NHS is ED wait times. This is also consistent with feedback through regular patient satisfaction surveys conducted by the NHS, with satisfaction with Niagara’s emergency departments being lower than the provincial average.

200 NHS Beds per Day Used for “Alternate Level of Care” Patients

A further factor in Niagara which is negatively impacting timely access to hospital emergency and inpatient care is the number of Alternate Level of Care patients occupying beds in Niagara hospitals. Alternate Level of Care (ALC) days are defined as “inpatient days where a physician (or designated other) has indicated that a patient occupying a hospital bed was well enough to have been cared for elsewhere”. Currently on any one day in Niagara, over 40% or over 200 beds are being occupied by patients in NHS acute and chronic beds who would be more appropriately cared for in an alternate care setting, either in long term care, supportive housing or at home with additional home care hours.

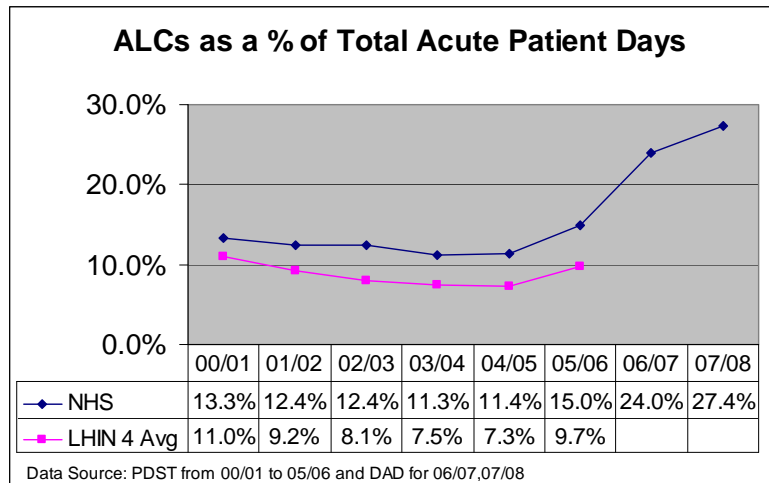
ALC Patients Lead to Backlog in ED and Potentially Unsafe Conditions

The level of ALC patients in hospitals directly contributes to the availability of beds required for acute patients, causing patients to be admitted to the ED. Sometimes patients can wait one or two days within an ED for an inpatient bed. The number of patients occupying beds in an ED can then also directly impact the ability of that ED to accept patients from ambulances when they arrive, causing significant ambulance offload delays. A patient can only be accepted into an ED if it is safe to do so. If an ED is overwhelmed with patients admitted with no beds and does not have sufficient physician or nurse staffing to accept more patients, the ambulance must wait and the ambulance attendants attend to the patient in the ambulance while waiting. Not only is this not an ideal situation for the provision of quality patient care

but also impacts the availability of ambulances to respond to other emergencies. Most importantly, this phenomenon is negatively impacting patient satisfaction with acute care services in Niagara.

The NHS ALC day percentage has been at least 3 to 5% above the HNHB LHIN average. From 2005/06 to 2007/08, the percent of acute care beds occupied has increased from 13.3% of total acute beds to 27.4% of total acute beds.

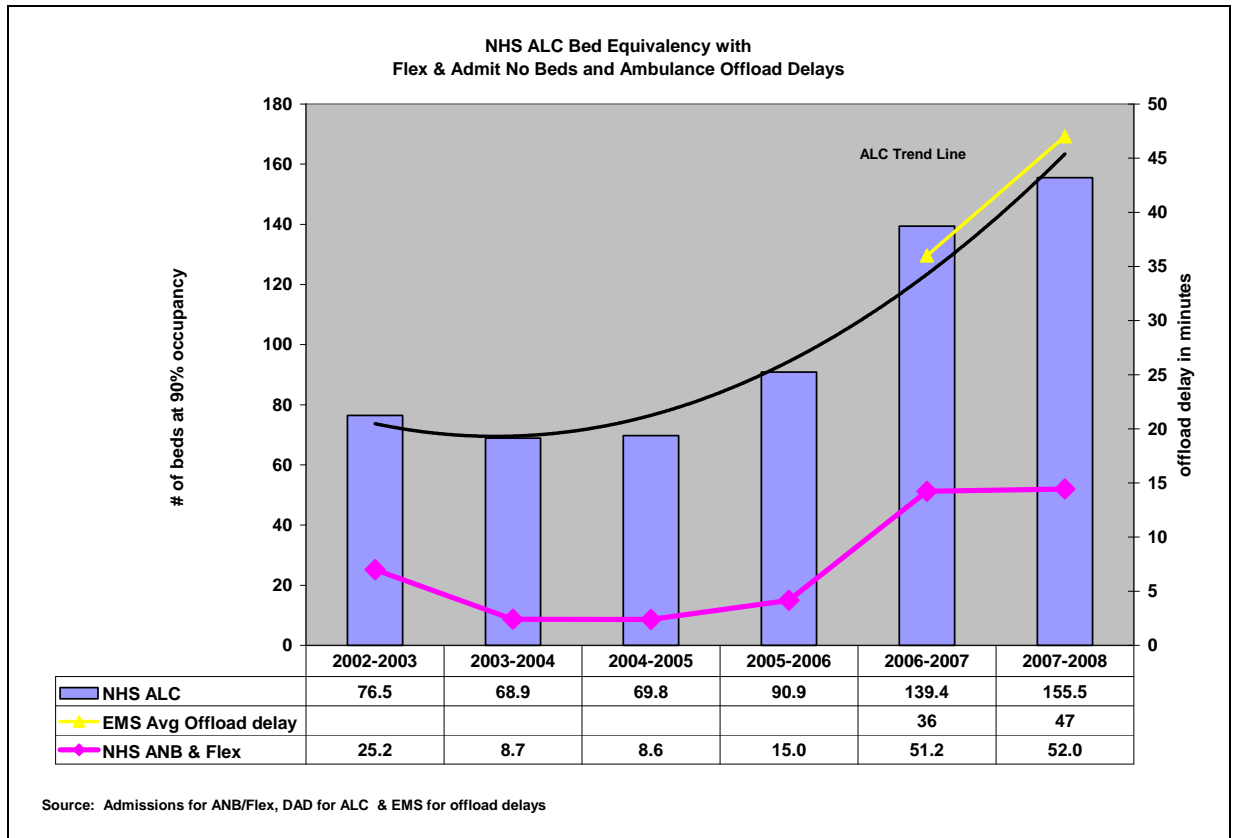
Exhibit 45: NHS and HNHB LHIN ALC Days as % of Total Acute Care Days



***Increase from 70 Acute Beds
Occupied by ALC Patients in
2004/05 to 156 Beds in
2007/08***

The ALC issues have been a long standing challenge in Niagara with the number of acute ALC patients across all NHS sites ranging from an average of 104 to 190 per month over past 3 years. ALC patients are impacted by the delay in receiving the appropriate level of care they require, and acute care patients are impacted by the resulting reduction in acute care capacity.

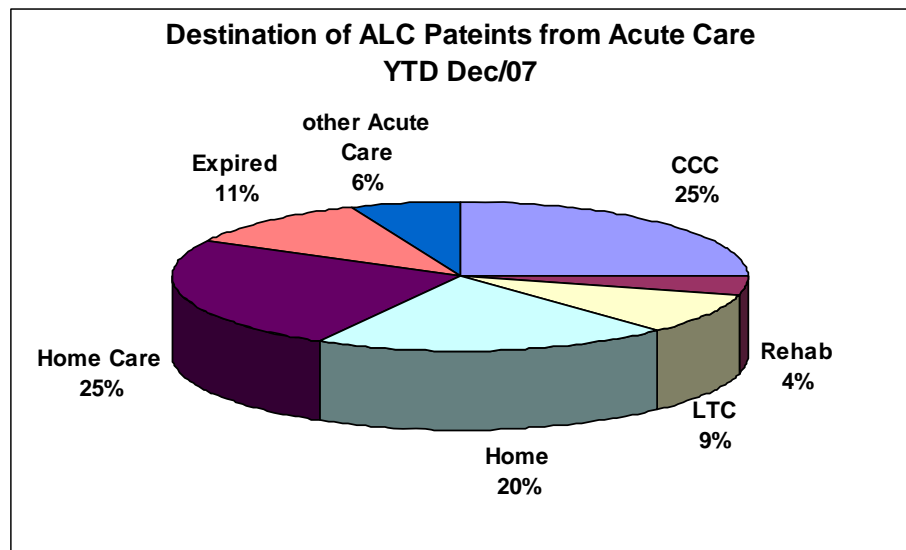
- Average acute beds occupied by ALC patients has increased by 123% over the past three years from an average of 70 beds in 2004/05 to 139 in 2006/07 and now 156 beds in 2007/08.
- 2007/08 has seen some ALC relief in the spring-summer with the opening of additional rehab beds at Hotel Dieu and chronic beds at WCGH, but ALC numbers are climbing again as these beds fill.
- Ambulances have experienced increased off-load delays due to over-crowded emergency departments with increased number of “Admit No Bed” (ANB) patients in EDs due to decreased acute care capacity, resulting in over-crowded EDs, EMS off-load delays have increased by 31% in 2007/08 from 2006/07 (47 from 36 minutes).

Exhibit 46: Comparison of ALC Beds With ED Offload Delays and “Admit – No Bed” Patients

ALC Discharge Destinations

ALC patients in acute beds are primarily discharged to CCC (25%), followed by discharges for home care (25%) and home (20%). Discharge destination should not be mistaken for appropriate placement, due to lack of long term care and rehab beds in Niagara and resulting patient flow pressures ALC patients are often discharged to NHS Chronic Care beds to await more appropriate placement. Recent CCAC assessment of Niagara ALC patients showed that many should receive rehabilitation care. Some ALC patients also die (11%) as they wait for palliative care services in the community.

Exhibit 47: April, 2007 to December,
2007 Discharge Destination of NHS Acute Care ALC Patients



***Investments in Non-Hospital
Services Required to Reduce
ALC***

Through this HIP submission, the NHS has identified resources required in the community to alleviate emergency, inpatient and ALC pressures. With appropriate investment in non-hospital based services such as primary care, chronic disease management, supportive housing, additional home care hours and rehabilitation, the NHS will be able to improve access to emergency and acute inpatient care. Further, through the creation of centres of excellence for specialty elective surgical procedures, the NHS will be able to improve the efficiency in delivery of those services to reduce wait times.

Work Life Focus

Quality of work life and employee satisfaction is paramount in a world of shrinking health human resources. The NHS strives to be an employer of choice to effectively recruit and retain healthcare professionals to Niagara in a very competitive market. Although the turnover rate is lower for the NHS compared to health industry averages and the average length of service for NHS employees is higher than the healthcare average, the operating challenges being faced by the NHS are having a direct negative impact on the satisfaction of our employees. There is evidence to support a direct correlation between employee satisfaction and the quality of care provided to patients.

***NHS Staff Satisfaction
Lower than Provincial
Averages***

The NHS periodically conducts employee satisfaction surveys to gauge the level of staff satisfaction and as a means of developing action plans to improve. Through a recent survey conducted in 2007, although there had been improvement in staff satisfaction from the last survey conducted in 2005, the satisfaction of NHS staff remains lower than comparable hospital peers. In the 2007 survey, staff were asked open ended questions regarding actions that could be taken to make the NHS a better place to work. The

reasons that were provided by staff support the case for change within the NHS, including:

***Desired Changes Identified
by NHS Staff***

- Increased availability of staff, especially RN's
- Decreased workload
- Ability to take vacation and stat holidays when requested
- Safe and secure environments
- Better workflow
- Air quality and better temperature control
- Equipment and supplies to do the job, especially replace outdated equipment
- Provide paid continuing education
- Provide opportunities for education during working hours

The development of the HIP is an opportunity to effectively address concerns raised by our employees to improve satisfaction and increase our competitiveness in the healthcare market.

Population Focus

A key consideration in the provision of healthcare services is to design the access and provision of the range of services offered in direct response to the specific characteristics of the population being served.

Chapter 3 provides an overview of the population health of Niagara.

Understanding the demographic and socio-economic characteristics of the residents of Niagara is the foundation to developing a plan for how the NHS can respond to the health needs of Niagarans.

Continuity of Service Focus

***Importance of Linkage of
NHS with Community
Partners***

Experiencing coordinated and seamless care is critical to enhancing quality of care and quality of life. To have an effective continuum of care, there must be effective linkages between primary care, preventive care, acute care, home care, residential care (long term care, supportive housing, etc), respite and palliative care. The primary role of the NHS in the continuum of care is the provision of acute care services. To be effective in this role, the NHS needs to be resourced adequately to provide acute care services and to foster effective partnerships and communication linkages with its many community provider partners in the provision of non-acute care services.

***Needs for Investments in
Community Services in
Niagara***

Due to the lack of non-acute care resources currently in Niagara, the NHS has become the safety net for many of these services. As a result, this has negatively impacted the quality (defined as the nine domains above) of acute

care services and as a result, impacted the level of patient satisfaction with acute care services in Niagara.

7.2 Proposed Vision for Hospital Services in the NHS

HIP Reflects NHS Vision

The clinical services plan presented in this Hospital Improvement Plan [HIP] reflects the Niagara Health System [NHS] vision – but more importantly, it is grounded in our commitment to achieving excellence while ensuring the sustainability of the hospital system that will be there for our children and grandchildren.

The clinical services plan speaks to a vision and a future that is based on the health needs of the residents of Niagara and demonstrates the passion and commitment of our clinical leaders to transform hospital-based care in Niagara. The plan builds on what we know today about the health of our population, about the trends in the health sector and creates a vision for hospital-based services that best meets the needs of the people of Niagara in the future.

The creation of vision for the delivery of acute hospital services in Niagara is a significant milestone since the formation of the NHS in March 2000.

HIP Responds to Challenges faced by NHS and All Healthcare Providers

The HIP responds to the key challenges that the NHS, and for that matter the community of Niagara and the country face. These are well documented challenges – an aging population, an aging workforce, decreasing population wellness and increasing prevalence of chronic disease, a need to enhance patient and staff safety, increasing patient/consumer expectations, demands for a better quality of worklife, rising healthcare costs, and poor integration of care particularly related to healthcare information sharing.

Move from Provider Focus to Patient Focus

This plan supports moving from a provider focus to a patient focus. It speaks to a system that can adapt to patients' needs - up, down and across the continuum of care. And every recommendation made herein demonstrates that it improves quality of patient care; is sustainable; and is recognized as best practice in the field.

Vision Focuses on Quality

Our vision for the future is one where first and foremost, quality will drive the delivery of patient care in Niagara – both how it is delivered and where it is delivered. At the NHS, we believe quality healthcare means delivering the care at the right time in the right place and having the best possible outcome. The clinical services plan sets a vision that is based on a case for change, summarized in the following theme areas:

Theme Areas

- Provision of the right care at the right place at the right time [safe and timely care]
- Commitment to enhance quality of care [best practice]

- Establishment of Centres of Excellence [increased specialization, minimizing duplication, enhancing infrastructure], including
 - Walker Family Cancer Centre - providing systemic/chemotherapy and radiotherapy to residents of Niagara, sited at the new healthcare complex.
 - Cardiac Catheterization Centre – introducing enhanced diagnostic and treatment capabilities for people with cardiac conditions, sited at the new healthcare complex. Stroke Centre – enhancing the continuum of stroke services currently offered by introducing a dedicated, acute stroke rehabilitation unit (10 beds) sited at the Greater Niagara General.
 - Centre of Excellence for Women’s and Children’s Health – a dedicated centre focusing on the health care needs of women, offering obstetrical and gynecological services as well as comprehensive specialty care for children from newborns through to their teens, requiring both medical and surgical care, sited at the new healthcare complex.
 - Centres for Complex Continuing Care – introducing slow-paced recovery/rehabilitation for people with complex medical needs, supporting people to transition home with support or to an alternate, more appropriate care environment. These will be sited at the Port Colborne and the Douglas Memorial sites.
 - Centre of Excellence for Mental Health Centre – combining long-term [tertiary] and all acute [short-term] inpatient services, sited at the new healthcare complex, along with an Emergency Psychiatric Team and dedicated out-patient programs at the Greater Niagara, Welland, Port Colborne, and Fort Erie sites.
 - Addictions Centre – integrated in-patient/residential and out-patient addictions services in a new, special purpose built location in the community of St. Catharines.
 - Diabetes Centre – a coordinated hub for care planning and patient education, located at the Port Colborne site.
 - Nephrology Centre – a coordinated hub of nephrology services at the St. Catharines site, with satellite services at the Welland, Greater Niagara and Fort Erie sites.
- Specialized Centres for Surgical Care – Exciting new technologies and techniques bring the promise of advanced care for patients requiring surgery in Niagara, and new levels of excellence at the following specialized sites:
 - Dental Surgery – Greater Niagara site.

- General Surgery and Endoscopy – Welland, Greater Niagara and St. Catharines sites.
- Gynaecological Surgery – St. Catharines site
- Orthopaedic Surgery – two specialized centres for orthopaedic surgery at the Greater Niagara and St. Catharines sites.
- Otolaryngological Surgery [Ear, Nose, Throat] – delivery of ENT surgery for adults at the Greater Niagara site and for children at the St. Catharines site.
- Ophthalmological Surgery – Welland site.
- Plastic Surgery – Greater Niagara and St. Catharines sites.
- Thoracic Surgery - St. Catharines site
- Urological Surgery – Welland site.
- Vascular Surgery - St. Catharines site
- Emergency Services – Emergency Department’s in Welland, Niagara Falls and St. Catharines will continue to provide 24 hour, 7 day a week access to services for the acutely ill, including children. Closure of the Emergency Departments at the Port Colborne and Fort Erie sites. It is recommended that the evolving Community Health Centres in Port Colborne and Fort Erie, with their associated primary care and walk-in clinics, can provide residents quick and convenient care closer to home.
- In keeping with the recommendation of the Ontario Joint Policy and Planning Committee, the Douglas Memorial, Port Colborne and Niagara-on-the-Lake sites will transform: “To change how they view themselves and how others see them – moving from places where people go when they get sick to places that provide services to their communities. They will need to be catalysts to develop local access points for health, not just health care, by providing support to community-based health care and social service providers, community agencies, volunteer associations and human service organizations in their catchment area.
- Requirements for community “enablers”/investments in areas such as:
 - Primary care
 - Supportive Housing
 - Home Supports
 - Transportation
- Ensuring a sustainable hospital system [financial and health human resources]

More specifically, the plan sets a vision that:

- Focuses acute care services and emergency care at the three large sites;

- Focuses care at the three small sites on non-acute care and as “catalysts to develop local access points for health, not just health care, by providing support to community-based health care and social service providers, community agencies, volunteer associations and human service organizations in their catchment area”. The three small sites will focus on in-patient sub-acute care.

7.3 Vision for Small NHS Hospital Sites

Emphasis on Small Sites as Integrated Models of Comprehensive Primary Care

In earlier sections of this report, we have outlined a number of initiatives in health care in Ontario and nationally. A key component of these initiatives is the recognition of the importance of highly integrated models of comprehensive primary care delivered in a community focused venue. Such models emphasize the importance of service delivery models which are configured to be patient and family [as opposed to physician] centred.

Importance of Hospital Support for New Primary Care Models

In addition to the benefits which such models confer upon patients and families, it clearly serves the acute care hospitals’ interest to participate in and foster the development of such models. The focus on the provision of highly integrated services facilitates the development and implementation of chronic disease management strategies, which will inevitably decrease the need for acute care hospitalization, minimize long-term complications of chronic diseases [such as diabetes, congestive heart failure, asthma, etc.], and decrease morbidity and mortality. All such outcomes minimize the demand for and the cost of provision of acute care hospital services.

The co-location of a variety of social and community agencies with health care providers facilitates the recognition and management of a variety of psychosocial phenomena which oftentimes, in of themselves, contribute to hospitalization. For instance, the early recognition of seniors at risk in the community allows for the identification and mobilization of those resources necessary to ensure the well-being and safety of this population in the community, minimize their risk of episodes such as falls which may result in acute hospitalization and long-term placement problems.

The supplementation of a primary care model with the presence of diagnostic services, such as Laboratory and medical imaging, also decreases the demand for these services in the hospital, while providing patients with an opportunity to have necessary investigations done in the same venue and at the same time as their interaction with health professionals. Importantly, such testing is “revenue positive” and confers significant financial benefits to the organization as well.

Opportunity for Clinics to Support Consultation and Follow-Up

In recognizing the imperative for increasing consolidation and rationalization of services in the Niagara region, it is clear that, notwithstanding the benefits of consolidation of some services to a smaller number of acute-care sites, there will continue to be a need in smaller communities for access to consultation, and a follow-up visits and

management by specialists. Creating a physical plant in which consultation and follow-up clinics can occur will allow patients to receive the benefits of such care closer to home, and maximize the efficiency of utilization of consultant time by ensuring a consolidated and integrated treatment plan from the time of consultation to the completion of follow-up.

Co-locating these clinics with primary care providers will also enhance the interaction between specialists and referring physicians, and allow for faster access to urgent consultations, and enhancement of primary care providers knowledge and skills.

***Port Colborne and Fort Erie
Sites to Evolve to Vibrant
and Comprehensive
Community Health Centres***

The Port Colborne and Fort Erie sites will evolve to vibrant and comprehensive community health centres with a strong focus on primary care and chronic disease prevention and management. The vision for the sites includes key partnerships with community organizations to further enhance the delivery of services to these communities. The in-patient capacity of these sites will be part of a new vision of enhanced complex continuing care to support patients who require slow-paced recovery and rehabilitation to transition home or to other care settings. In addition, the Port Colborne site will also become the coordinated hub for diabetes care planning and patient education, and the Fort Erie site will be a satellite for dialysis care.

***Continued NOTL Role
Supporting Primary and
Complex Continuing Care***

The Niagara-on-the-Lake site will provide a focused role in complex continuing care and continue to facilitate access to enhanced primary care through its Family Health Team.

8.0 Proposed Program Delivery Models and Evaluation

8.1 NHS Clinical Service Plan Evaluation Criteria

The evaluation of the current and proposed clinical service delivery models has been based on the criteria approved by the NHS Board, including the 9 dimensions of quality described earlier in this report. For each criterion (listed in the table below) the models have been assessed as either being non-compliant, partially compliant, or compliant. The symbols used in the evaluation tables are:

- Non-compliant
- ◐ Partially compliant
- Compliant

Exhibit 48: Evaluation Criteria Used to Assess Program Service Delivery Models

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care: <ul style="list-style-type: none"> ▪ Effective ▪ Efficient ▪ Equitable ▪ Safe ▪ Patient Centred ▪ Timely ▪ Work Life Focus ▪ Population Focus ▪ Continuity of Service Focus 		
B. Compliant with: NHS Success Factors MOHLTC Policy HNHB LHIN Policy		
C. Leverages health professional resource pool		
D. Supports ability to advance/promote health care [e.g., introduction of new technology]		
E. Leverages physical plant capacity		

8.2 Emergency Program

8.2.1 Current State

Niagara Health System (NHS) operates five 24/7 full-service emergency departments plus one 14 hour prompt care (at the Ontario Street site in St. Catharines). The NHS EDs provide care to patients of all ages presenting with a broad spectrum of health problems.

About one in five NHS ED patients are children, and a further one in five are 65 years or older.

Exhibit 49: Age Profiles of NHS ED Visits from 2005/06 to 2007/08

Age	FY 05/06	%	FY06/07	%	FY07/08	%
0-18	41969	21.6 %	41169	20.6%	40114	20.4%
19-64	113655	58.4%	118731	59.3%	117317	59.5%
65-74	15469	8.0%	15702	7.8%	15878	8.1%
75-84	16843	8.79%	17569	8.8%	16605	8.4%
85+	6523	3.4%	6959	3.5%	7151	3.6%

From 2001/02 to 2007/08 there has been a reduction of 2.3% in the total number of ED visits in NHS hospitals.

Exhibit 50: Trend in Volume of Visits

Site	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	% Change 01/02 to 07/08
St. Catharines General	46,569	48,029	46,757	47,487	49,166	47,496	45,823	-1.6%
Hotel Dieu/OSS	31,947	30,373	25,796	26,389	25,743	33,254	36,152	13.2%
Greater Niagara General	51,583	51,817	48,649	49,856	48,451	46,081	45,094	-12.6%
Welland County General	31,039	30,851	28,234	29,250	28,690	28,444	27,686	-10.8%
Port Colbourne	22,083	22,698	24,382	24,966	24,244	25,516	22,860	3.5%
Douglas Memorial	18,513	19,724	19,698	17,887	18,166	19,339	19,450	5.1%
NHS-Total Visits	201,734	203,492	193,516	195,835	194,460	200,130	197,065	-2.3%

From 2006/07 to 2007/08, there was a reduction in ED visits to NHS sites for all age groups, except for patients aged 65 to 74 years old.

Exhibit 51: YTD Profiles

Age	FY06/07	FY07/08	Percentage Change
0-18	41,169	40,114	-2.6%
19-64	118,731	117,317	-1.2%
65-74	15,702	15,878	1.1%
75+	24,528	23,756	-3.1%
Total	200,130	197,065	-1.5%

There was a reduction in ED visits across all triage levels, except for triage level 4 (less urgent), which increased by 3.3%.

Exhibit 52: YTD CTAS Profiles

CTAS	FY06/07	FY07/08	Percentage Change
Level 1 Resuscitation	994	948	-4.6%
Level 2 Emergent	18,082	17,208	-4.8%
Level 3 Urgent	84,196	80,741	-4.1%
Level 4 Less Urgent	80,692	83,390	3.3%
Level 5 Non-Urgent	15,780	14,778	-6.3%
Total	199,744	197,065	-1.3%

Note: 2006/07 visit volumes exclude 386 cases not assigned a CTAS triage level.

The clinical profile of care of the emergency departments includes the acute and emergent management of patients suffering from a variety of disorders including trauma, acute cardiac emergencies, and a variety of other life or limb threatening problems.

The program also offers fast track treatment for patients presenting with lower degrees of urgency [Canadian Triage and Acuity System level 4 and 5 patients] designed to facilitate throughput of patients suffering from non-emergent illness.

In addition, the Ministry of Health and Long Term Care [MOHLTC] has recently promised funding for a clinical decision unit in which patients will be observed and aggressively treated for up to 23 hours in order to avoid short stay admissions and deferrable admissions.

A rapid assessment area is planned to open in September or October of 2008 to improve emergency department flow and decrease the wait time of CTAS 3 patients presenting to the SCGH ED. It is anticipated that the emergency departments of GNGH and WCH will also implement a rapid assessment area in the late fall. Consultative services are provided by specialists on an on-call basis at the three larger sites operated by the system. Consulting services are not available in either the PCGH or DMH sites. The lack of specialist consultation, combined with the lack of infrastructure to support the care needs of high acuity patients results in the transfer of those patients

needing this care to larger emergency department sites.

In reviewing the care needs of patients presenting to the five full-service sites operated by the system, distinct patterns emerge. While all sites provide services to those across the age spectrum, visit volumes at the Port Colborne and Fort Erie sites are significantly lower than those at the other sites. This is particularly true with regard to the number of patients seen on the night shift, particularly between the hours of 10 p.m. and 8 a.m.

In addition, disproportionately large numbers of patients present to the Port Colborne and Fort Erie sites who are suffering from minor illnesses and injuries [CTAS level 4 and 5 patients], and very few patients, both in absolute and relative terms, present with high acuity problems.

Exhibit 53: % of ED Patients Triage as CTAS 4 (Less Urgent) or CTAS 5 (Non-Urgent) by NHS ED

NHS ED Site	% CTAS 4 or 5
St Catharines Gen	27.3%
Greater Niagara	40.5%
Welland County	46.4%
Fort Erie	58.7%
Ontario Street	68.4%
Port Colborne	69.7%

Many individuals within the Niagara region utilize the emergency departments for primary care owing to a shortage of family physicians. Notwithstanding this, the level of acuity of patients presenting to the emergency departments has been increasing. That is believed to occur because those patients presenting to the emergency departments oftentimes have multiple co-morbidities, and the emergency department oftentimes is also required to provide services to the socially disadvantaged. These issues may lead to an increased likelihood of admission, particularly due to insufficient community-based resources for the provision of primary care to these patient populations. In addition to the shortage of family physicians, there are insufficient community resources for complex care, long term care and alternative level of care

8.2.2 Case for Change

The Niagara Health System, as well as other emergency programs both provincially and nationally, is experiencing severe difficulty in recruiting and retaining trained emergency department providers. The lack of a sufficient cadre of both physicians and nurses with the specific training and skills required for the provision of emergency services, posits a current, and in the future, increasing difficulty for the system.

In addition to difficulties caused by the lack of a sufficient cadre of care providers, other issues in the emergency department contribute to

accelerated rates of stress and burnout in the emergency department staff, making it difficult to both retain and recruit new staff. These issues include, amongst others, those which are inherent to emergency medicine [a high stress environment, the uncertainty regarding admit or discharge decisions, the necessity for shift work], as well as those specific to the sites operated by the Niagara Health System [difficulty obtaining timely consultation, frequent high numbers of patients admitted with no bed interfering with patient flow, difficulties gaining access to appropriate investigations].

Many "best practice" models of care have resulted in patients being preferentially transferred to and treated at centres possessing excellence in specific subject areas. These include, for instance, the designation of specific trauma centres, stroke centres, and centres of care for patients presenting with cardiac emergencies. Within the Niagara Health System, patients are, for instance, currently preferentially transferred to the Greater Niagara General site if suspected of suffering from acute stroke. With the development of the centre of excellence in cardiology at the St. Catharine's General site, it is anticipated that patients presenting with cardiac emergencies will be preferentially transferred to this institution.

Wait times and access to service based on Canadian Triage and Acuity Scale (CTAS) are not currently in accordance with the Ontario Hospital Association standards and benchmarks. The CTAS ED indicator, monitored by the Ministry of Health, establishes a baseline target of 90% of patients being managed within a defined timeframe by CTAS level. The NHS consistently falls below the 90% target range at all larger sites.

The smaller sites (PCGH, DMH, and OSS) perform above the 90% benchmark for CTAS 4 and 5 patients. Seriously ill patients requiring admission at those sites must be transported to a larger site. Currently, delays are regularly experienced in transport response times.

Wait times accessing service are further lengthened by the high volumes of admitted patients in the emergency department awaiting inpatient beds. The length of time from the decision to admit to transfer to an inpatient bed has been steadily increasing, further compounding the inability to provide quality care within benchmark time frames.

The literature confirms that the elderly and complex medical patients experiencing an increased emergency department length of stay sustain compromise to physical and cognitive status with consequent increases in in-patient length of stay and complications.

Emergency physicians and nurses are expert in the delivery of care to emergency patients. Managing admitted patients in an environment suited to the delivery of emergency care not only adversely affects operation of the emergency program, but also leads to problems with recruitment and retention of emergency department staff.

Follow-up programs or clinics which could reduce admissions to hospital, especially among patients without a primary care physician or those who need to access a consultant urgently but not emergently, are minimal or nonexistent.

As a consequence of these issues, it is an appropriate time for the Niagara Health System to focus on the distribution of service and models offered for after hours and emergency care.

8.2.3 Proposed Service Delivery Model

Given the combination of low visit volumes, low acuity, and particularly low visit volumes on the midnight shift, the need for a full-service emergency department at the Port Colborne and Fort Erie sites must be examined. In addition, given that all patients requiring consultation or critical care must be transferred to another site, and that the absolute number of appropriate admissions amongst the remaining patients is low, the need to maintain an emergency department in either venue must be questioned. This is particularly true in light of the difficulties in recruiting and retaining a sufficient number of medical and nursing staff to provide a high quality service.

Even if a full service emergency department were to be maintained at either site, the resultant number of admissions would be too low to create a cost-efficient or cost-effective in patient unit (20 beds at the DMH and even less at PCGH).

It is believed that with appropriate public education, and models of pre-hospital triage and transport which are appropriately planned, the needs of all patients with emergent and urgent needs will be met with equal or superior quality if they are transferred to and treated at any or all of the Welland, Niagara Falls or St. Catharine's Hospital's.

The needs of lower acuity patients [CTAS level 3, to a large extent, 4 and 5] could be well addressed in a centre offering comprehensive primary care, and extended hours of service. This model would reflect the current Ontario government's initiatives in the areas of primary care reform, and the broader trend in the healthcare industry to multidisciplinary models of care. It would also afford an opportunity to integrate a number of other care providers into a comprehensive primary care service. This would include, for instance, opportunities to integrate social workers, community care access centre providers, physiotherapists, podiatrists, and a variety of other health professionals into an integrated model which would be capable of meeting all of the primary care needs of the communities of Port Colborne and Fort Erie. Such a model has recently been approved for the community of Orleans, to be operated by the Montfort Hospital.

By offering extended hours of service [it is suggested that physicians should be on site until 9 or 10 p.m. five days a week, and for 8 to 10 hours per day on Saturdays and Sundays], and capitalizing on the existing infrastructure [existing emergency facilities such as suturing and casting rooms, diagnostic imaging, and laboratory], the needs of CTAS 4 and 5 patients would continue to be provided on site, resulting in minimal numbers of patients needing to travel to one of the larger sites for care.

Having such a breadth and depth of primary care services will not only ensure the highest possible quality of care for residents of Fort Erie and Port Colborne, but also potentially provide an ideal teaching model for students assigned to family medicine as undergraduates, and postgraduate family medicine trainees.

The physical plants at the PCGH and DMH have, in other sections of this report, been designated to serve as sites for comprehensive reactivation and continuing care services. The co-location of a comprehensive primary care service would ensure access to diagnostics for inpatients at these facilities, and provide opportunities to maximize the efficiency of utilization of both non-physician and physician professionals. The physicians could be relied upon, for instance, to provide initial evaluation and management of any urgent health care need which arose in the inpatient facility.

The anticipated net impact on the GNGH, SCGH and WCH sites would be minimal. The sites are already receiving those patients in need of specialist consultation and or intervention, and the volumes of such patients will not increase. It is anticipated that the presence of a comprehensive primary care facility in both Fort Erie and Port Colborne will allow for the establishment of chronic disease management programs which will enhance the management of those suffering from a variety of chronic diseases [e.g. diabetes, heart failure, osteoporosis, etc.] who have been well demonstrated to be frequent users of emergency departments either because of acute complications related to their underlying illness, or long-term morbidity which occurs as a consequence of sub-optimal management. The creation of comprehensive primary care facilities in these communities should decrease the need for the utilization of emergency services by patients suffering from these disorders by virtue of both the enhanced ongoing management and the decreased long-term morbidity which will be experienced.

In addition to this outcome, the continuing presence of a site capable of providing for the care needs of patients with CTAS level 3, 4 and 5 problems will result, it is anticipated, in an incremental burden of approximately 7 to 10 visits per day on the three larger sites, which is not a significant workload issue.

The reconfiguration of the sites will create opportunities for those committed to careers in emergency medicine to shift their primary focus of practice to sites offering full emergency service, while concomitantly creating a milieu

for which current graduates from family medicine programs have demonstrated a preference. Current family medicine trainees are frequently exposed to, and regularly express interest, in working in comprehensive care facilities where they are supported by a broad array of other health professionals.

In addition, the creation of this model will posit significant opportunities to form new collaborative relationships with community-based agencies such as CCAC's, and may also portend an opportunity for unique financial relationships with providers who, traditionally, have been located in the community, such as physiotherapists and chiropractors.

Both communities have been planning Community Health Centres (CHCs), and have been approved for the development of such entities. The plan proposed may provide an ideal opportunity for cooperation and collaboration and co-location with these facilities.

Finally, one of the most significant difficulties experienced by providers at the current sites in Port Colborne and Fort Erie is the difficulties experienced in secondary transfer after patients have been assessed and stabilized in these centres. By shifting the burden of care for acutely ill patients to the larger sites, the difficulties encountered in subsequent transfer may be minimized or eliminated.

Notwithstanding the above, it is recognized that it will require a deliberate and planned program before the ultimate service delivery model can be achieved. It is suggested, as a first step, that the current pattern of service delivery default to a 16 hour per day prompt care at both sites. This can be accomplished with minimal disruption to the current service delivery model.

It will, however, require a great deal more planning and support in order for the ultimate transition in the care model to be accomplished. In addition to the support of the Local Health Integration Network and the Ministry of Health, it will be necessary to engage a variety of providers, services and personnel in the development of the ultimate model. Until such time as all of the Niagara Emergency Medical Services, Community Care Access Centres, family physicians, Community Health Centres, and other health professionals express their commitment to and support of this model, and any necessary physical plant modifications have taken place, the prompt care model should continue. Only once all of the above have been achieved, (ideally within a three to five year time frame), will this ultimate vision be realized.

Anticipated Benefits of Proposed Model

The anticipated benefits to this recommendation include but are not limited to:

- Improved quality of care and access for acutely ill patients currently transferred from smaller sites to the larger sites where comprehensive diagnostics and clinical specialists are available 24/7.
- Improved quality of care and access to patient's presenting to the Emergency Department by shifting those Complex Care, ALC and reactivation patients awaiting in-patient beds in the ED's to Centres of Excellence in Port Colborne and Fort Erie.
- Improved quality of care and follow-up based on the needs of a population who may require enhanced supportive services of Physiotherapists, Respiratory Therapists, Social Work, Pharmacists and a Geriatric Emergency Management Nurse in order to remain at home within their community.
- Improved quality of care through the formation and evolution of current or future community provider partnerships (i.e. CCAC, Stay at Home Program etc.) to provide seamless, safe and supported transition back to the community.
- Improved service delivery, Right provider, Right Care, Right time, Right patient.
- Consistency and standardization across all sites within the ED program (utilization of Standard Medical Directives, Order sets and Care Pathways in collaboration with other specialties/programs).
- Improved ability to recruit and retain certified Emergency Nurses and Physicians through improved job satisfaction in a work environment focusing on the delivery of "Best Practice in Emergency Care".
- Anticipated improvement and compliance in alignment with the MOHLTC initiatives for "ED Wait Time Strategies" and CTAS Standards of care.
- Reinvestment in core service provision of Emergency Services to support the ED's at WHC, SCGH and GNGH to meet the needs of the population served by the NHS.
- Alignment with NHS success factors.

Critical Enablers to Support the ED Vision

The following are critical enablers to support the proposed vision for ED services in the NHS:

- ✓ Build upon the collaborative working relationship between Niagara EMS and the NHS to support implementation;

- ✓ The development of strong patient distribution protocols for ambulances to ensure patients arrive at the proper destination;
- ✓ Public education on the appropriate use of Emergency Departments;
- ✓ Public education on appropriate use of ambulance for urgent/life-threatening conditions only, using other forms of transportation for non-urgent conditions [Niagara EMS has a significantly higher per capita utilization of ambulance service than the Ontario average];
- ✓ MOHLTC consideration of funding of a Critical Care Transport Team within Niagara;
- ✓ Investments in primary and chronic disease management programs in the community.

8.2.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care:		
▪ Effective	○	●
▪ Efficient	○	●
▪ Equitable	●	●
▪ Safe	○	●
▪ Patient Centred	○	●
▪ Timely	●	●
▪ Work Life Focus	○	●
▪ Population Focus	●	●
▪ Continuity of Service Focus	●	●
B. Compliant with:		
NHS Success Factors	●	●
MOHLTC Policy	○	●
HNHB LHIN Policy	○	●
C. Leverages health professional resource pool	○	●
D. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
E. Leverages physical plant capacity	○	●

8.2.5 Narrative Analysis of the Evaluation

8.2.5.1 Optimizes Quality of Care

Effective

The creation of two comprehensive primary care centres and three fully functioning emergency departments will result in a highly effective, highly efficient model of comprehensive primary care in Fort Erie and Port

Colborne. In addition to its effectiveness and efficiency, this model will be configured to assure the absolute safety of the population, and will, when realized, result in enhanced health care outcomes for the population.

The consolidation of emergency department services at the three remaining sites will result in a sustainable, safe, high-quality pattern of care in the those emergency departments. It will allow, in combination with suggestions made elsewhere in this report regarding issues such as the provision of consulting services, the consolidation of consulting services, the advent of clinical decision units, and other innovations, for more timely assessment of patients by consultants, and much more effective throughput and clinical decision making.

Efficient

The services offered at the DMH and PCGH will be optimally efficient owing to the broader array of primary care services, and a physical plant and service alignment which is configured to meet the specific needs of the population.

The care will become a great deal more efficient owing to the volume of patient services which will facilitate recruitment and retention of staff, and clinics and service delivery model changes which will also enhance quality of life in the workplace and facilitate provider recruitment and retention.

The designation of sites as centres of excellence in certain areas of care (e.g. cardiology) will allow for more efficient use of ambulance services, and the alignment of infrastructure to support the emergency department activity including diagnostic and therapeutic resources also enhance efficiency.

Equitable

While currently operating as a "program" the resources and services available to patients presenting to the emergency departments are not consistent. For instance, those presenting to the smaller sites in need of consultation are currently required to await transport, and subsequent treatment in another site. By consolidating all patients with high acuity needs in a smaller number of sites, the timeliness of service will be enhanced.

In addition, by ensuring that those with higher acuity needs are initially evaluated in centres invested with more sophisticated diagnostic resources [such as CT scanners] the timeliness of access and equity of care will also improve.

Safe

Currently, while operating as a unified "program" there is a lack of standardization of approaches to care in the sites offering emergency

services. The consolidation to a smaller number of sites will facilitate the development of policies, care maps, and other protocols designed to ensure consistency, and conformity with evidence based and best practices. In addition, the ability to consolidate trained medical and nursing staff to a smaller number of sites will allow for increased staffing, as well as the provision of care by practitioners with specific training and aptitude for emergency medicine.

Ensuring that patients who are critically ill are treated in sites where access to consultation, operating rooms, and critical care units is available in a short time frame will maximize the safety of care.

Treating patients in an environment where a fuller array of diagnostic and support services are available will further enhance patient safety.

Work Life Focus

As indicated in other sections, there is currently a significant shortfall in the human resource pool of trained emergency physicians and nursing staff. Consolidating emergency services to a smaller number of sites will ensure a sufficiently large cadre of providers, thus decreasing the need for the use of agency provided nursing and medical staff. The presence of such individuals in the department is perceived as contributing to stress and burnout amongst the hospital's regular providers, and it is anticipated that minimization of this need will improve quality of life in the workplace.

Additionally, other improvements in the clinical care model, such as improved consultant response times, and the use of protocols for investigation and treatment, should minimize the numbers of admitted patients, the delays experienced by patients in gaining access to care, and stress on care providers.

Timely

In multiple other sections of this report, we have made reference to the accelerated access to care which will be experienced by patients as a consequence of the new model of service delivery. It is anticipated that if the service delivery model changes as suggested the Niagara Health System will be able to be compliant with the Ministry of Health guidelines regarding time intervals from triage to physician interview, and from admission order to transfer.

Population Focus

We believe that the comprehensive primary care model suggested for the Port Colborne and Fort Erie sites will serve as a model both provincially and nationally for the provision of care for primary care services. It will be integrated, comprehensive, and allow for extended hours of service.

Consolidation of higher acuity patients in the remaining sites will allow for the optimization of care, and maximization of the use of non-physician or nurse professionals, such as social workers, physiotherapists, and others to optimize the quality of care in these venues as well.

Additionally, the consolidation of patients requiring care for special services, such as cardiology and acute stroke will be enhanced by ensuring that such patients are treated across a fewer number of sites.

Continuity of Service Focus

The co-location of an after-hours service facility and family physician offices in the Port Colborne and Fort Erie sites ensures easy access to patient records, as well as to the records of after-hours services at such time as patients return to their primary care physician for treatment. In addition, primary care physicians will be able to access laboratory and diagnostic imaging results in a seamless manner, further enhancing the continuity of service.

Patients seen at the St. Catharine's General, Niagara Falls, or Welland County sites will be supported by the proposed development of follow-up clinics and clinical decision units which will allow for extended management of emergency presentations which may stabilize with such care [e.g. asthma, abdominal pain of unknown origin, head injuries, etc.] or re-evaluation within 24 to 48 hours for a variety of other health care problems, allowing patients to be discharged to the community with the assurance of rapid access to follow-up evaluation and/or consultation.

8.2.5.2 Compliant with NHS Success Factors and MOHLTC/HNHB LHIN Policies

The Centre of Excellence model is aligned with the NHS' Corporate *Success Factors* as outlined below:



Focus on those we serve

- Enhances provision of high quality and sustainable care.
- Facilitates investment in enhanced community services and supports to meet the needs of patients/clients as close to home as possible.



Bring out the best in each other

- Enhances the quality of work life for staff by improving relationships and increasing teamwork within the Emergency Services program.
- Provides three unique but like groups of staff to learn from and support one another across the continuum.
- Creates potential to develop new roles such as Advance Practice Nurses/Clinical Nurse Specialists/Nurse Practitioners and integrate a patient-focused Inter-professional model of care.



Build strong and successful relationships

- Facilitates collaborative relationships with community service providers in providing care and support to patients/clients to enable a seamless transition from the ED to home with enhanced support.
- Creates more opportunities to partner and link with universities and colleges to facilitate learning [e.g., student placements] as well as research.



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.



Use our resources wisely

- Facilitates efficient use scarce human resources and affords the opportunity to standardize equipment across sites, move less used equipment to an area of higher utilization, and expend on enhanced technology to support our patients and families.

MOHLTC and HNHB LHIN

Performance in the realm of emergency care and service is at the forefront of priorities as expressed by the Ministry of Health and Long Term Care as well as the LHIN and the consuming public. Expectations to improve service, access, wait times and overall performance dominate the discussion of emergency services in all of these agencies and bodies. The program service model which we are describing will address all of these concerns, and demonstrate considerable improvement over the historic performance of the organization.

8.2.5.3 Leverage Health Professional Resource Pool

The model suggested above, incorporating the use not only of physicians and nurses, but a variety of other professionals, will incorporate and maximize utilization of skill sets of a variety of health care providers. Such models of care have consistently been demonstrated to improve outcomes in the emergency department, improve provider satisfaction, and maximize professional recruitment and retention.

It will also allow, as indicated above, to concentrate resources focused on the needs of specific patient populations, such as the elderly.

8.2.5.4 Recognizes Changing Community Demographics and Population Health Needs

This model recognizes the predominance of the need for treatment of high volumes of low acuity patients in the Port Colborne and Fort Erie sites, while providing and ensuring access to quality care in a safe manner for the

small number of patients requiring more intensive investigation or treatment at other sites within the Niagara Health System.

Concomitantly, the patients living in Niagara Falls, Welland and St. Catharines will continue to have access to comprehensive emergency services on a 24/7 basis as they have in the past. As a consequence of this, and other innovation, they will benefit from more timely access to investigations and consultation as well as admission.

8.3 Mental Health Program

8.3.1 Current State

The Niagara Health System Mental Health program offers both in- and out-patient services at three of its sites: St. Catharines General, Greater Niagara General and Welland. In addition, new tertiary in-patient and ambulatory care services are slated to be operational in Niagara with the opening of the new healthcare complex in 2011/2012.

Across the three sites, there are a total of 58 beds staffed and in operation. In-patient activity is profiled in the following tables. Highlights include:

- There were a total of 2,388 separations in 2007/08, which is significantly higher than expected based on a comparison with the average provincial rate of separations⁹.
- There is a low average length of stay [ALOS] across all three sites ranging from 5.3 to 8.8 days; a reasonable, best practice target for ALOS is generally 12-14 days (CAMH Consulting Unit, 2001).
- Occupancy rates are also lower across all three sites [ranging from 66 to 78%] than best practice targets of 85%.

⁹ The Ontario average for mental health separations from General Hospitals with acute mental health beds in 2004/05 was 452 separations per 100,000 population. Based on this, it would be expected that there would be 1,800 inpatient visits per year for the NHS [versus actual of 2,388], using the 2006 census population. This reflects issues with utilization of the acute care unit as well as lack of access to 24 hour a day, 7 day a week crisis services and other community supports.

Exhibit 54: NHS Mental Health Inpatient Activity, 2006/07

KEY STATISTICAL INDICATORS			
April 2006 - March 2007			
	GNG	SCG	WHS
Avg Beds Available	25	18	16
Avg Beds Staffed and in Operation	24	18	16
Avg Beds Days Staffed and in Operation	8,760	6,448	5,840
Patient days	6,526	5,055	3,681
Separations	968	609	695
ALOS	6.7	8.3	5.3
% occupancy	74.5%	78.4%	63.0%

Exhibit 55: NHS Mental Health Inpatient Activity, 2007/08

KEY STATISTICAL INDICATORS			
April 2007 - March 2008			
	GNG	SCG	WHS
Avg Beds Available	25	18	16
Avg Beds Staffed and in Operation	24	18	16
Avg Beds Days Staffed and in Operation	8,784	6,588	5,856
Patient days	6,329	5,120	3,847
Separations	1,033	585	720
ALOS	6.1	8.8	5.3
% occupancy	72.1%	77.7%	65.7%

8.3.2 Case for Change

Best Practice

The current array of acute in-patient services across the three sites is *not* in keeping with the best practice framework for Schedule 1 in-patient units (CAMH Consulting Unit, 2001), as outlined previously.

Duplication

Inherent in a three site model is duplication of core services, resulting in little residual ability to invest increasingly scarce resources in enhanced acute care/supports. In addition, the current in-patient units function as separate and distinct services as opposed to a regional integrated program. This further creates confusion related to multiple “points of entry” as patients/clients are not clear on the “best” place to go for care.

Special Populations

Special populations with mental health needs continue to grow in Niagara and there are insufficient resources to invest in appropriate services to meet the demand. For example, the number of children who are in need of in-patient acute care is increasing [children represented 10% of the in-patient mental health admissions in 2007/08] but neither the physical environment

nor care model is capable of adequately supporting their needs. This is similarly the case with the specialized needs of psychogeriatric patients.

Acute Role, ‘Scope Creep’

Psychiatrists are increasingly concerned about the scope of practice associated with general in-patient psychiatry. The need to facilitate specialization within a psychiatric practice is increasingly identified as a need both from a quality of care perspective but also to aid in recruitment and retention of health professionals. In addition, the significant shortage of community-based psychiatrists and community services has fostered hospital-based acute care functioning as a de facto short-term crisis service and ‘*safety net*’ as opposed to its role in providing an intensive, acute care therapeutic milieu. As a result, there are high rates of short stay admissions, low occupancy rates, and high readmission rates¹⁰ across the sites which are concerning from a quality of care perspective.

Health Human Resources and Sustainability

The shortage of psychiatrists in Niagara is compounded by the aging of the current complement of psychiatrists. Access to a shrinking pool of psychiatrists is paramount to a national crisis. In addition, the current complement of psychiatric nursing staff is also aging very rapidly. The sustainability of a three site acute care of model is in question simply from a health professional perspective.

Physical Environment

Although the capital equipment needs of a mental health program are minimal in comparison to other areas of medicine, the physical environment is fundamental to the treatment and safety of patients. There is a growing body of literature that is reinforcing the need for an appropriately designed physical environment that is more conducive to treatment and healing from both a patient and staff safety perspective. This includes for example, private rooms, outdoor spaces, therapeutic program areas, as well as an environment that minimizes escalation of aggression and other psychiatric symptoms that may be triggered by environmental factors. None of the existing acute mental health units offer an appropriate physical environment for patients with serious mental illness

Academic scholarly enterprise

The need to create an environment of excellence supported by research and teaching is critical in Niagara. A new way of delivering mental health care offers the promise of a compelling environment to attract and develop

¹⁰ Supporting data is provided in the narrative following the evaluation using the decision matrix.

leaders in mental health care in Niagara who can deliver excellence in patient/client care.

Exhibit 56: Comparison of Schedule 1 Best Practice and NHS Current Capacity

Best Practice For Acute Schedule 1 Units	NHS Current Capacity
Emergency Department: <ul style="list-style-type: none"> ▪ 24 hour, 7 day a week crisis service ▪ Holding beds, with LOS up to 72 hours 	<ul style="list-style-type: none"> ☒ No 24/7 crisis service ☒ Holding beds only at St. Catharines General site
In-patient assessment/treatment	<ul style="list-style-type: none"> ☒ Low occupancy across all sites ☒ No Psychiatric Intensive Care Unit at any site ☒ Limited multi-disciplinary team to support the therapeutic relationship [social work, recreational therapists, occupational therapists, psychologists] ☒ No paediatric mental health unit
Partial Hospitalization [role of partial hospitalization is to provide assessment and stabilization functions while permitting ongoing integration of the patient into the community]	☒ No partial hospitalizations
Discharge Planning	☒ Inconsistent discharge planning with community providers
Ambulatory Care	☒ Need for more comprehensive ambulatory services using a satellite model
Consultation/Education	☒ Limited support to community providers, including primary care physicians
Coordination/integration	☒ Inconsistent community planning/integration

In addition to challenges associated with meeting best practice standards within a limited envelope of resources, there are additional pressures for both the community and hospital sector which continues to impact the ability to deliver state-of-the-art psychiatric services for Niagara residents, further outlined below.

**Exhibit 57: Community and Hospital Sector Pressures
Impacting NHS Mental Health Services**

Community Service Pressures	Hospital Pressures
Lack of affordable and decent supportive housing to support ongoing community care	Aging workforce – nursing and psychiatrists
Lack of psychogeriatric assessment and treatment services	Lack of regional on-call system among psychiatrists; onerous site call schedules [e.g., 1 in 2]
Limited child/adolescent assessment and treatment services	Aging infrastructure and inadequate physical design
Only 1 Assertive Community Treatment Team [ACTT] – insufficient capacity for Niagara	Need for appropriate psychogeriatric assessment and treatment services
Need for better integration with hospital and addictions sector	Need for appropriate child/adolescent assessment and treatment services
Shortage of community-based psychiatrists	Shortage of psychiatrists

8.3.3 Proposed Service Delivery Model

Mental health services, more than any other hospital based services are very highly linked and dependent on community supports/services. This co-dependency highlights the need for a broader based planning exercise to validate assumptions made herein related to hospital avoidance strategies, community supports or enablers, and appropriate bed sizing. In addition, this should take into account tertiary service planning with St. Joseph's Hospital. Preliminary discussions have been initiated with St. Joseph's Hospital Hamilton, the regional provider of tertiary mental health services related to the development of a Memorandum of Understanding [MoU] to support the:

- divestment of tertiary mental health and associated ambulatory care services;
- provision of advice on program specific planning for tertiary care;
- development of a regional mental health vision to validate the service needs for acute and tertiary hospital-sponsored services and community services.

Senior staff of both organizations are developing a draft MoU for respective CEO/Board consideration.

The introduction of new tertiary services in Niagara provides a unique opportunity to think creatively about the delivery of hospital-based mental health services. Specifically, it provides the opportunity to leverage investments in specialized programs to create new, shared services to meet the needs of patients who require short [acute] as well as longer-term [tertiary] care and support. This is an exciting opportunity to build on the

synergies of both systems and create a model for a sustainable in-patient mental health system in Niagara.

The vision for acute and tertiary mental health care in Niagara is of *one Centre of Excellence for Mental Health Care*. Specifically:

- Consolidate from 3 to 1 acute in-patient mental health unit. Acute unit to be co-located with the new tertiary mental health program at the new St. Catharines healthcare complex to facilitate sharing of physical space as well as staff/programs.
- This will include creation of a dedicated Emergency Psychiatric Team [EPT] with dedicated crisis beds in the Emergency Department at the St. Catharines healthcare complex.
- Expansion of the current community partnership crisis service to a 24 hour a day, 7 day a week mobile response team to respond to patients in crisis wherever they are in Niagara.
- Creation of out-patient services at the Greater Niagara General and Welland hospital sites, supporting patient/client community reintegration. This will also include the opportunity to develop out-patient program satellites in partnership with the Community Health Centres of Fort Erie/Port Colborne.

This vision speaks to a clinical service model that is based on reinvestment of current resources as well as investment of new tertiary resources.

8.3.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care: <ul style="list-style-type: none"> ■ Effective ■ Efficient ■ Equitable ■ Safe ■ Patient Centred ■ Timely ■ Work Life Focus ■ Population Focus ■ Continuity of Service Focus 	<p>○</p> <p>○</p> <p>●</p> <p>○</p> <p>○</p> <p>●</p> <p>○</p> <p>●</p> <p>○</p>	<p>●</p> <p>●</p> <p>●</p> <p>●●</p> <p>●</p> <p>●</p> <p>●</p> <p>●</p>
B. Compliant with: NHS Success Factors MOHLTC Policy HNHB LHIN Policy	<p>●</p> <p>○</p> <p>○</p>	<p>●</p> <p>●</p> <p>●</p>
C. Leverages health professional resource pool	○	●
D. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●

Evaluation Criteria	Current State	Proposal/ Recommendation
E. Leverages physical plant capacity	○	●

8.3.5 Narrative Analysis of the Evaluation

8.3.5.1 Optimizes Quality of Care

Effective

A *Centre of Excellence for Mental Health Care* in Niagara that hosts both acute and new tertiary services will result in a significant critical mass of both patients/clients and providers to support a sustainable, effective mental health hospital system that is in keeping with best practice standards. In addition, this still represents significant system enhancements, with over 80 in-patient beds, increased community service capacity for specialized and acute care to facilitate hospital avoidance, and enhanced synergies with the Centre for Excellence in Addictions Services.

In-Patient Care

A single site in-patient model will enable a streamlined designated access point for hospital admission and care that is based on standardized protocols and best practice. This single site model will also facilitate better coordination with community service providers to facilitate patients/clients being supported at home rather than in in-patient settings.

The literature as well as shifts in provincial health policy [originating in 1993 with *Putting People First*] offers support that the most effective model for mental health services is to ensure that there are sufficient community based services for individuals with serious mental illness. More specifically, this has been articulated as a need to shift the majority of resources to support community rather than hospital-based services [60/40 split of resources]. With this investment, the need for both acute and tertiary beds has been shown to be decreased. Similarly, much of the literature has also identified the need for alternatives to acute hospital beds such as safe beds, 24 hour crisis services, supportive housing and outpatient services. The hospital may then concentrate on its role to provide urgent medical and psychiatric assessment and treatment for those who require high intensity or immediate support.

People with serious and persistent mental illness show significant improvement in their community functioning, quality of life, symptoms and use of substances when involved in community mental health programs. They experience fewer crises, require less frequent hospitalization and visit the emergency rooms less often (Community Mental Health Evaluation Initiative, 2002).

The HNHB LHIN's Integrated Health Services Plan also called for community investment and coordination/integration in mental health care as a key priority to facilitate ease of access to services [i.e., away from the current multiple entry points].

There is also similar support for investment in community care for patients requiring higher level tertiary support including hospital avoidance alternatives such as Assertive Community Treatment Teams [ACTT], intensive case management and high support housing. In some jurisdictions, there has been a significant reduction in the need for tertiary beds when this investment has been made.

In addition, it is well recognized that over 60% of patients with a serious mental illness also have addiction or substance abuse issues. A Centre of Excellence will provide an opportunity to deliver more effective and targeted programs for the concurrent disorder population. In addition, there will be opportunities to link more effectively with a Centre of Excellence for Addictions Services.

Bed Planning Targets

In early 2000, in-patient mental health bed targets identified 35 beds per 100,000 as a bed planning goal, representing 14 beds per 100,000 for tertiary care and 21 beds per 100,000 for acute in-patient Schedule 1 units. This was refined from the original and more aggressive target of 30 beds per 100,000 population, with 12 beds for tertiary and 18 beds per 100,000 for acute in-patient beds (CAMH, May 2001).

However, it is acknowledged that benchmarks should be viewed as a mechanism to promote system change not an end in themselves. For example, reports from those US states who have invested in alternative community settings for tertiary care have reduced their bed numbers to 7 -8 per 100,000 population. The Centre for Addictions and Mental Health [CAMH] research group reports that it would be reasonable to estimate that with adequate specialized outreach and alternative residential settings, the number of in-patient hospital beds required for tertiary care would be between 7-10 per 100,000 population (Tertiary Mental Health Services, Journal of Canadian Psychiatry, 2000).

The vision for a Centre of Excellence reflects a total consolidated bed capacity of 88 beds in Niagara [including 4 acute paediatric mental health beds], which represents an overall increase in in-patient service capacity. This increased bed capacity will be a combination of flexible short and specialized [long-term] in-patient support:

Historical bed utilization of acute services within the Niagara Health System and improved occupancy targets points to the opportunity to consolidate all in-patient services, including acute care repatriation potential from St.

Joseph's Hospital Hamilton. In 2007/08 the NHS inpatient mental health beds operated at an average occupancy of 71.9%. At the target occupancy of 80% for a consolidated unit, this was equivalent to 52 acute inpatient beds.

**Exhibit 58: 2007/08 NHS Mental Health Beds and Occupancy
(Ontario MOHLTC Daily Census Summary)**

NHS Site	Number of Mental Health Inpatient Beds					
	Acute Psych.	Addiction	Forensic	Crisis Unit	Long Term	Total
Welland County	16	0	0	0	0	16
Greater Niagara	24	0	0	0	0	24
St. Catharines	18	0	0	0	0	18
Total	58	0	0	0	0	58
NHS Site	Average Percent Occupancy of Mental Health Beds (07/08)					
	Acute Psych.	Addiction	Forensic	Crisis Unit	Long Term	Total
Welland County	62.8%	0.0%	0.0%	0.0%	0.0%	63.1%
Greater Niagara	72.0%	0.0%	0.0%	0.0%	0.0%	72.0%
St. Catharines	79.5%	0.0%	0.0%	0.0%	0.0%	79.5%
Total	71.8%	0.0%	0.0%	0.0%	0.0%	71.9%

In addition to the inpatient mental health beds in the NHS, residents of Niagara also used inpatient mental health (both acute and tertiary) beds at St. Joseph's in Hamilton. The following table shows the equivalent number of beds used by Niagara residents for 2006/07 and 2007/08. In 2006/07 the use of inpatient mental health beds at St. Joseph's by Niagara residents was equivalent to 23 beds. Approximately 20 beds were used by Niagara residents in 2007/08.

**Exhibit 59: 2007/08 NHS Mental Health Beds and Occupancy
(Ontario MOHLTC Daily Census Summary)**

Inpatient Mental Health Activity in Hamilton	2006/07	2007/08
Acute Care Inpatient Cases	82	68
Acute Care Inpatient Days	1,717	1,674
Average Acute Care LOS	20.9	24.6
Equiv. Acute Care Beds @ 80%	5.9	5.7
Tertiary Inpatient Cases	91	62
Tertiary Inpatient Days	5,093	4,158
Average Tertiary LOS	56.0	67.1
Equivalent Tertiary Beds @ 80%	17.4	14.2
Total Equivalent Beds	23.3	20.0

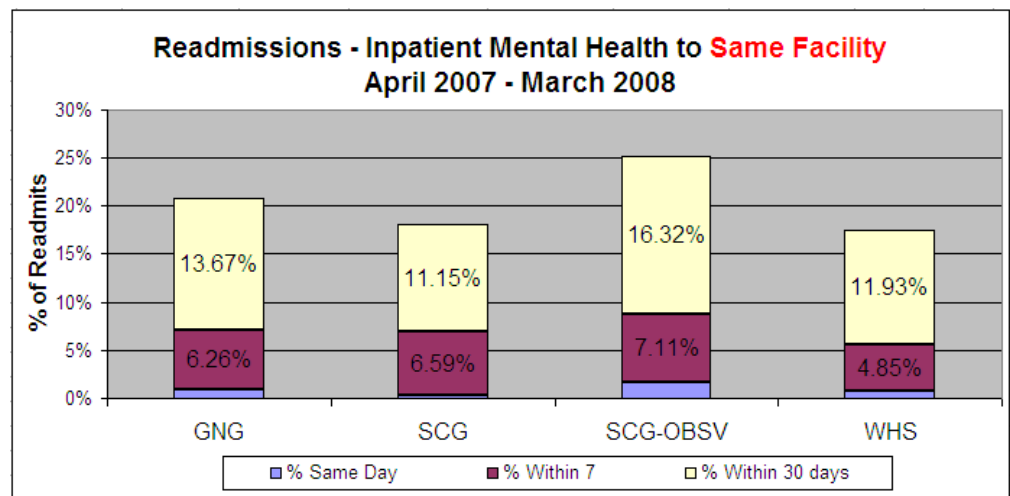
Coupled with the 52 equivalent acute inpatient mental health beds in the NHS, the total effective inpatient mental health capacity available to Niagara

residents has been 72 to 75 beds. The plan for NHS mental health services would provide 88 inpatient beds consolidated on a single site. This represents a significant increase in the inpatient mental health capacity available to Niagara residents.

Readmissions to Same Facility

Across the three sites, there is a high readmission rate of acutely mentally ill patients. This raises concerns from an effectiveness perspective. Specifically, this ‘revolving door’ phenomenon is likely largely reflective of a lack of community supports including crisis services and stabilization.

**Exhibit 60: Percent Readmissions to Same Facility
for NHS Mental Health Units by Time**



Reinvestment in a Regional Mobile Crisis Team and Dedicated Emergency Psychiatric Team [EPT]

A regional, *mobile crisis team* and EPT will provide access to a 24 hour, 7 day a week crisis service which has demonstrated the ability to facilitate hospital avoidance and shorter length of stay in other jurisdictions.

In a 2005 Hay Benchmarking of Canadian Hospitals report, it is noted that “Across Canada, over 60% of the medical and mental health patients are admitted via the ED...Unplanned admissions through the emergency department require hospitals to respond to unpredictable demand. For some types of patients, an unplanned or crisis admission through the emergency department may also reflect the lack of appropriate care in the community that is necessary to support the patient outside of hospital.”

Although the Hay benchmark is 60% for unplanned admissions, the three NHS sites have consistently higher rates at 78% and higher, speaking to factors such as lack of community supports including comprehensive crisis care and shortages of community-based psychiatrists.

Further, the best practices literature has identified the critical role of crisis services to facilitate hospital admission avoidance. In 2007/08, the average number of patients who had crisis intervention support prior to admission ranged from 42% at GNGH and WCH to 59% at SCGH. This rate of crisis intervention prior to admission should ideally be higher. The current utilization rate is attributed to a number of factors including:

- insufficient access to 24 hour a day/7 day a week crisis support;
- current use of general hospitals as de facto crisis services results in an increasing number of patients who are admitted by Emergency Department physicians under a Form 1 for mandatory assessment. Introduction of an EPT will facilitate this assessment in the ED rather than current practice of admission which could be avoided. This also has a potential negative impact on patients/clients as they then have a formal history of a psychiatric admission.

Further, in a 1997 paper endorsed by the Canadian Psychiatric Association, it is suggested that up to 40% of acutely mentally ill persons presenting for admission can be managed in alternative care settings including day hospitals or intensive ambulatory care. Psychiatric assessment prior to admission is critical for assessing alternate care.

Efficient

A Centre of Excellence for Mental Health Care in Niagara that hosts both acute and new tertiary services will result in a significant critical mass of both patients/clients and providers to support a sustainable and efficient mental health hospital system. This will facilitate a regional approach to care.

This model supports a philosophy of ‘doing more with less’; specifically, by pooling scarce human resources, there is the potential to streamline the number of psychiatrists who need to provide in-patient coverage which can be offset with other psychiatrists providing needed specialized services, community outreach and ambulatory care. For example, currently there are two child psychiatrists in Niagara who do not have capacity to focus solely on their specialty from an in-patient perspective but rather must provide general psychiatric services to sustain the number of in-patient units across multiple sites.

In the late 90’s, three acute care sites were consolidated into one acute mental health unit in London Ontario. This was initiated through growing concern regarding physician coverage at the three sites and recognition that administrative efficiencies and increased academic appointments could be achieved through consolidation. Most importantly the authors indicate that the critical mass of professionals providing acute mental health improved the delivery of accessible, quality care in a more organized, streamlined way

(Consolidation of Acute Mental Health Services in London Ontario Mitchell, Kulkarni, Persad 1998).

The availability of Schedule 1 beds with well functioning inpatient and outpatient services and good community based service systems can dramatically lower the need for tertiary care. In reformed mental health systems, effective tertiary care relies highly on the regional schedule 1 facilities taking on the role of gatekeeper to the tertiary level system (Clarke Consulting Group 1998).

In contrast to past reliance on inpatient settings for tertiary care, more flexible portable options may also be considered such as Assertive Community Treatment teams or delivery of tertiary care in long term home settings which allow individuals to maintain community tenure (Tertiary Mental Health Services, Canadian Journal of Psychiatry, CAMH Group 2000).

Equitable

This model allows all residents of Niagara access to care in a state-of-the-art facility facilitating a higher and consistent standard of care [e.g., Psychiatric Intensive Care Unit [PICU], linkage with tertiary services, etc.].

Safe

For mental health services, a large majority of safety issues can be categorized into two areas: admission practices and therapeutic/design principles. An External Review of the Greater Niagara General in-patient unit [2005] specifically identified safety issues relating to Emergency Department practices and the therapeutic environment. These issues can only be resolved through significant capital renovations.

It is recognized as best practice that mental health units should have specially designed Psychiatric Intensive Care unit's to adequately address stabilization, close observation and medical co-morbidity factors that results in a safe environment for both patients/clients and staff. This is not possible to achieve in the present three site system, both from a staffing and physical environment perspective.

The design of inpatient mental health units need to reflect the emphasis on safety, recovery, shorter stays and the patient's role in their treatment. They need to be places of treatment and preparation for return to community. People need access to the outdoors but still be in a secure setting. Given the huge variety of mental states and behavioural issues, patients need to be cohorted in small groups and preferably in private rooms. Design must allow

for patients to control their social interaction and find their own safety¹¹. This is not possible to achieve in the present three site system.

Patient-Centred

In keeping with mental health reform policy, by consolidating psychiatric resources including psychiatrists, there is potential to create capacity to provide urgent consultation to primary care providers [i.e., the literature supports that 60% of mental health clients/patients can be adequately maintained by primary care practitioners]. This supports a “Shared Care” model which is more humane and patient-centred from a patient/client perspective [e.g., less stigma and more normalized].

A humane in-patient system is one that embraces how the environment and access to outside space can contribute to the overall treatment aspect of care.

The Centre of Excellence approach calls for a significant investment in community services. This is argued as a more patient-centred approach to care. The current ‘revolving door’/high readmission rate is not patient-centred from a patient/client perspective.

Timely

Introduction of a mobile urgent crisis team and EPT facilitates improved timeliness of care for patients/clients. Specifically, the EPT will reduce current wait times in the EDs by providing dedicated and focused response and triage to patients/clients.

There is some evidence that for out-patient/ambulatory services, the farther the driving distance the more likely people will not present for appointments or will drop out of care. By locating outpatient services in the communities of Niagara Falls, Welland, Port Colborne and Fort Erie, this will facilitate ease of access.

Work Life Focus

The Centre of Excellence model supports improved quality of worklife for staff; a new, specially built physical environment that has patient and staff safety as a major focus will significantly increase staff satisfaction and morale.

In addition, it has the potential to further enhance the quality of worklife for staff by creating a new “culture”, working to improve relationships and

¹¹ Specific safety considerations for mental health units include: ability to maintain high level of observation, avoidance of blind corners, flush mounted and unbreakable fixtures, unobtrusive alarm systems, natural light, natural ventilation, temperature control, privacy, adequate space, and provision of separate space for psychiatric intensive care.

increase teamwork within the mental health program [as opposed to a competitive and equally stretched three site model].

Critical mass is a key element in enhancing recruitment and retention of professional staff which are essential for a sustainable health care system. Sufficient capacity for continuous coverage prevents burnout, disruption when a practitioner leaves and promotes continuity of care for patients. Under the current delivery model, the shortage of nurses, psychiatrists and other professionals is posing significant worklife challenges.

A Centre of Excellence promotes consistent standards of practice, improved access to education, enhanced ability to realize scope of practice and more efficient work processes.

Population Focus

The needs of patients/clients with serious mental illness are growing in scope and complexity. For example, there are a significant number of co-morbid conditions [e.g., diabetes, cardiovascular, obesity], increasing number of patients with concurrent disorders [addictions] as well as other syndromes such as Fetal Alcohol Syndrome and developmental disorders. All of these population needs supports the need for more specialized team of professionals, both in the acute care and specialized/long-term care areas. The Centre of Excellence in Mental Health will allow for this focus on population needs.

The Centre of Excellence in Mental Health better meets the needs of patients with serious mental illness as there is an ability to define and centre on core components of a contemporary mental health hospital service. This includes responding to patients/clients' immediate crisis needs by a trained psychiatric team, ability to safely respond to those who are violent, aggressive or in need of close observation separate from the general population of mental health patients, targeted unit for paediatric patients so they are no longer co-located in an adult mental health unit [without appropriate care and support], more comprehensive and robust team of professionals for assessment, treatment and purposes which will provide better discharge planning and needed guidance/consultation for community providers who will carry on treatment plans.

Continuity of Service Focus

The Centre of Excellence model with the associated investment in 24/7 crisis services as well as community and shared care will better meet the needs of patients in Niagara by providing day-to-day care as close to home as possible as well as improved community linkages.

8.3.5.2 Compliant with Policy

NHS

The Centre of Excellence model is aligned with the NHS' Corporate *Success Factors* as outlined below:



Focus on those we serve

- Enhances provision of high quality and sustainable care.
- Facilitates investment in enhanced community services and supports [e.g., 24/7 crisis service] to meet the needs of patients/clients as close to home as possible.



Bring out the best in each other

- Enhances the quality of worklife for staff by improving relationships and increasing teamwork within the mental health program.
- Provides a critical mass of staff to learn from and support one another.
- Creates potential to develop new roles such as Advance Practice Nurses/Clinical Nurse Specialists/Nurse Practitioners.



Build strong and successful relationships

- Facilitates closer relationship with community service providers in providing care and support to patients/clients.
- Creates more opportunities to partner and link with universities and colleges to facilitate learning [e.g., student placements] as well as research.



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.



Use our resources wisely

- Facilitates efficient use scarce human resources.
- Minimizes the need for capital renovations at multiple sites in order to meet environmental best practice standards.

MOHLTC and HNHB LHIN

It is largely acknowledged that the focus of the seriously mentally ill became a health policy priority in 1993 with the release of *Putting People First*. The vision of a comprehensive mental health service delivery system embraced a shift from institutional to community services and a highly integrated and coordinated system. The model of a Centre of Excellence for Mental Health Care is highly contingent on investment in community services to reflect government priorities and achieve positive system changes such as those highlighted below:

- Frontenac Community Mental Health Service in Kingston reported a 60% reduction over 8 years in total length of time people spent in hospital in that agency's housing program. Waterloo Regional Homes for Mental Health in Waterloo report an 89% reduction in average amount of time people spend in hospital after becoming involved in the supportive housing program.
- CMHA Toronto reports a decrease in total hospitalization costs from \$1,358,136 to \$172,692 for 56 people receiving comprehensive case management services in Toronto (The Benefits of Funding Addiction and Mental Health Services, Ontario Federation of Community Mental health and Addiction Program 2004)

8.3.5.3 Leverages Health Professional Resource Pool

By 2013, 65% of all mental health RNs and 56% of all mental health RPNs will be eligible for retirement. Clearly, from a health human resource perspective, the sustainability of the mental health service is in jeopardy.

Similarly, the need for psychiatrists to sustain a hospital-based service is fragile. There are currently 12 hospital-based psychiatrists in Niagara, of which 6 or 50% are over the age of 65. There is a current need for 16 psychiatrists and that is projected to grow to a need for 25.

The plan to create a Centre of Excellence for Mental Health Care will aid in recruitment efforts for psychiatrists by facilitating a more manageable call schedule and therefore enhanced quality of worklife [assists with retention as well]. In addition, a new state-of-the-art facility with a strong link to an academic department of psychiatry at McMaster has the promise of an attractive environment for psychiatrists, nurses, and allied health professionals.

8.3.5.4 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

Introduction of current and new treatments such as ECT as well as access to enhanced diagnostic capability is better supported at a single site, minimizing duplication in these specialized areas.

Recruitment difficulties are further challenged in that Psychiatrists prefer to work in an area connected with an academic environment. This becomes further pronounced in subspecialty areas such as child psychiatry or geriatric psychiatry. The current system does not allow for sufficient opportunities for specialized clinical experience, access to diagnostic/technological resources, education, training and research.

8.3.5.5 Leverages Physical Plant Capacity

The current infrastructure across all three acute mental health units is a serious concern. The literature supports the need for a physical environment that allows for smaller grouping of patients with plenty of common areas to go to rather than one large space as it is imperative that people be allowed to control their social interaction.

The opportunity to leverage the building of a dedicated mental health space in the new St. Catharines healthcare complex provides a timely transition to the one site Centre of Excellence.

The argument for co-locating units on one site provides patients with a wider range of possible activities, the ability to choose and vary their chosen company (especially respite from difficult relationships and conflict), greater flexibility around single and mixed gender provision and opportunities for some degree of unit environment specialization. For staff the advantages include greater opportunity for professional and continuing education, more secure administration and management structures, greater scope for internal specialization, peer support and the avoidance of intellectual isolation (Report of the London England Royal College of Psychiatrists Working Party, 1998).

This opportunity also leverages a partnership with the Maternal Child Program to develop a 4 bed acute in-patient child/adolescent unit at the St. Catharines complex. A concerning in-patient activity trend relates to the number of children/adolescents admitted to the adult in-patient mental health unit:

- 8.5 % of the admissions on the Mental Health [MH] Units were under the age of 19 in 2007/08. Children spent a total of 748 days in MH units during FY 07/08 or 4.8% of the total patient days.
- Children as young as 8 years of age are being admitted to the in-patient adult mental health unit.
- An additional 55 children were admitted to the in-patient paediatric units in 2007/08. In total, children represented 10% of the in-patient mental health admissions and 5.5% of patient days.
- Admitting children to an adult in-patient mental health unit is laden with concerns regarding effective and appropriateness of care environment.

8.4 Addictions Services Program

8.4.1 Current State

The Niagara Health System Addictions Program offers both in and outpatient services, located in 4 distinct buildings on the Ontario Street [OSS] site as well as a service at the Port Colborne General [PCGH] site.

The Addictions Programs are funded by the Ministry of Health and Long-Term Care's "Other Vote" program and are not a part of the Niagara Health System's global budget.

The Addictions Program includes:

- Men and Women's Withdrawal Management Services [WMS], a 24 hour a day, 7 day a week service for clients who are intoxicated, are in withdrawal, are in crisis related to substance use, or are in need of relapse prevention [17 beds for men and 10 beds for women]. Close to half of the clients are between the ages of 16 and 34;
- Newport Centre, a designated provincial program that offers a 35 bed short-term [18 day] intensive residential treatment program for individuals seeking recovery from alcohol or drug abuse. Over half of the individuals receiving treatment are from outside the Hamilton Niagara Haldimand Brant Local Health Integration Network and close to half of the clients are between the ages of 16 and 34;
- A Better Choice (ABC) Program offers intensive case management out-patients services for pregnant or parenting women who have concerns about alcohol or drug use;
- Out and About Methadone Program provides physician supervised harm reduction methadone treatment services;
- Primary Care Clinic offers Nurse-Practitioner led primary care supports to clients in the WMS, Newport and ABC Programs;
- Multi-Lingual Problem Gambling Program maintains a culturally and linguistically appropriate website and provides education activities;
- Branscombe Recovery House, a 7 bed transition home for women in early stages of recovery. The average length of stay is 6 months.

Program activity is profiled in the exhibit below. Highlights include:

- The number of admissions, patient days for withdrawal management and residential services and occupancy rates decreased from 2006/07 to 2007/08. This largely reflects the change in the types of drugs used by clients and a change in their withdrawal management needs. In addition, many clients elect to receive support via telephone or on a drop-in basis. As a result, there is a need to shift a portion of withdrawal management programming away from in-patient services to ambulatory day services as well as Emergency Department [ED] interventions.
- The number of methadone patients increased in 2007/08.

Exhibit 61: Key Addictions Program Statistical Indicators

KEY STATISTICAL INDICATORS				
April 2007-March 2008				
	WMS [in-pt]	Newport [in-pt]	ABC	Out & About
Admissions	1818	449	n/a	n/a
Visits	n/a	n/a	675	5705
Patient Days	5344	6258	n/a	n/a
ALOS	2.9	13.9	n/a	n/a
Occupancy	54.2%	62.7%	n/a	n/a

KEY STATISTICAL INDICATORS				
April 2006-March 2007				
	WMS [in-pt]	Newport [in-pt]	ABC	Out & About
Admissions	1915	526	n/a	n/a
Visits	n/a	n/a	787	5187
Patient Days	6212	7448	n/a	n/a
ALOS	3.2	14.2	n/a	n/a
Occupancy	63%	74.7%	n/a	n/a

Although not formally captured in the key statistical indicators, there continues to be a growing trend of clients with an addiction who also have a pre-existing mental illness [concurrent disorders].

8.4.2 Case for Change

Need to Relocate Services from the OSS site

All of the Addictions Programs at the OSS will be required to relocate in late 2011/early 2012 to coincide with the sale of the OSS property¹². All of the OSS services *except* for Addictions Programs will be relocated to the new St. Catharines healthcare complex. Therefore, alternative physical space is required to house these services. In keeping with best practice, these services are best sited in a community and non-hospital environment as they are currently.

Duplication and Inefficiency

Inherent in a multi-site residential treatment and out-patient program model is significant duplication of core staff, resulting in basic inefficiencies. By leveraging economies of scale, there will be opportunities to offer an innovative range of programs such as community and day withdrawal, early

¹² The Ontario Street properties were sold in 2006 as part of the local share to fund the new healthcare complex in St. Catharines. The transaction allows the NHS to continue to occupy the facilities until construction of the new facility is complete.

treatment, clinical support to other areas, and further develop specialized services that function more efficiently and effectively. Cohorting all beds together will allow clients to be treated more seamlessly, offering flexibility to meet the changing needs of clients as required.

More Diverse Clients

Clients who access addictions services are facing more complex care and support needs given the increasingly diverse range of addictions problems, from alcohol, to street drugs, prescription drugs, and gambling. As well, the ‘face’ of addictions is changing; increasingly the need for specialized services for youth, the elderly, women, ethnocultural communities, etc. has been identified because general programming does not adequately meet their needs. By creating a more efficient and flexible system, there will be opportunities to adapt and modify programs to better reflect diverse and unmet client needs.

Best Practice

Much of the best practice literature has referenced the need to create a multifunctional agency that serves as a central point of entry and delivery for addictions clients, to assist with system navigation and to collaborate on delivery of care and support [Setting the Course, 1999]. In addition, new provincial best practice standards for physical design of WMS are anticipated to be released shortly and it is anticipated that this will further highlight the deficiencies associated with the current addictions services physical environment.

Needs of Concurrent Disorder Clients

Increasingly, clients have co-occurring substance use and mental health problems [concurrent disorder]. Close liaison and coordination is required between the mental health and addictions providers to enhance referral and care for these clients. In addition, cross-training of staff is crucial in the addictions, mental health and Emergency Department programs

Physical Environment

The Newport Centre occupies an aging infrastructure with poor clinical design that does not lend itself to appropriateness as a residential treatment centre. Further, the sale of the OSS properties has created an opportunity to also rectify many significant physical plant issues associated with the current buildings. More specifically, the sites were originally private family residences not meant for high density utilization. The buildings are not accessible, floor plans limit client observation, they are old and inefficient buildings with high utility costs, and there are insufficient and inappropriate treatment areas. Privacy must be balanced with safety as appropriate.

Research and Teaching

The need to create an environment of excellence supported by research and teaching is critical. A new way of delivering addictions services offers the promise of an environment to attract and develop leaders who can further deliver excellence in research and teaching that focuses on client-centred care.

8.4.3 Proposed Service Delivery Model

The vision for the NHS Addictions Program is of *one Centre of Excellence for Addiction Services*, and specifically to consolidate all NHS sponsored in-patient/residential and out-patient addictions services to one new, special purpose built location in St. Catharines.

This vision also provides an opportunity for other community-based addiction providers, the majority of which are already located in St. Catharines, to potentially physically co-locate with the NHS services into one multifunctional centre. This has the potential to significantly streamline access to addictions services for clients.

In addition, through consolidation, there will be opportunities to:

- Reallocate addiction workers to be part of the Emergency Psychiatric Team proposed in the Mental Health Program vision, to further support the needs of clients with concurrent disorders;
- Reallocate addiction workers into Emergency Department's [ED] to provide diversion and triage support. A London, Ontario study found that up to 13% of people with mental health and addictions needs presenting to the ED were seeking care for social-structural stressors such as housing, financial issues, and the legal system.¹³

8.4.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care:		
▪ Effective	○	●
▪ Efficient	○	●
▪ Equitable	○	●
▪ Safe	○	●
▪ Patient Centred	◐	●
▪ Timely	◐	●
▪ Work Life Focus	○	●
▪ Population Focus	◐	●

¹³ Cristine, R., K. Hartford, E. Vingilis, and D. White. (2007). Mental Health Triage in the ER: a qualitative study. *Journal of Evaluation in Clinical Practices* 13(2): 303-309.

Evaluation Criteria	Current State	Proposal/ Recommendation
▪ Continuity of Service Focus	●	●
B. Compliant with: NHS Success Factors	●	●
MOHLTC Policy	○	●
HNHB LHIN Policy	○	●
C. Leverages health professional resource pool	○	●
D. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
E. Leverages physical plant capacity	○	●

8.4.5 Narrative Analysis of the Evaluation

8.4.5.1 Optimizes Quality of Care

Effective

A *Centre of Excellence for Addictions* in Niagara will facilitate a significant critical mass of both clients and providers to support a sustainable, effective service. A single site model will enable a streamlined, designated access point for clients and will also facilitate better coordination with community service providers, increasing capacity to provide integrated and expanded services for clients including opportunities for more specialized care.

To be more effective and meet the needs of increasingly diverse clients, addiction services must be more flexible and offer a broader range of treatment options in a more timely way. A Centre of Excellence provides that flexibility in terms of shared programs, shared staff and reinvestment of new efficiencies in services. This includes opportunities to develop targeted interventions based on “Stage of Change” model of care for addictions.

Clients who are in need of multiple supports are seeking better co-ordination of services, more integration among different addiction service providers, and better integration between addiction services and other health, housing, social and employment services. A Centre of Excellence for Addictions Services will streamline service delivery and improve case management and coordination.

In addition, it is well recognized that over 60% of patients with a serious mental illness also have addiction or substance abuse issues. A Centre of Excellence will provide an opportunity to deliver more effective and targeted programs for the concurrent disorder population. In addition, there will be opportunities to link more effectively with the Centre of Excellence for Mental Health as well as other Centres of Excellence such as Maternal Child and Women’s Health.

Efficient

A *Centre of Excellence for Addictions* in Niagara will increase the capacity of the addictions system by making more effective use of scarce resources. For example, there is an opportunity to shift a portion of in-patient services to ambulatory day services as well as Emergency Department [ED] interventions. Admission avoidance to acute beds by appropriate use of addiction treatment beds will free up acute care beds for their intended purpose. Clinical coordination and co-location will provide opportunities to find savings in basic staffing, freeing up resources for reinvestment in other program areas.

In addition, through consolidation, there are opportunities to reduce the number of in-patient/residential treatment beds and reinvest in out-patient services that better support client reintegration.

Equitable

By improving the scope and quality of addictions services, clients will have better access to treatment and support as well as a higher and consistent standard of care.

Safe

In the provision of addictions services, there are important safety considerations for clients and staff. The current array of addictions services are scattered and the physical environment is not conducive to best practices from a safety perspective [e.g., poor sight lines, heating and ventilation issues, non-accessible physical environment, etc.]. A newly built Centre of Excellence offers the opportunity to reflect safety and recovery considerations and create an appropriate environment for treatment and preparation for return to community.

Patient-Centred

The Centre of Excellence model identifies opportunities to reinvest efficiencies gained by consolidation into programs that better meet the needs and expressed preferences of clients. It will also facilitate development of more targeted interventions/individualized treatment plans for clients. Siting of the Centre for Addictions and specifically the WMS in the same community as the Centre for Mental Health and its associated Emergency Psychiatry Team will further support important program synergies from a patient/client perspective, ensuring more specifically that patient/clients with concurrent disorders receive coordinated care in the most appropriate place.

Timely

More timely care through better coordination and integration can be achieved through a Centre of Excellence.

Work Life Focus

The Centre of Excellence model supports improved quality of worklife for staff; a new, specially built physical environment that has patient and staff safety as a major focus will significantly increase staff satisfaction and morale. It will also allow staff to have a private area in which to retreat for meal breaks.

In addition, it has the potential to further enhance the quality of worklife for staff by creating a new “culture”, working to unify/integrate the addictions services, increase teamwork and cross program capacity.

Population Focus

The Centre of Excellence in Addictions has the potential to better meet the needs of clients with diverse needs [e.g. youth, women, geriatrics, concurrent disorders] by providing more specialized treatment and supports.

Continuity of Service Focus

A better coordinated and seamless system will improve the continuity of service for clients and their families. In addition, it will facilitate ease of development and implementation of protocols for increased service collaboration and shared care with the mental health and other health sectors.

8.4.5.2 Compliant with Policy

NHS Policy

The Centre of Excellence model is aligned with the NHS’ *Corporate Success Factors* as outlined below:



Focus on those we serve

- Enhances provision of high quality and sustainable care.
- Facilitates re-investment in enhanced programming to meet the needs clients.



Bring out the best in each other

- Enhances the quality of work life for staff by increasing teamwork and access to a state-of-the-art environment.
- Provides a critical mass of staff to support one another.



Build strong and successful relationships

- Facilitates closer and more streamlined relationship with community service providers in providing care and support to clients.
- Creates more opportunities to partner and link with universities and colleges to facilitate learning [e.g., student placements] as well as research.



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.



Use our resources wisely

- Facilitates efficient use scarce human resources.
- Provides operational efficiencies to facilitate reinvestment in program delivery [e.g., reduction in current physical plant costs associate with aging infrastructure].
- Minimizes the need for capital renovations at multiple sites in order to meet environmental best practice standards.
- Potential to reduce basic operating costs [heat, hydro etc.] if other community additions consider co-location with the Centre of Excellence.

MOHLTC and HNHB LHIN

A Centre of Excellence in Addictions Services is consistent with provincial policy documents such as “Setting the Course” and “Making it Happen” as well as “Health Canada’s Best Practices: Concurrent Mental Health and Substance Use Disorders”. Setting the Course [1999] continues to provide guidance related to the organization and delivery of addictions services in the Province of Ontario. The vision of that policy document speaks to an “integrated, client focused system of evidence-based, cost effective services designed to meet their diverse needs as well as the needs of family members and others affected by someone’s addiction.”

The HNHB LHIN 2006 Integrated Health Services Plan identified *improved access to services for people with concurrent disorders* as a key priority.

8.4.5.3 Leverages Health Professional Resource Pool

By 2013, 42% of all addiction services staff are eligible for retirement. Pooling human resource capacity will provide sustainability for addictions services in Niagara. In addition, the vision for a Centre of Excellence provides opportunities for increased cross-training of staff [addictions and mental health]. In addition, having a Centre of Excellence for Mental Health located in the same community as a Centre of Excellence for Addictions may facilitate greater psychiatrist involvement in concurrent disorder service delivery and planning.

8.4.5.4 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

Introduction of new approaches can be leveraged such as ED diversion and addictions workers' participation on an Emergency Psychiatric Team, as previously outlined.

8.4.5.5 Leverages Physical Plant Capacity

A new Centre of Excellence can leverage best practice in physical plant design for addictions clients as well as higher utilization of spaces.

8.5 Maternal Child Program

8.5.1 Current State

The Niagara Health System (NHS) Maternal Child Program offers a range of services to support the obstetrical patient from early antenatal care, through labour and delivery and postpartum care and on to transitioning into the community. As well as providing care to moms, the program offers inpatient and outpatient care to children from newborn up until the age of 17 years and 364 days of age. Pediatric care covers a range of Level I and II services and as with the obstetrical patient the more complex tertiary patients are transferred out to larger centres in Hamilton and Toronto.

Maternal Child services are offered at the three large sites within the NHS: the Greater Niagara General Hospital (GNGH) Site; the St. Catharines General Hospital (SCGH) Site; and, the Welland County General Hospital (WCGH) Site. Care for mothers, babies, children and youth will continue to be provided within the NHS's designated Emergency Departments and the associated Prompt Care Centre in St. Catharines. Currently only 4% of all Pediatric visits to the Emergency Departments of the NHS result in a hospital admission.

The number of births in NHS sites has decreased from 2001/02 to 2006/07, as is shown in the following table.

Exhibit 62: Trend in Number of Live Births in NHS Hospitals from 2001/02 to 2006/07

OBS/Newborn Indicators	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06	FY 06/07
# Live births	3313	3185	3195	3221	3148	3029

8.5.2 Case for Change and Proposed Service Delivery Model

The current trend in obstetrical practice has been towards more procedural interventions with an increase in the use of epidurals, episiotomies, fetal health surveillance or electronic fetal monitoring, inductions, vacuum extractions, and caesarean sections. Interestingly, research out of Australia suggests that the increased medical focus of maternal care in Australia, the USA and UK, although well-intended has resulted in increased rates of

obstetrical intervention and in particular for low risk women at an increased cost to the public purse. It is thought that procedures that lower risk when applied to high risk women may be counterproductive when applied to lower risk women and warrants further research.¹⁴ With respect to pediatric care the most significant trend has been towards more and more outpatient care. Advances in technology and improvements in pharmacology have facilitated this movement.

Another notable trend has been the movement towards more regionalization with respect to obstetrical care. The rationale for closing smaller obstetrical units (less than 100 births) has often been linked to physician departure (solo-practices), ability to maintain nursing competency due to so few births, patient safety again related to maintenance of competency among practitioners and a change in the population served.¹⁵ Within the Niagara peninsula, the smaller hospitals within the southern tier, Port Colborne General and Douglas Memorial chose to close their obstetrical programs prior to the formation of the NHS for a combination of the reasons cited above. In support of regionalization, on a larger scale, research in both Germany and Norway, concluded that for low risk deliveries, the risk of neonatal death increased proportionately to the number of deliveries below 2000 per year. The research showed a pronounced mortality gradient with the size of the unit in low risk births.^{16 17} Conversely, research from Australia challenged the view that small hospitals are not a safe place for women with uncomplicated pregnancies to give birth. This study did however note that the outcomes for smaller hospitals may have been more favourable due to the practice of transferring out higher risk moms, and as such this was a limitation to their study findings.¹⁸

Our population health data trending is indicative of a declining birth rate throughout our region. In anticipation of this, the Maternal Child Program

¹⁴ S.K. Tracy, et al. *Does Size matter? A population based study of birth in lower volume maternity hospitals for low-risk women*. BJOG. International Journal of Obstetrics and Gynecology. DOI:10.111/j. 1471-0528.2005.00794x. p.94.

¹⁵ The Advisory Board Company. *The Effects of Rural OB Unit closure on Hospital and Community. Original Inquiry Briefing*. May 6, 2004. p.3.

¹⁶ Heller, G. et al. Are we regionalized enough? Early neonatal deaths in low risk births by the size of the delivery units in Hesse, Germany, 1990-1999. *Int J Epidemiology* 2002;31:p. 1061-1068.

¹⁷ Moster D. et al. Relation between size of delivery unit and neonatal death in low risk deliveries: population based study. *Arch Dis Child Fetal neonatal Ed.* 1999; 80 (3): F221-F225.

¹⁸ S.K. Tracy, et al. *Does Size matter? A population based study of birth in lower volume maternity hospitals for low-risk women*. BJOG. International Journal of Obstetrics and Gynecology. DOI:10.111/j. 1471-0528.2005.00794x. p.91.

engaged in a comprehensive program planning process since 2002, and the following recommendation was made and endorsed:

“Based on a comprehensive analysis, the ability to improve the quality of care with the consistent use of evidenced base best practice consistently carried out at one site, the ability to optimize our health human resources and attract new professionals to a single Centre of Excellence and the opportunity to create cost savings, the Maternal Child Program recommends consolidation to a one-site model”. (August 2006).

The recommendation is to locate and refocus the program at the new healthcare complex to be built in St. Catharines.

A consolidated Maternal Child Program would require a total of **50,000** square feet. In addition, a consolidated program would need access to OR suites to accommodate approximately 300 hours of OR time per four-week block plus access to Emergency Services.

Each of the current sites were evaluated in terms of physical space capacity, OR capacity, ED capacity, SCN needs, adjacencies and general infrastructure of the plant. The consolidation will require a new build to accommodate the consolidated program regardless of location chosen.

In December of 2004, the Maternal Child Program underwent an external review (Livingstone, Ejwunmi, Hickey). The following are key recommendations from this review:

- Consideration should be given to the inclusion of gynaecology in the Maternal Child Program, converting this to a Women’s and Children’s Health Program
- Consolidate all Level II Nurseries at one regional site with the recruitment of a Paediatrician with additional training and expertise in neonatology to ensure delivery of appropriate levels of care at that site
- Planning in consultation with the MOHLTC should begin to identify a mechanism and appropriate site for a single centre of excellence for women’s and infant’s health on one site to serve the entire NHS.
- The NHS Maternal Child Program Committee already working on integration and consolidation within the system should focus specifically on the development of a functional plan for a single-site program, identifying human and physical resource needs and establishing a time frame for early implementation.
- Create caesarean section rooms at the GNG/WCGH sites.

Given the existing provincial, national and international nursing shortage we are already experiencing difficulty recruiting Physicians and Nurses to the Maternal Child Program. The current model of service delivery, offering

services at three sites is inefficient and not sustainable. It was strongly felt and supported that the creation of a Centre of Excellence for Women's and Children's Health would enhance recruitment and retention of essential health care professionals in this area.

There are three key drivers linked to this proposal based upon our External Review (2004) and the *“Maternal Child Program – A Case For Change: Proposal to Consolidate the Maternal Child Program”* (2006).

1. Optimize opportunities to consistently provide quality and safe patient care utilizing evidence based research and best practice guidelines through improved communication and team work, clinical skills and proficiencies within an interprofessional model of care delivery with Physicians, Midwives and Nurses.
2. Enhance the quality of work life for all health professionals with less onerous call-schedules and fewer overtime shifts coupled with the opportunity to optimize our health human resources and attract new health care professionals to a single Maternal Child Program Centre of Excellence;
3. Lastly, to realize cost savings and improve capital equipment efficiencies.

Overview of One-Site Maternal Child Service Delivery Model

The one site model for the Maternal Child Program will provide a continuum of services for maternal care and newborns, including inpatient and outpatient maternal services, and a Level II nursery. Services will be provided using primarily a LBRP (labour, birth, recovery and postpartum) model of care. The inpatient services would include antepartum and intrapartum care of the stable patient, postpartum care of the delivered mother and infant until discharge, education throughout the continuum of care and support for breastfeeding mothers and phototherapy treatment for infants. Outpatient services would include antenatal assessments, Rh injections, mother/baby support including lactation consultation, some newborn assessments and neonatal procedures. In addition, outpatient services would include pre-admission clinics and possibly ophthalmology consults for follow-up for retinopathy of prematurity.

The Level II nursery would provide services for infants who are greater than or equal to 32 weeks gestation and require close observation, care and assessments. The nursery would also provide care to infants repatriated from tertiary centre, and those awaiting transport to a tertiary centre. Neonatal TPN (total parental nutrition) and Neonatal C-PAP (continuous positive airway pressure) would be provided.

In addition, the consolidated Maternal Child Program will provide a range of Paediatric services to children and youth less than eighteen years of age.

This 24-bed Paediatric unit will include three (3) beds for continuous monitoring as well as 4 beds for children and youth requiring hospitalization for mental health issues. Ambulatory services will be provided through a clinical decision unit (CDU) / medical day care service (2-beds) and a pre-admission clinic associated with a paediatric surgical day care service (11-stretchers). Furthermore there will be outpatient services for the chronic disease management for conditions such as asthma and diabetes. To support paediatric care in the remaining large sites, Paediatric CDU beds (1-2) would be established for each of the other sites to be housed in the Emergency Department. These beds would be supported by a clinical resource team with knowledge and skills to care for the paediatric patient population. Further consultation is required with the Emergency Program as we move towards our implementation plan.

8.5.3 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care: <ul style="list-style-type: none"> ▪ Effective ▪ Efficient ▪ Equitable ▪ Safe ▪ Patient Centred ▪ Timely ▪ Work Life Focus ▪ Population Focus ▪ Continuity of Service Focus 	○ ○ ○ ○ ○ ○ ○ ○ ○ ○	● ● ● ● ● ● ● ● ● ●
B. Compliant with policy: NHS Success Factors MOHLTC Policy HNHB LHIN Policy	○ ○ ○	● ● ●
C. Leverages health professional resource pool	○	●
D. Recognizes changing community demographics and population health needs	○	●
E. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
F. Leverages physical plant capacity	○	●

8.5.4 Narrative Analysis of the Evaluation

8.5.4.1 Optimizes Quality of Care

Effective

The creation of a Centre of Excellence for Women's and Children's Health in Niagara will result in an ideal critical mass of both patient/clients/families and health care providers to support a quality, safe, sustainable, and efficient program that reflects best practice standards of care.

Efficient

Through the utilization of the Ontario MOHLTC Planning Decision Support Tool (PDST) Benchmark Tool addressing hospital occupancy, a hospital with 200-299 beds should ideally have a 75% occupancy rate for the Maternal Child Program. Based on our Key Statistical Indicators for 2006/2007 across our three sites there are a total of 22 Paediatric beds staffed and in operation with an occupancy rate of 57.3%. Obstetrics has 30 beds staffed and in operation with an occupancy rate of 83.3% (this volume is higher due to off service gynaecological patients requiring hospitalization post operatively), newborns 31 bassinets (including GNGH and WCH Level II Nursery bassinets) with an occupancy of 55.1% and lastly Special Care Nursery (SCGH site only) with 7 beds staffed and in operation with an occupancy rate of 68.7%.

A one-site model would enhance our occupancy with appropriate beds based on our population health data.

Human and capital resources remain critical drivers. Due to the fluctuating patient census, each site must continue to provide baseline staffing which may or may not be efficient based on patient demand. We must be able to capitalize on our nursing resources in a time of need due to the nature of our patient population's health care needs that are not predictable. Maintaining baseline nursing staffing is an ongoing challenge for our Program. The current model of service delivery, offering services at all three sites is inefficient and not sustainable.

Equitable

Capital equipment resources currently are not equitable across our three sites due to competing priorities within our system. Our challenge is to ensure our equipment i.e. fetal monitors, birthing beds, cardio respiratory monitors are readily available, up to date and functioning at all times. Given our current three site model it is becoming increasingly challenging to maintain all of our much needed equipment current and up to date. Outlined below are our Program's capital equipment requests and associated funding allocated for our much needed equipment over the last three years. All of this equipment is essential at all three sites due to the fact we need it "in case". With a one

site model, the need for duplication of capital equipment is eliminated and our capital equipment resources are utilized wisely.

Exhibit 63: Maternal Child Program Capital Requests – 2005/06 to 2007/08

Site	Year	Total Requests	Total Approved	Funding For Approved Items	
				Approved Via Contingency	Approved With Funding
SCGH	2005/06	809,714	176,714	-	176,714
GNGH	2005/06	748,000	6,500	6,500	-
WCGH	2005/06	338,800	115,000	-	115,000
2005/06 EQUIPMENT		1,896,514	298,214	6,500	291,714
Site	Year	Total Requests		Approved Via Contingency	Approved With Funding
SCGH	2006/07	1,071,769		-	12,269
GNGH	2006/07	709,432	161,232	-	161,232
WCGH	2006/07	347,566	123,766	-	123,766
2006/07 EQUIPMENT		2,128,767	297,267	-	297,267
Site	Year	Total Requests	Total Approved	Approved Via Contingency	Approved With Funding
SCGH	2007/08	713,800	110,093	-	110,093
GNGH	2007/08	509,488	83,488	-	83,488
WCGH	2007/08	310,769	133,269	-	133,269
2007/08 EQUIPMENT		1,534,057	326,850	-	326,850

Safe

Human resources are not equitable across our sites due to our fluctuating patient census. We need to ensure at all times “baseline” nursing staffing is readily available even though there may not be any patients due to our unpredictable patient census. We need to ensure a safe environment so we need to staff accordingly.

Currently there are 13 Obstetricians/Gynaecologists, 14 Paediatricians and 17 Midwives within the Program. Consolidation would enhance the quality of worklife and call schedule for Physicians and Midwives and would be in keeping with best practice.

Without consolidation, there will be ongoing difficulty recruiting new physicians as there is reluctance to maintain the existing call schedule in a three site model. New graduates are demanding a quality of worklife that reflects at least a 1:4 or better call schedule and a practice environment with an up to date infrastructure and associated technology and equipment required to provide best practice.

Through the strengths, weaknesses, opportunities and challenges Analysis, the Program Management Team identified a number of opportunities for improved quality of care and service delivery associated with a one-site model. A sufficient critical mass creating opportunities to enhance clinical

proficiencies is a recognized factor in improving quality of care and better outcomes and is frequently a driver in regionalization efforts.

While much work has been accomplished by the Program over the past year in terms of standardization of policies and procedures across all three sites, and joint preparation for Accreditation, it is recognized that the cultures within each Site are somewhat different and thus influence clinical practice. A single site with its own unique culture will emerge, evolving from the best attributes of the founding sites. In addition, the ability in a one-site model to add new members to the Inter-professional team Paediatric Dietician, and dedicated Social Worker - will serve to enrich the service delivery model. A Centre of Excellence for Women's and Children's Health based on best-practices and grounded in quality will influence a culture of performance excellence.

Work Life Focus

A one site model would enable the Physician/Midwife/Pediatrician and/or Anaesthetist to be on site 24 hours per day to ensure continuity and consistency of safe and quality patient care. Having on-site health care professionals will enhance communication, team work, culture and decision making. Working conditions for Physicians, Midwives and Nurses are increasingly difficult. Best practice recommends minimally a 1:4 on call schedule for Physicians. Currently at the WCGH site we have Obstetricians doing a 1:2 on call and at GNGH site 1:3 on call. Working conditions and quality of worklife have become a major factor in attracting graduating Physicians and Nurses to the Niagara Region. New graduates value quality of worklife and do not want to have an onerous call schedule or overtime. Newer graduates are seeking a call schedule of a 1:4 or better. They want to work in a collaborative group practice versus working in isolation. They also want up to date health care environments, technology and equipment to provide the best possible care to our patients and families.

Timely

In this planning process, one of the guiding principles was that accessibility would be taken into account when the issue of siting was discussed. The distance from the shores of Lake Erie to Lake Ontario is approximately 70 kilometres, and from the western border to the Niagara River, the distance is approximately 54 kilometres. All communities are within a 30 to 45 minute drive from one another, and most commutes between hospitals are less than this.

Using mapping methodology, service area polygons were developed using a best route algorithm. Using the street network data from the Region of Niagara, and inputting speed limits and classification of roads, routes to each of the area hospitals providing Maternal Child care as well as a route to the site for the new healthcare complex in St. Catharines were calculated. It is

important to note that the data does not reflect normal impedances such as traffic lights, stop signs, construction, etc. This mapping data was then coupled with Census Dissemination Areas (DAs) data which is a source of the population data. Based upon the mapping methodology 90% of mothers and families can reach the new healthcare complex within 30 minutes.

Patient Centred: Humane

The Niagara Health System Maternal Child Program follows a philosophy of Family – Centred Care as espoused by Health Canada in their national guidelines. The philosophy is as follows:

“...Family-centred maternity, newborn and paediatric care is a complex, multi-dimensional, dynamic process of providing safe, skilled and individualized care. It responds to the physical, emotional, and psychosocial needs of the women and her family. In family-centred maternity and newborn care, pregnancy and birth are considered normal and healthy life events. As well, such care recognizes the significance of family support, participation, and choice. In effect, family-centred maternity and newborn care reflects an attitude rather than a protocol.”¹⁹

A single state of the art Centre of Excellence for Women’s and Children’s Health will improve quality of care as more services will be delivered within the NHS, there will be less need for our mothers and babies to be transferred out of our facility to Hamilton Health Sciences or the Hospital for Sick Children and lastly, our patients can return to the NHS sooner from our tertiary care centres.

Our Centre of Excellence will also enable the Maternal Child Program to work collaboratively with other programs like Mental Health to treat our moms with post partum depression, our youth with mental disorders, create an osteoporosis clinic with the appropriate screening needs.

Continuity of Service Focus

The implementation of a single site model of care for the Maternal Child program is designed to improve the quality of care through increased opportunity to maintain clinical proficiencies and through increased consistency in following evidenced –based program policies and procedures. Furthermore this model will optimize our current staffing and increase the attractiveness of the NHS as a place for new clinicians and nursing professionals, thus improving our recruitment and retention efforts. And

¹⁹ Health Canada. *Family-Centred Maternity and Newborn Care: National Guidelines*, Minister of Public Works and Government Services, Ottawa, 2000. p. 18.

lastly, this new model will boost our ability to attract more clinical students and participate in research, thus enhancing our scholarly interests.

8.5.4.2 Compliant with Policy

NHS Success Factors

This recommendation to move to a one site model of care for Maternal Child is aligned with the **NHS Success Factors** as outlined below:



Focus on those we serve

- Enhances quality of care to this patient population through creation of a Centre of Excellence.
- Centre accessible within 30 minutes to 90% of the population served.
- Should an emergency arise for any child or mother, EMS (911) will transport the patient to the nearest ED where our patients will be cared for in a timely and safe manner. Should the child require hospitalization, he/she will be transferred.



Bring out the best in each other

- Allows for a critical mass of staff to learn from one another and to support each other through an interprofessional collaborative approach to care
- Enhances the quality of work life by increasing the baseline number of staff for relief as needed.
- Creates potential to develop advance practice nursing positions / clinical nurse specialists



Build strong and successful relationships

- Opportunity to work closely with LHIN partners in service delivery as per conceptual framework for model of care.
- To enhance inter professional care and communication between Physicians, Midwives, Nurses and support staff
- An NHS Centre of Excellence for Women's and Children's Health service creates more opportunities for us to partner and link with universities & colleges for student placements and for participation in research.



Create a better way

- To collaborate with other programs like Mental Health to care for mental health disorders for our mothers and children
- A one site model of care delivery creates a critical mass of patients served to expand services and maintain proficiencies and clinical competencies

- This larger critical mass of patients will provide further opportunities to repatriate more neonatal and pediatric patients to the NHS from the Hamilton Health Sciences Tertiary Care hospital in order to provide care closer to home
- A Centre of Excellence creates a critical mass to allow for research activity
- Opportunity to develop outreach clinics and services for communities within the peninsula



Use our resources wisely

- A one site model allows for expansion and further development of core team membership to create a true centre of excellence while creating operational cost savings of \$1.1M plus \$500K for Physician remuneration annually.
- A one site model reduces the need for major clinical equipment through elimination of duplicate and triplicate capital equipment needs to service three sites and as a result lessens the burden on our Foundations and Auxiliaries.

MOHLTC Policy

In November 2004, an External Review was undertaken of the NHS Regional Obstetrics Department. The recommendations from this review were aimed at enhancing quality of services for this program. One of the longer range recommendations was that the NHS should begin planning in consultation with the MOHLTC to identify a mechanism and appropriate site for the creation of a “Centre of Excellence” for Women’s and Children’s Health.

HHNB LHIN Policy

The Hamilton Niagara Haldimand Brant (HNHB) LHIN initiated a project in the spring of 2006 to identify the requirements for an effective, person centred and sustainable maternal newborn health system. This recommendation builds on the “*Final Report of the Maternal Newborn Steering Committee*” (September 2007) in terms of finding ways to sustain high quality maternal and newborn care in the face of changing demographics, an aging workforce and variable physician supply within the Niagara Region. Our proposed strategy will promote equitable access to a number of services that support healthy moms and their babies, child and their families.

The Maternal Child Program’s recommendation of a consolidated program is in keeping with the LHIN’s philosophy of innovation, improvement and quality of care. This model will enhance inter professional collaboration and care to maintain quality and safe patient care based on best practices

between Physicians, Midwives, and Nurses for our patients and their families.

The HNHB LHIN Environmental Scan Overview report, page 8 states that: “Concerns regarding the safety and efficiency of low volume birthing services suggest a need to consider consolidation of birthing while maintaining wide distribution of prenatal care and maternal and newborn care”. The proposed consolidated program clearly responds to this need identified by the HNHB LHIN.

8.5.4.3 Leverages Health Professional Resource Pool

There are four subspecialties of nursing practice within this program: labour and delivery; postpartum care; special care nursery; and, pediatrics. In line with the national picture, the population of this work force is aging and the percentage of nurses eligible for retirement in the next few years is alarmingly high.

Within the Maternal Child program across all three sites there are a total of 220 staff (full-time, part-time and casual). By 2013 44% of Registered Nurses (RNs) and 52% of Registered Practical Nurses (RPNs) are eligible to retire. It is evident that the clinical expertise and experience will leave a significant void for our program and potentially could be detrimental to the sustainability of our program.

A study conducted on Paediatrician Human Resource Planning in Canada concluded that the shortages of paediatricians, especially in remote and rural areas continues to be of major concern and shows no sign of improving²⁰. The article also noted that the workforce is aging, and quoting work down by Haslam and Issenman published in Paediatric Child Health (2002) estimated that 40% of the current Paediatric workforce will have retired by the year 2010. The other observation they made was that Paediatricians tended to be located primarily in urban settings and there is a shift towards more women practitioners. The authors expressed concern regarding the impact the physician shortage would have on the quality of child-care services over the next two decades.

A one site model may require fewer specialists to meet the needs of the population served thus reducing the current need for more Practitioners. Furthermore, a work place environment with less on-call may create opportunities for practitioners to remain active longer (retention) and make the NHS a more attractive place to work thus assisting with recruitment.

²⁰ *Consumer and Canadian Health Care Trending Analysis 2004*. The Change Foundation: Creative Change for Better Health. February 2005.

8.5.4.4 Recognizes Changing Community Demographics and Population Health Needs

There is little growth in this patient population as evidenced by the changing community demographics which further supports the need to create a critical mass through a single site model.

The population is expected to show a net growth of 2% between 2002 and 2008 and a further 2% increase between 2008 and 2016. The largest percentage increase in the Niagara Region population is projected to be for the 80+ group of 9.3% followed by the 45-64% age group of 10.3% between the years of 2006-2011. There is a significant reduction of the paediatric population of 6.7% between 2006 and 2011. Our reproductive age group (women between the ages of 16-44) will be decreasing by 2.1% by 2011.

As outlined below we have experienced a steady decline in our annual birth rates since 2001/2002 to date. Given this decline, it only makes sense to take a proactive approach to plan ahead in preparing to create a “state of the art” “Centre of Excellence” for Women’s and Children’s Health” in order to sustain quality and safe patient care.

Exhibit 64: Trend in Number of Live Births in NHS Hospitals from 2001/02 to 2006/07

OBS/Newborn Indicators	FY01/02	FY02/03	FY03/04	FY04/05	FY05/06	FY 06/07
# Live births	3313	3185	3195	3221	3148	3029

8.5.4.5 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

The need for advanced ultrasonography for Prenatal Screening – nuchal fold transparency is not easily achievable in a three site model. One site model would enable the program to have access to essential capital equipment and clinical expertise for interpretation of key tests for our patient population.

We are currently determining if we are able to introduce “Fetal Fibronectin” within our program. This is a test that helps Physician with determining whether or not a mom is in early preterm labour. The potential benefits of the proposed instrumentation and methods include reducing the rate of preterm delivery, improving maternal and perinatal outcome, monitoring treatment, decreasing caesarean rate and providing research methods to understand uterine and cervical function. However, the testing apparatus is an enormous expense and must be at all three sites. In a one site model this would reduce costs tremendously and enhance quality and safe patient care.

8.5.4.6 Leverages Physical Plant Capacity

Currently in our three site model OR access at the GNGH and WCH site are not available within the Maternal Child Program. These sites are dependent on the main OR for elective and emergent caesarean births. Based on our

External Review (2004) and best practice guidelines it is recommended that operating rooms be available within the Maternal Child Program. The SCGH site is currently the only site that has two OR(s) within the unit. We are in the process of opening an OR at the Welland Site within the Maternal Child Program.

A consolidated Maternal Child Program would require a total of **50,000** square feet. In addition, a consolidated program would need access to OR suites to accommodate approximately 300 hours of OR time per four-week block plus access to Emergency Services.

Each of the current sites were evaluated in terms of physical space capacity, OR capacity, ED capacity, SCN needs, adjacencies and general infrastructure of the plant. The consolidation will require a new build to accommodate the consolidated program regardless of location chosen.

8.6 Medicine Program

8.6.1 Current State

Inpatient Medical Services are provided at the St. Catharine's General Site, Greater Niagara General Site, Welland Hospital Site, Port Colborne General, Douglas Memorial Site and Niagara-on-the-Lake with the following bed complement:

Exhibit 65: Number of Inpatient Acute Medical Beds by NHS Site

NHS Site	SCGH	GNGH	WCGH	PCGH	DMH	NOTL	Total
# Medical Beds	106	49	60	32	32	9	288

Patients are primarily admitted to these beds by means of an Emergency Department admission, through repatriation to the patient's community residence or movement of patients to Douglas Memorial and/or Port Colborne to address acute bed pressures at the three large sites (e.g., Welland, Niagara Falls, and St. Catharines).

Patients are admitted by a physician. The physicians who primarily utilize these beds are; Internal Medicine or sub-specialty service, Family Practitioners and Hospitalists. It is significant to note the number of family practitioners with admitting privileges continues to decline resulting in an increased reliance on the Hospitalist Program.

Presently the Physician subspecialty distribution is as follows:

- Internal Medicine/Cardiology- GNGH and SCGH and WCGH sites
- Gastroenterology- GNGH and SCGH sites.
- Neurology- GNGH and SCGH sites.
- Respiriology- GNGH and SCGH sites.

- Palliative care – GNGH and WCGH (Hospitalist)
- Oncology/Palliative - SCGH site (Oncologists/Hospitalists)
- Hospitalist Service – WCGH, SCGH, GNGH and PCGH sites
- Dialysis – OSS, SCGH and WCGH sites

The top case mixed groupings (CMGs) for the large sites (GNGH, SCGH and WCGH) are:

- Heart Failure
- Simple pneumonia and pleurisy
- Specified cerebrovascular disorder
- Esoph/Gastro/Misc Digestive
- Chest pain
- Chronic obstructive pulmonary
- Lower urinary tract infection
- Diabetes

The top CMGs for the small sites (DMH, PCGH and NOTL)

- Heart Failure
- Chronic/Obstructive pulmonary/Chronic Bronchitis
- Simple pneumonia/pleurisy
- Esoph/Gastro/Misc Digestive
- Rehabilitation
- Lower urinary tract infections

The NHS has a number of out-patient clinics to address chronic disease management. They are as follows:

- Niagara Diabetes Centre supporting all sites for out-patient clinics
- COPD clinics at SCGH and WCGH
- District Stroke program with hub at GNGH site
- Heart Function clinic-SCG
- Osteoporosis Screen Clinics partnered with Osteoporosis Canada
- Primary Care Clinic NOTL (walk-in supported by a NP and on-site Physicians)
- Medical Day Stay at each of the large sites-GNGH, SCGH and WCH.

8.6.2 Case for Change

Level of Service:

While the NHS provides acute inpatient medical services across 6 sites the level of service varies as it relates to the smaller sites as outlined below;

- Limited access to Physician Specialists and Sub-specialties such as Internal Medicine, Respiriology, Cardiology, Gastroenterology and Surgery
- Non-availability of certain diagnostic modalities such as Nuclear Stress Testing, CT and MRI scanning and limited non invasive Cardiology procedures and Respiratory testing e.g. stress testing and pulmonary function on site
- Limited availability of rehabilitative professionals e.g. Physiotherapy, Occupational Therapy, Respiratory Therapists due to the lack of critical mass of patients.

The system has responded to this by developing referral patterns and transport criteria for patients in Douglas Memorial, Port Colborne and Niagara-on-the-Lake to the larger NHS sites to ensure all patients have access to the care they require. There are significant daily inter-site transfers for testing and consultation from the small sites to larger sites which results in patient inconvenience, professional staff off site during transfers and the potential for delays in diagnosis and treatment.

Patient Profile Across the NHS Sites:

The patient profile data review reveals differences in the complexity of patients in the smaller sites

- Based on analysis of CIHI inpatient Discharge Abstract Database (DAD) and National Ambulatory Care Reporting System (NACRS) data 2006/2007 when activity is assigned to patient residence, not location where service was provided, there are increased rates of acute care utilization related to medical admissions for Welland, Port Colborne and Fort Erie.
- There are higher rates of ‘ambulatory care sensitive condition’ (ACSC) in Fort Erie and Port Colborne which suggests improved access to primary care would better manage residents health needs.

This data reveals an opportunity for the NHS to refocus services in the smaller communities to better meet health needs by providing access to enhanced primary care, chronic disease management strategies and integration of community services at these sites.

Duplication:

Providing acute inpatient medical services across 6 NHS sites results in the duplication of core services.

This limits the capacity of the system to invest increasingly scarce resources in acute care.

Health Human Resources and Sustainability:

There is ongoing pressure in the system related to the recruitment and retention of health care professionals. The present pool of Medical RN's and RPN's are rapidly aging and projected retirement data further confirm our inability to maintain appropriate skill mix levels for acute care across 6 sites.

8.6.3**Proposed Service Delivery Model**

1. Focus Inpatient Acute Care at the St. Catharines General, Greater Niagara General and Welland County Hospital Sites. Access to these acute medical beds will be assured through effective utilization activities and a drastic reduction in ALC days. .
2. Enhance and expand prevention and management of Chronic Diseases through out-patient clinics using an inter-professional team approach. Clinics to be aimed at CMG's volumes currently seen in in-patient stays – for example: Heart Function, Cardiac Rehabilitation, COPD, Asthma, and Diabetes. Clinics will be delivered as appropriate across all of the NHS sites and enhance the level of services in the Fort Erie and Port Colborne areas based on data identifying higher reliance on inpatient care for ambulatory care sensitive conditions, prevalence of chronic disease and their aging population.
3. The Port Colborne and Douglas Memorial sites will be highlighted as 'centres of health' by partnering with or hosting clinics with existing organization e.g. Community Health Centres, HNHB CCAC, community partners to improve accessible and effective services within their community . The Niagara-on-the-Lake site will continue its' Nurse Practitioner led clinic and continue to host the Family Health Team.

8.6.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care:		
▪ Effective	●	●
▪ Efficient	●	●
▪ Equitable	●	●
▪ Safe	●	●
▪ Patient Centred	●	●
▪ Timely	○	●

Evaluation Criteria	Current State	Proposal/ Recommendation
<ul style="list-style-type: none"> ▪ Work Life focus ▪ Population focus ▪ Continuity of Service Focus 	<p>●</p> <p>●</p> <p>●</p>	<p>●</p> <p>●</p> <p>●</p>
B. Compliant with policy: NHS MOHLTC HNHB LHIN	<p>●</p> <p>●</p> <p>●</p>	<p>●</p> <p>●</p> <p>●</p>
C. Leverages health professional resource pool		●
D. Recognizes changing community demographics and population health needs	●	●
E. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
F. Leverages physical plant capacity	●	●

8.6.5 Narrative Analysis of the Evaluation

8.6.5.1 Optimizes Quality of Care

Effective

Currently the NHS acute medical cases show a high level of ambulatory care sensitive conditions admissions (ACSC) and these are significantly higher in Fort Erie and Port Colborne. According to the CIHI Health Care in Canada Report published in May, 2008 these “higher than average rates may signal an opportunity to improve the planning or delivery of primary health care services to better meet the needs of the population”

The top Case Mix Groups (CMG) in acute medicine reflects the prevalence of chronic disease including Heart Disease, Chronic Obstructive Lung Disease, Stroke and Diabetes. The enhancement/development of chronic disease prevention and management strategies is imperative to refocus the core services to be delivered by the NHS. There is a need to ensure there is the capacity with the community services to ensure care is provided in the right place, by the right person at the right time so the NHS is not the “default” for the community service provision. The NHS will develop outpatient strategies and partner with community resources to address the highest volume case mix groupings.

Efficient

The consolidation of acute inpatient medical services at 3 centres will:

- create a critical mass of acute medical inpatient cases

- provide access to appropriate physician specialties that is not currently available at Douglas Memorial or Port Colborne
- improve utilization of best practices guidelines and protocols
- Align medical technologies congruent with the level of service required
- Reduction in inter-site transportation for testing (e.g., CT scan, MRI etc)

Equitable /Timely/ Patient Centred

Patients requiring acute medical admission will have access to the skilled nursing care, physician management, and diagnostic and treatment modalities available at all three large sites.

The creation of enhanced primary care access points i.e. siting of Community Health Centre and/or Chronic Disease Prevention and Management Clinics at all sites will provide the right care in the right place at the right time.

Safe

The creation of 3 Centres of Excellence for inpatient medical care creates a critical mass of patients, physicians (primary/specialty) and other health professionals to provide consistent best practices in acute inpatient care. There will be an improved ability to meet patient's individual needs and ensure safe, high quality care.

Work Life Focus

Quality of work life will be enhanced with a more focused approach to acute inpatient care where staff are engaged in creating a centre of excellence. Opportunities for knowledge growth and skills enhancement are promoted.

The integration of a Chronic Disease Prevention and Management model provides inter-professional team development and closer relationships between hospital based personnel and community partners.

Population Focus

The proposed changes in care delivery are based on population health data responding to identified needs in such areas as Diabetes, Cardiovascular and Respiratory Disease.

Continuity of Service Focus

Services will provide a continuum of service from primary care to acute episodic inpatient returning to community management and support.

8.6.5.2 Compliant with Policy

NHS



Focus on those we serve:

- The model recognizes and responds to the demonstrated patient needs for increased primary/secondary care and access to specialized inpatient services.



Bring out the best in each other:

- Provides the opportunity to further develop new roles such as Nurse Practitioners, Clinical Nurse Specialists and Advance Practice Nurses.



Create a better way

- Provides opportunities to develop programs and services that are based on best practice and innovation



Build strong and successful relationships

- Recognizes and values the importance of community partnerships in meeting patients' needs.



Use our resources wisely

- Facilitates the efficient use of scarce human resources
- Eliminates the need for duplication of equipment and technologies improving our ability to address competing capital needs

MOHLTC/ HNHB LHIN

The MOHLTC and the LHIN'S recognize the changing roles of hospitals in Ontario and are committed to Chronic Disease Prevention and Management strategies for planning. The maximization of health human resources using innovative care delivery models, the use of alternative health care providers e.g. NP's, and community partnerships is in keeping with MOHLTC/LHIN vision.

8.6.5.3 Leverages Health Professional Resource Pool

The amalgamation of acute inpatient medical services from 6 sites to 3 sites will position the NHS to concentrate physicians, nursing staff and allied professionals in a more efficient and focused manner. Retirement rates for 2013 for the small sites: RN 50% and RPN 49% and large site RN 36% and RPN 28%. The vacancies created by these anticipated retirements will severely compromise our ability to sustain adequate staffing levels and require the pooling of resources to meet patient's health care needs.

The use of inter-professional teams to deliver outpatient chronic disease management clinics will maximize the expertise of a variety of health care professionals including Nurse Practitioners, Clinical Nurse Specialists,

Rehabilitation professionals and Respiratory Therapists and provide service to larger groups of patients.

8.6.5.4 Recognizes Changing Community Demographics and Population Health Needs

Focusing on demonstrated needs of the community related to chronic disease management and facilitating community care provider access to facilities recognizes the changing demographic in Niagara.

8.6.5.5 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

Promoting concentration of inpatient services will provide patients with improved access to diagnostic modalities, consultation services and specialty teams. Through the elimination of redundancies the NHS is better positioned to acquire new modalities and technologies.

8.6.5.6 Leverages Physical Plant Capacity

Each of the three sites have the capacity to accommodate a consolidation of acute in-patient beds.

8.7 Cardiac Catheterization Interventional Services

8.7.1 Current State

The Niagara Health System (NHS) submitted and received approval from the Ministry of Health and Long-Term Care (MOHLTC) to build a new health-care complex in St. Catharines. Three new regional programs were included one of which was cardiac catheterization lab. The Functional Program received approval to build two new cardiac catheterization labs. Both labs were fitted but only one equipped. Approval was received to establish a cardiac catheterization lab to provide diagnostic investigation services to undertake procedures to diagnose cardiac disease, assess the severity of disease and to evaluate the suitability of the patient for angioplasty, surgery, or other interventions. This would assist in lowering wait times and improving access to treatment.

The population in the Niagara Region is older, sicker and poorer than elsewhere in the province, and these factors contribute to a higher incidence of heart disease and hospitalization. From a socio-economic status, Niagara has lower incomes, fewer years of education and higher proportion of seniors living alone, compared to the provincial average. There is a strong inverse relationship between heart disease and socio-economic status.

According to the Canadian Community Health Survey, in 2007 Niagara residents displayed slightly higher rates of smoking, obesity and hypertension and lower rates of physical activity and a healthy diet,

compared to the provincial average. These lifestyle characteristics are risk factors related to heart disease.

Cardiovascular disease accounts for the death of more Canadians than any other disease. Both the NHS and Hamilton Health Science Centre treat thousands of residents for cardiac conditions. Investment is necessary in order to lessen wait times, recruit retain health-care professionals, and to significantly reduce the need for the people of Niagara to leave the region for services thereby providing service closer-to-home.

8.7.2 Case for Change:

While approval was not received for the inclusion of an interventional catheterization lab at the new St. Catharines hospital, the Niagara Health System (NHS) Cardiology Program Steering Committee strongly recommends renewed consideration of this decision. Inclusion of a catheterization lab satisfies an unmet community need for diagnostic cardiac catheterization services but does not meet the community's need for interventional cardiac services.

Best Practice

There have been significant changes in the treatment of acute myocardial infarct (AMI) in the past several years. Review of the literature presents 23 randomized control trials that have found that clinical outcomes improve when using primary PCI in comparison to fibrinolytic therapy. A reduction in mortality, reinfarction and stroke has been found.

Many reports and studies have endorsed PCI at centres without on-site surgery as long as certain criteria are met. They found performing PCI was not related to doing the procedures with on-site surgical back up but related to staff, infrastructure and processes to provide the service. Data tells us that urgent surgery is necessary in about 0.2% or 0.3% of cases, which is very low. Transportation needs do not arise often. The common themes in all these reports were:

- There must be a well defined transport protocol that has been tested and monitored
- Must have experienced operators with intensive training and credentialing. These operators must meet pre-defined volumes initially and per year
- Must have experienced staff
- Sufficient coverage for 24/7 access
- Must have a formal Quality Assurance program for data collection, analysis and review to evaluate procedural and clinical outcomes

The Cardiac Care Network of Ontario (CCN) whose mandate is to improve the quality, efficiency, access and equity in the delivery of adult cardiac services has submitted four major reports to the Ministry of Health and Long-Term Care (MOHLTC) since 2001.

One of the reports the “Expert Panel on Invasive Cardiology in Ontario” reviewed a comprehensive list of published guidelines and scientific literature. Several recommendations were made regarding institutional, operator and infrastructure requirements for performing cardiac catheterizations and PCI procedures in Ontario. It was acknowledged that the volume of procedures performed by the operator is a major determinant in measuring competence both clinical and technical. Therefore several recommendations were made regarding the intensive training that must occur, the minimum procedures that an operator and hospital must perform to maintain competence.

Each operator needs to receive intensive training for one year and perform 300 procedures. The Standards for Maintenance of Competence in Cardiac Catheterization of the Canadian Cardiovascular Society were adopted with minimum number of procedures being 150/year and 150 procedures per year for interventional cardiologists that perform procedures at centres without on-site cardiac surgery. Each cardiac catheterization centre must perform at minimum 500 diagnostic catheterizations and 400 interventional procedures. The NHS would meet these volumes.

A formal arrangement and agreement with off-site surgical back up must be in place with the mentor hospital and with Emergency Medical Services (EMS) to ensure rapid transportation should it be required. The NHS has a good working relationship with its partners. Hamilton Health Sciences is represented at the Cardiac Steering Committee and NHS representatives are at the table at the LHIN 4 Cardiac Working Group.

The Expert Panel report from the CCN referenced the pilot project at Rouge Valley-Centenary site that was in progress to demonstrate the safety of providing interventional procedures at a community hospital without on-site cardiac surgery. This prospective assessment regarding the safety and efficacy of stand-alone PCI hospital demonstrated that with current technology PCI can safely be performed in such facilities with no correlation observed between lesion complexity and adverse outcome for patients as long as certain criteria were met and procedures in place. That evaluation was completed and expansion has now occurred at the Thunder Bay Regional Hospital and Hotel-Dieu Grace Hospital in Windsor, 2007.

Another report from the CCN, “Access to Urgent PCI for ST Segment Elevation Myocardial Infarction” was to the MOHLTC and released in April, 2004. Rescue PCI or primary PCI has been shown to be the better option for patients presenting with STEMI. This report found that 80% of patients in Ontario do not present to a PCI centre and that patients that can

be transferred quickly to a PCI centre for primary PCI experience superior outcomes than patients treated with fibrinolytics. This study found that for patients over the age of 75 years fibrinolytic therapy did more harm than good therefore better outcomes with primary PCI. As stated earlier Niagara has a greater proportion of the population that is greater than 75 years of age. In patients where fibrinolytic therapy is contraindicated, the availability of primary PCI is of paramount importance. Also distance is a major barrier to outpatients having access to this preferred procedure.

The new C-PORT study will evaluate elective PCI as well and 10 centres are participating. The trend suggests that PCI in non-surgical centres is increasing.

When looking to the future and advancements in technology (CT angiography) the literature does not recommend diagnostic labs alone.

Improvements in the technique of coronary angioplasty as well as in technological advances have increased the number of patients receiving this therapy over the past decade. Percutaneous coronary intervention (PCI) procedures are performed and low-risk scheduled angioplasty will offer a significant improvement in local access and enhanced convenience for patients, families, and physicians.

In the New England Journal of Medicine, January 2008, LeMay presented a citywide protocol for primary PCI in Ottawa. The conclusion was that door-to-balloon times were often achieved when paramedics trained in ECG interpretation independently triaged and transported a patient directly to the primary PCI centre. This would not be difficult to replicate in the Niagara Region. In Niagara EMS was one of the first to implement (2004) 12 lead ECG interpretations. Currently all paramedics whether advanced care or primary care are trained and equipped to perform and interpret 12 lead ECG in the field. In addition a “Cardiac Alert” program (2005) was initiated by EMS which involves early notification to the receiving hospital that the paramedics are transporting a patient with ischemic chest pain who is positive for STEMI. If Niagara had the capability of performing PCI as well, a program similar to the stroke program could be initiated, where the patients would bypass other sites and be transferred directly to SCGH Site for primary PCI.

Access to Care

There has been a significant improvement in wait times for patients within our region in the past year as illustrated in the table below. However the current situation does not meet the goal of care closer-to-home especially due to the large geographical area. There continues to be an unmet need of primary PCI for all of our sites due to the distance to Hamilton Health Sciences. Delays have been experienced with the challenges of transportation whether by EMS or by private stretcher service provider.

**Exhibit 66: NHS Inpatient Average Length of Stay and Wait
for Access to Cardiac Catheterization Services**

NHS Site	Cases	Total Days	Avg. ALOS	Cath Days Wait	Avg. Cath Days Wait
St. Catharines General Site	309	2,214	7.17	488	1.58
Greater Niagara General Site	232	1,274	5.49	396	1.71
Welland County General Site	228	1,419	6.22	426	1.87
Port Colborne General Site	3	30	10	8	2.67
Douglas Memorial Site	18	136	7.56	31	1.72
Grand Total:	790	5,073	6.42	1,349	1.71

Currently in the Niagara Region, patients who require a cardiac catheterization or percutaneous cardiac intervention (PCI) need to travel outside of the Niagara region. The majority of patients travel to Hamilton Health Sciences Corporation and a small number of patients are referred to Trillium in Mississauga, Toronto or London. Based on the Cardiac Care Network (CCN) planning guidelines, the volume of cardiac catheterization cases generated by Niagara residents is more than adequate to support a local cardiac catheterization lab. In fact; Niagara is the only community of its size in the province of Ontario that does not have a cardiac catheterization lab. Of the 18 Cardiac Catheterization labs in Ontario, 14 of them provide PCI. The two most recent hospitals that expanded to provide PCI are Hotel-Dieu Grace in Windsor (2006) and Thunder Bay Regional Health Sciences Centre (2007). The volumes in Niagara warrant their own catheterization lab both diagnostic and interventional.

Keeping pace with Diagnostic Technology Advances

An article in *“Imaging technology News” September 2007* discussed how CT scanners have evolved over the years and how they can apply to rule out emergent and non-emergent assessment of underlying cardiovascular disease. Currently on going studies are in progress to evaluate the accuracy and effectiveness of this modality. Due to its non invasive nature it will improve quality patient care due to decreased risk and the fact that it can be performed without having to slow down the patient’s heart rate which is currently done for cardiac catheterizations if the patient’s heart rate is rapid.

In November, 2007 an article in the Globe and Mail by Paul Taylor discussed the new 320-CT scanner at Toronto General Hospital. This is the most sophisticated CT scanner in the world and is much less invasive than catheterizations. Studies are currently being conducted to see if this latest innovation can make a real difference.

Given recent and ongoing advances in less invasive diagnostic modalities (particularly CT Coronary Angiography) and the high percentage of patients who benefit from same-procedure PCI; it is extremely difficult to justify construction of a diagnostic-only catheterization facility at this time.

8.7.3 Proposed Service Delivery Model

The position of the Niagara Health System is that the cardiac catheterization lab at the new Health Care Complex in St. Catharines includes interventional services upon opening to enhance access for our community and to provide quality patient-focused care. We need to move beyond the limitations of diagnostic labs and provide as much flexibility for the future as possible.

To ensure early detection and ensure appropriate use of resources, the NHS would develop a Cardiology Division. Cardiologists would assess and manage patients with cardiac disease and make a referral if they felt clinical presentation warranted diagnostic/interventional care. Each referral would be assessed by the interventional cardiologists to determine if the patient was eligible for services in Niagara.

According to Cardiac Care Network of Ontario, in 2002/2003 Niagara residents received 1,793 cardiac catheterizations; 70% of these procedures provided at HHSC. Current data from the Cardiac Care Network indicates that from *May 1/06 to April 30, 2008* approximately 20% of the patients referred required PCI during their procedure.

Exhibit 67: Volume of Niagara Residents Referred to Hamilton HSC for Diagnostic and Interventional Cardiac Catheterizations

May 1, 2006 to April 30, 2008 (2 years)	Inpatient Referrals from the Niagara Region	Outpatient Referrals from the Niagara Region	TOTAL
Cardiac Catheterizations	1079	2744	3823
PCI	782	173	955

Further breakdown from Cardiac Care Network data shows that there was an increase of **8.7%** of patients requiring *cardiac catheterizations* for May 1st to April 30th for the years of 2006/07 compared to 2007/08. There was an increase of **6.3%** for the same time frame for *PCI*.

Exhibit 68: Increase in Cardiac Procedures for Niagara Residents from 2006/07 to 2007/08 (# of Inpatients)

Procedure	2006/07 (May – April)	2007/08 (May-April)	Increase
Catheterization	517	562	8.7% increase
PCI	379	403	6.3% increase

Based on these figures, Niagara could perform 2 inpatient catheterizations per day and 5-6 outpatient catheterizations per day and 2-3 PCI per day (1-2 inpatients and 1 outpatient). Given the aging demographics of Niagara and the identified percentage increases (8.7% catheterization & 6.3% PCI), the NHS could initially perform 70% diagnostic and 30% interventional services.

8.7.4 Evaluation Using Decision Matrix

Evaluation Criteria	Diagnostic Lab Only	Interventional Lab
A. Optimizes Quality of Care:		
▪ Effective	●	●
▪ Efficient	○	●
▪ Equitable	●	●
▪ Safe	○	●
▪ Patient Centred	●	●
▪ Timely	○	●
▪ Work Life Focus	○	●
▪ Population focus	○	●
▪ Continuity of Service Focus	○	●
B. Compliant with policy:		
NHS	●	●
MOHLTC	●	●
HNHB LHIN	●	●
C. Leverages health professional resource pool	○	●
D. Recognizes changing community demographics and population health needs	○	●
E. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
F. Leverages physical plant capacity	○	●

8.7.5 Narrative Analysis of the Evaluation

8.7.5.1 Optimizes Quality of Care

Effective

Research suggests that Primary PCI has been shown to be superior to fibrinolytics especially for the elderly population. Niagara has a higher than average percentage of elderly people.

Efficient

Patients having a cardiac catheterization often require PCI. If ‘diagnostic only’ services are available the patient will need to be scheduled for a repeat catheterization at the mentor hospital. Not only will this cause the patient distress but it will increase costs of having to repeat the procedure (supplies, staff).

Equitable

This would enable the NHS to provide best practice treatment with primary PCI which currently is not available for most of our sites due to travel distances.

Safe

There is risk and patient discomfort associated with invasive procedures such as cardiac catheterization. There is a potential for bleeding, embolus formation etc. Performing a diagnostic catheterization only to find the patient requires a percutaneous intervention (PCI) causes duplication of procedures and increased anxiety for patients.

Patient Centred

Providing PCI will enable the NHS to provide a higher level of necessary cardiac care to the residents on Niagara Region by bringing services closer-to-home; eliminate delays in treatment and better patient satisfaction. The NHS can ensure that quality cardiac services are provided through enhanced coordination of effort, reducing costs and waste.

Timely

The ability to diagnose and treat acute cardiac episodes with the appropriate modality has an impact on patient outcomes. The ability to provide the right treatment at the right time in the right place is of paramount importance to the residents of Niagara. This includes timely access to primary percutaneous intervention when required.

Work Life Focus

The approval of an interventional lab would be an exciting new program offering staff and physicians the opportunity to work in a highly skilled inter-professional team environment. The knowledge transfer, educational and program development would create a unit of increased staff satisfaction resulting in improved recruitment and retention potential within the NHS.

Population Focus

The prevalence of heart disease is one of highest causes of hospitalization and mortality in Niagara.

Continuity of Service Focus

An interventional catheterization lab for Niagara would provide patients the full spectrum of cardiac services based on their individualized health needs within their own region, reducing delays and improving outcomes.

8.7.5.2 Compliant with Policy

NHS



Focus on those we serve

- The request for Intervention Cardiac Catheterization Services in Niagara is a direct result of our patient health care needs as evidenced through review of admission and mortality rates.



Bring out the best in each other

- Quality of work life will be enhanced for all involved through the inter-professional synergies inherent in new program development and implementation.



Build strong and successful relationships

- There is further opportunity to strengthen and enhance our collaborative relationships with our partners e.g. HHSC, CCN, EMS. Regional Base Hospital as we plan and implement our move towards implementation of our Cardiac Catheterization Service in the NHS.



Create a better way

- The opportunity to integrate interventional cardiac catheterization services would provide a robust service which would improve diagnosis and treatment of our patients.



Use our resources wisely

- The opportunity to incorporate an interventional modality to our Cardiac Catheterization Service planned for the New Health Complex in St. Catharines will reduce the redundancy and waste of retrofitting an operational diagnostic lab.

MOHLTC/HNHB LHIN

Health care priorities in both Ontario and LHIN clearly articulate the priority of research based best practices for the prevention, diagnosis and treatment of patients with cardiac disease.

8.7.5.3 Leverages Health Professional Resource Pool

Developing an interventional program would assist in the recruitment of physicians as an interventional lab would be much more attractive than a purely diagnostic lab. It would also provide the infrastructure required to attract additional medical specialists to the NHS. There is urgency to cardiac catheterization human resource planning as it is a complex process that should begin as soon as possible. A minimum one year training “run up” is required for recruitment and training of nursing and support staff.

8.7.5.4 Recognizes Changing Community Demographics and Population Health Needs

Circulatory Disease

- 4 of 12 municipalities have a higher rate of hospitalizations for circulatory disease compared to the Niagara Region rate (St. Catharines, Welland, Port Colborne and Fort Erie)
- 5 of 12 municipalities have a higher rate compared to the LHIN rate (St. Catharines, Niagara Falls, Welland, Port Colborne and Fort Erie)
- 7 of 12 municipalities have a higher rate compare to the Ontario rate (St. Catharines, Niagara Falls, Welland, Port Colborne, NOTL, Thorold and Fort Erie)

Source: Clinical Provincial Data Set MOHLTC

Circulatory Disease Incidence

For the fiscal year 2006/07, the rate of ischemic heart disease:

- 505 admission/100,000 population as most responsible reason for admission
- 6% of these patients died within the same admission
- An additional 947 admissions/100,000 population have ischemic heart disease documented as a co- morbidity.

Source: Clinical Provincial Data Set MOHLTC

Heart Disease is a concern for all residents in Niagara where the incidence and prevalence is higher than most provincial and regional levels.

8.7.5.5 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

Flexibility for the future is important. With advances in current technology, diagnostic cardiac procedures will replace more invasive procedure community deserves to have care closer-to-home.

8.7.5.6 Leverages Physical Plant Capacity

The NHS has a once-in-a-lifetime opportunity with the building of the New HealthCare Complex to ensure that an appropriate physical environment is designed to meet the needs of this program. The current plans for the healthcare complex would require some slight modification; however, addressing this now would be less costly than having to do this in the future. The NHS is proposing that we move forward with a formal business case/proposal for an interventional lab and that the physical plant changes occur prior to the new hospital build. We request that the LHIN review our

position and consider approval of an interventional cardiac catheterization lab.

8.8 Oncology Program

8.8.1 Current State

The Niagara Health System Oncology Program provides out-patient care to patients with a diagnosis of malignant disease. Care provided includes medical and radiation oncologist consultation, administration and support of chemotherapy and related side effects and support of toxicities of radiation therapy administered at other regional cancer centres. It also encompasses general supportive care of cancer patients and family members including symptom control, bio-psychosocial support, and patient and family education across the continuum of cancer care. Clinical research is conducted through clinical trials in conjunction with the National Cancer Institute of Canada Clinical trials group, the Ontario Clinical Oncology Group, and industry partners.

The core service is provided at the St. Catharines General site and two peripheral clinics are located in Welland and Niagara Falls. Those clients requiring hospital admission are admitted to one of the NHS in-patient medical units.

The Oncology Program will evolve to a full-service Cancer Centre at the time of opening of the new healthcare complex in St. Catharines in 2011/2012²¹. Three radiation treatment machines will be operational at opening and a fourth radiation treatment suite will provide future expansion capacity. As a result of a generous philanthropic donation from Walker Industries, it will be known as the Walker Family Cancer Centre [WFCC]. The operating costs of the new WFCC have been quantified in a post construction operating plan (PCOP) submission.

In January 2008, Cancer Care Ontario, Juravinski Cancer Centre/Hamilton Health Sciences and the Niagara Health System signed a Memorandum of Understanding for Integrated Cancer Partnership with a vision to support **“a coordinated cancer program that is delivered on two sites”**.

The guiding principles supporting the partnership include:

- Service Delivery
 - Achievement of the highest standards of cancer care delivery
 - Appropriate care as close to home as possible

²¹ In the late 1990's, the Health Services Restructuring Commission directed that a new cancer treatment facility be built in St. Catharines.

- Efficient use of operating, capital, and facility resources
- Human Resources
 - Efficient use of scarce health human resources
 - Cooperation in the recruitment and retention of qualified staff for the regional program
- Governance
 - Maintenance of independent governance, separate corporate status and ownership of institutional facilities and assets
- Planning
 - Establishment of Steering Committee to achieve the purpose of the Memorandum of Understanding
- Service Level Agreements [SLA]
 - SLA developed when one Hospital is providing services to the other or when the Hospitals jointly contract for services

8.8.2 Case for Change

Access

Over 1,000 Niagara residents currently travel to Hamilton or other Cancer Centres for radiotherapy services.

8.8.3 Proposed Service Delivery Model

In keeping with the Functional Program for a Niagara Regional Cancer Centre, endorsed by Cancer Care Ontario and approved by the Ministry of Health and Long-Term Care, the Walker Family Cancer Centre [WFCC] will be a Centre of Excellence for cancer care, located at the new healthcare complex in St. Catharines. The WFCC will be the sole provider of radiation therapy and systemic treatment within Niagara. The WFCC will continue the satellite clinics currently operated in Welland and Niagara Falls for new patient and follow-up clinic visits.

8.8.4 Evaluation Using Decision Matrix

In light of the approved direction for the WFCC, evaluation using the decision matrix and supporting narrative analysis was not deemed necessary for purposes of the HIP submission.

8.9 Nephrology - Chronic Kidney Disease Program

8.9.1 Current State

The Niagara Regional Renal Program is a full service regional chronic disease program serving the population of Niagara. The Program provides

care and support 24 hours per day, 7 days per week as necessary. The Renal Program has been developed and is evolving based on the Ministry of Health Long Term Care (MOHLTC) Model of Care Document. A total of six Nephrologists support the program. Three Nephrologists have offices located in the community and three Nephrologists have offices based at the OSS site; therefore, the volume of patients being followed by the Program does not reflect the total number of patients being assessed and monitored in Niagara.

For clarity it is important to define the concepts of a ‘Hub and Spoke’ model of care delivery as it relates to the current and proposed care delivery model:

- Hub: The “hub” is the centre for specialized services including renal outpatient clinics, Nephrologists pre-renal assessment clinics, critical inpatient care for renal patients and access to vascular surgery and interventional radiology.
- Spoke: The “spoke” are satellite sites where outpatient dialysis and support for non-critical renal patients occur. This could also include the care of dialysis patients in Complex Continuing Care.

Since governance transfer to the NHS in 2005, the Program has operated under a fractionated hub model due a lack of space at the St. Catharines General site and the enormous costs that would have been required for renovations. Currently the Chronic Kidney Disease Program operates on three sites; Ontario Street Site, Welland site and St. Catharines General Site.

Ontario Street Site

This site represents 2/3rds of the Program. This site provides:

- all outpatient clinic services
- home dialysis (peritoneal and haemodialysis) peritoneal catheter implantation, home modality education, follow up and support
- full spectrum (self care, progressive care and full care) outpatient haemodialysis treatments

At present more than 2000 residents utilize the services of the program from the Ontario Street Site; 257 people receive outpatient haemodialysis treatments, 50 are supported with home peritoneal treatments, 9 clients are supported with home haemodialysis, 1000 are followed in the Nephrology Clinic, 400 people are followed in the Progressive Renal Insufficiency Clinic, 371 Pre-dialysis education and treatment options and approximately 219 are followed/supported in the Pre and Post transplant service.

St. Catharines General

This site supports the nephrology patient who requires sub-specialty expertise or care that is only available at this site. There are two stations

plumbed outside ICU to support the medical surgical patients and there are six stations plumbed in the intensive care unit to address the needs of the critically ill/multi-system failure patients. Within the intensive care settings we also support the provision of continuous venous venous haemodialysis (CVVHD) by means of the Prismaflex.

At the present time we are providing on average six to seven (6-7) treatments per day for medical surgical patients and two to three (2-3) intensive care treatments per day. Due to patient volume and the infection control issues (patients who are positive MRSA and/or VRE) the support of the medical surgical patients is not efficient. At times we have to transport patients to the Ontario Street site for their treatments due to insufficient space or the inability of patient integration due to infection control measures.

Welland Site

This site presents 1/3rd of the Program. This site consists of 15 designated Nephrology beds and 24 station haemodialysis satellite. This satellite unit provides support for both inpatients and outpatients. Currently 100 patients are being supported from this site and the Satellite unit provides support to patients in the Welland Intensive Care Unit who have one-system instability. Due to staffing and resources we are limited to the provision of care for two patients in the Welland ICU; one stable ventilated patient and one non ventilated patient. Patients who become unstable or require specialized resources are transferred to the hub (St. Catharines General site) or to a tertiary centre.

The Inpatient Nephrology Unit (3 South) provides skilled nursing services to nephrology patients including peritoneal dialysis treatments. The Inpatient Unit also provides community/patient support when the Peritoneal Dialysis Clinic is closed (i.e., off hours and weekends).

As a system we are timely in our assessment, follow up and treatment initiation and provision. The Program has a Vascular Access Nurse. However there is no vascular surgery or interventional radiology support for dialysis access within the NHS. We are not timely in the preservation and maintenance of dialysis accesses. As a result we are required to utilize a higher rate of catheters which result in a higher hospitalization, morbidity and mortality. There are no vascular surgeons in Niagara providing support to the nephrology patient population and there is one visiting vascular surgeon providing a half day a month service.

Patient's no longer requiring acute care beds are eligible for placement in the complex continuing care beds. On average we have three to four patients residing in complex continuing care beds. This level of service currently is only eligible for haemodialysis patients.

Hospitalized nephrology patients awaiting long term care have longer wait periods for a bed than their non-nephrology counterpart. The Program provides education to the long term care sector and we provide supportive services (e.g., Dietitian, Social Work) upon request. We currently have 16 long term care facilities providing care to 23 haemodialysis patients. Currently there are no long term care facilities willing to provide peritoneal dialysis care and support.

8.9.2 Case for Change

Best Practice

The lack of vascular surgery and interventional vascular/radiology services to provide the surgical and diagnostics supports for the diagnosis, treatment and specialized examinations is not in keeping with best practice. Our tertiary partners, St. Joseph's and Hamilton General Hospital have articulated they cannot meet the service demands for Niagara and service is being denied.

Special Populations & Consistency with the Model of Care

With MOHLTC approval, the delivery of services from several different sites spanning the Niagara Region was projected. Based on the current service delivery volume and the anticipated volumes forecasted by ICES, there is a need for more capacity than what was previously approved. There are potential opportunities to renovate existing infrastructure versus new construction to address the needs.

Care as Close to Home as possible

Given the average of age of dialysis patients is greater than 65 years of age and the transportation challenges within Niagara, the creation of satellite units is a safe, effective and practical manner of service delivery.

Health Human Resources and Sustainability

The need for Nephrologists in Niagara is compounded by the aging of the current complement of physicians. The consolidation of services with satellites is necessary from a health professional perspective.

Care Right Place, Right Time

There is a need to expand the relationships with Complex Continuing Care and Long Term Care facilities to care for renal patient population. At present we have a number of haemodialysis patients reside in long term care facilities and this must be expanded to include patients who utilize peritoneal dialysis as their renal replacement modality.

8.9.3 Proposed Service Delivery Model

With MOHLTC approval, the delivery of services from several different sites spanning the Niagara Region was projected as follows:

- The majority of the dialysis treatment stations to be located in St. Catharines between the OSS and the SCGH site; this city site was to function as the regional centre, the “*hub*” of the Nephrology Services for the Region. Satellite locations were to be developed to allow NHS to provide additional growth capacity and to better serve the patients of the region by providing closer-to-home care, as identified below:
- The Regional centre will be capped at 30 stations
- The Welland Satellite will be capped at 24 stations
- Nephrology Services will be provided from the Welland Site of NHS (including 15 temporary stations that will increase to 24 permanent stations and 15 inpatient Nephrology beds); this site will provide care to clinically stable ambulatory Level 1 and 2 dialysis outpatients.
- Niagara Falls would be capped at 12 stations
- Future station requirements (15 stations) would be determined based on geographic and population density requirements

Prior to the opening of the new health care complex, we are proposing the delivery of inpatient services will continue on two sites. There is a need to expand the capacity to:

- Address the delivery of services at the St. Catharines site for the medical-surgical patients. In the fall of 2008, plans have been developed for these services to be transferred and developed in the current endoscopy area at the St. Catharines site. Based on the available space, we will be able to increase the number of stations from two to four/five. This will address the infection control measures that are required due to the increasing numbers of isolated patients and the overall volumes and surges in capacity at this site. This will eliminate the need to transport acute care patients from the St. Catharines site to the OSS site for treatments.
- Create two satellites units (Niagara Falls and St. Catharines) to address the station/space re-allocation with the planned closure of the Ontario Street site and the needs which were not projected in the functional plan for the new St. Catharines complex. The St. Catharines satellite will provide training and support for patients who wish to perform home haemodialysis as well as outpatient clinic support; general nephrology, progressive renal insufficiency, follow up and pre and post transplant. This site will also provide outpatient haemodialysis treatments to clinically stable patients who are unsuitable for the home based program. The Greater Niagara General Hospital satellite will provide services to clinically stable Level 1 and 2 patients.

With the creation and opening of the new Health Care complex in St. Catharines, the Chronic Kidney Disease Program will operate as a hub and spoke model. The hub will be the new health care complex. This site will have 80% of the designated inpatient nephrology patients. This site will provide:

- care to all in-patients where their primary diagnosis is nephrology
- support to critically ill patients with multi system instability at this site
- all peritoneal dialysis catheter implantations, dialysis training and ongoing patient
- haemodialysis treatments to clinically unstable outpatients and inpatients at this site.

At the hub, the NHS requires the support of the LHIN to recruit vascular surgeons and develop interventional vascular/radiology services to provide the surgical and diagnostics supports for the diagnosis, treatment and specialized examinations of this patient population. This must include vascular surgery expertise and interventional capabilities for the creation, maintenance and revisions of dialysis (peritoneal and haemodialysis) accesses.

Welland will continue to provide outpatient hemodialysis services. This site will also maintain 20% of the designated Nephrology beds for patients requiring specialized care in the sub-acute phase of their illness.

Due to the aging demographics in Niagara and the long waiting periods for long term care beds, there is a need to develop specialized nursing knowledge in Complex Care for the care of the haemodialysis and the peritoneal dialysis patients. Currently we have haemodialysis patients in this setting and there is a need to expand the knowledge and skill to include peritoneal dialysis patients. Due to the proximity of the Welland Satellite Unit and the Inpatient Nephrology Unit, the provision of this service should remain at the Welland site so the staff can act as a back-up to issues/concerns that may arise.

The Renal Program with the support of the LHIN needs to develop relationships with long term care facilities to care for renal patient population. The Program will continue to provide knowledge, expertise and educational supports to long term care facilities. At present we have a number of haemodialysis patients reside in long term care facilities and this must be expanded to include patients who utilize peritoneal dialysis as their renal replacement modality.

Post completion of the new health care complex in Niagara and when the satellites in Welland and Niagara Falls are reaching maximum occupancy, we are projecting the requirement for 12 dialysis stations in Fort Erie in 2013. The stations would provide services to clinically stable patients from

this area and we are predicting the need to a satellite in the Grimsby/Beamsville area when St. Catharines Satellite is reaching maximum capacity and a critical mass has been developed.

In summary, patients' who require inpatient services will receive their care on two sites; new St. Catharines complex and the Welland site. Patients, who require the skill and expertise of a vascular surgeon or interventional radiology, will receive their care at the St. Catharines site. Complex continuing care should be expanded to provide support for both the haemodialysis and peritoneal dialysis patients. The siting for patients requiring complex continuing care should initially be at the Welland site and it could be expanded to the Douglas Memorial site once the satellite is operational. Outpatient haemodialysis treatments will be provided at the satellite locations. Satellite sites will be developed utilizing existing infrastructure and based on the patient demographics.

8.9.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care: <ul style="list-style-type: none"> ▪ Effective ▪ Efficient ▪ Equitable ▪ Safe ▪ Patient Centred ▪ Timely ▪ Work Life Focus ▪ Populations Focus ▪ Continuity of Service Focus 	○ ○ ● ● ● ●/○ ● ● ● ●	● ● ● ● ● ● ● ● ● ●
B. Compliant with policy: NHS MOHLTC HNHB LHIN	● ● ●	● ● ●
C. Leverages health professional resource pool	●	●
D. Recognizes changing community demographics and population health needs	●	●
E. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
F. Leverages physical plant capacity	●	●

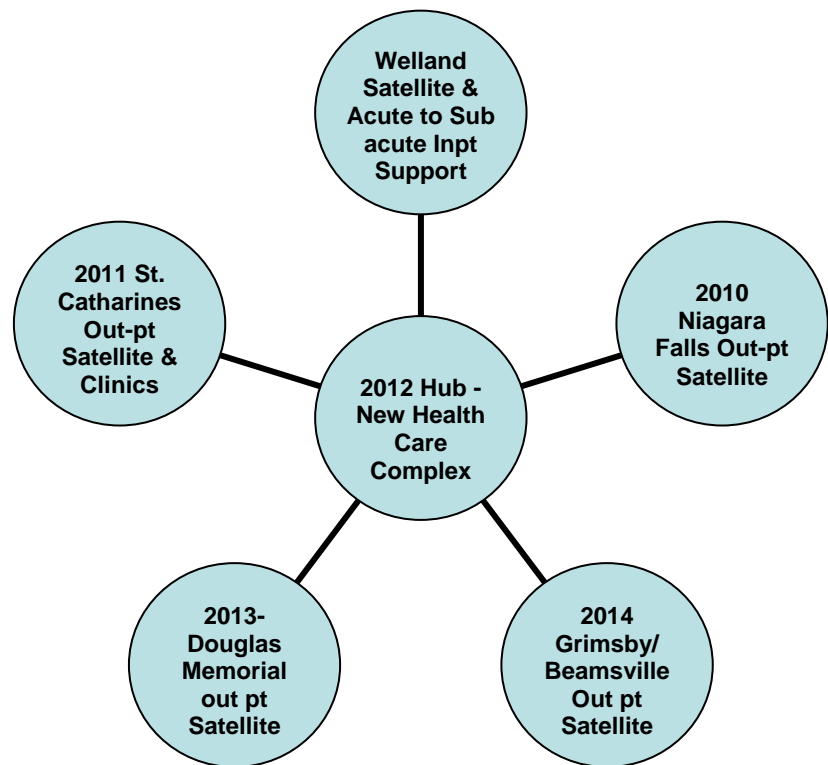
8.9.5 Narrative Analysis of the Evaluation

8.9.5.1 Optimizes Quality of Care

Efficient

Based on the need to develop additional capacity and the Ministry of Health Model of Care, the hub and spoke model for Niagara is depicted below.

Exhibit 69: Vision for Dialysis Services Across NHS Sites



The hub and spoke model promotes effective or efficient use of services and leverage of health professionals. It will promote, develop and sustain the specialized knowledge and skills required to provide care for nephrology patients. The current model was developed due to the excessive costs to consolidate the nephrology patients at the hub.

Studies (Prakash et.al April 2007 Nephrology Dialysis Transplant) have found that the expansion of haemodialysis satellites has not led to the inappropriate utilization of services and an inefficient investment of resources/ supply induced demand. The construction of satellite units can reduce travel time and distances for patients living outside the metropolitan areas and allows patients and families to better utilize existing transportation networks. The satellite units can also reduce travel costs associated with

programs such as MOHLTC high intensity needs, Ontario Disability Support Program and Indian Affairs.

Based on the final configuration of services within the NHS, there may be opportunities to create the Niagara Falls satellite within the existing facility and increase the number of stations to achieve greater efficiencies. Further study is required to examine the renovation costs compared to new construction at the Greater Niagara site and what is in the best utilization of space and monies.

The ability to support peritoneal dialysis patients in long term care facilities and complex continuing care needs development in collaboration with the LHIN. The barriers for haemodialysis patients are limited compared to those patients utilizing peritoneal dialysis as a modality. The NHS proposes to develop the peritoneal dialysis services in complex continuing care which should promote effective utilization of resources while maintaining the individual on their modality of choice/effectiveness. The development of this service element would be consistent with the MOHLTC Peritoneal Dialysis Initiative.

Effective

With the creation and opening of the new health care complex in Niagara, the program will operate in a true hub and spoke model. The consolidation of inpatient services will continue on two sites will allow for a more effective, efficient and safer model of care which better leverages the skill and expertise of all of health care professionals. This is consistent with the Ministry of Health and LHIN Model of Care and the philosophy of the NHS with care as close to home as possible.

Equitable

The proposed service delivery model with the creation of additional satellites is more equitable for haemodialysis patients and families in that the distances they are required to travel will be reduced. Since the cost of travel is based on distance and location, the additional satellite units will allow for increased opportunities to utilize wheelchair transit systems with a reduction in cross municipal boundary travel requirements. As well the creation of additional satellites will be viewed as more humane by patients and family, especially those travelling significant distances and they have evening treatment times. (e.g., 75 year old person traveling 30-45 minutes and their dialysis treatment ends at 2200 hours). This should also foster aging in place.

Safe

Patient safety will be improved with the consolidation of medical sub-specialty support at the hub. This will be further enhanced with the

specialized inter professional CKD Team of RN's, RPN's, Vascular Access Nurse, Renal Technicians and Renal Aides.

Patient Centred

The introduction and consolidation of peritoneal dialysis services in long term care and complex continuing care will ensure equitable access to skilled inter-professional care in these settings. This should result in improved patient flow and better utilization of acute care beds.

Timely

The introduction of vascular and radiology services will ensure dialysis patients receive timely access care and care consistent with best practice. Currently the tertiary centres, Hamilton and St. Joseph Health Care Centre provide very limited services and they have articulated they do not have the capacity to support the volume of patients from Niagara.

The consolidation of inpatient services at two sites and with all specialty services being consolidated at the hub will ensure there is a critical mass to ensure efficiencies and there is a consolidation of the service to ensure expertise.

Work Life Focus

Quality of worklife is heightened with the consolidation of specialized teams of health care professionals. A culture of support and mentoring improves staff satisfaction and morale.

Population Focus

The MOHTLC requested the Institute for Clinical Evaluative Studies (ICES) to examine the growth required for dialysis services. According to ICES, the dialysis services have had the following historical average growth:

- Incidence: 4.9%
- Prevalence: 7.2%.

By January 2011, ICES is forecasting 1,195 patients will require haemodialysis services within the HNHB LHIN by January 2011. Based on our current patient volume and a 7% growth rate, the NHS potentially will be required to service 450-500 individuals. This represents an additional 100 to 150 patients which potentially translates into 17 to 25 additional in-centre haemodialysis stations.

Continuity of Service Focus

The need for vascular surgery expertise and vascular and radiology interventional services are denoted as "...an absolutely essential component of an end stage renal disease program" (The Provincial Haemodialysis

Vascular Access Initiative, p 4). The need to develop vascular and radiology expertise was also a recommendation from our external review. The ability to perform interventional radiology services supporting vascular access will ensure more timely access to care for dialysis patients in Niagara. Interventional services will preserve the life of an access and thereby improve the overall health of the individual. The approval of the NHS as an Associate Vascular site will allow for the recruitment of a vascular surgeon.

8.9.5.2 Compliant with Policy

The proposed delivery of services is aligned with the NHS success factors as outlined below:



Focus on those we serve

- Enhances the provision of high quality care as close to home as possible.



Bring out the best in each other

- Provides an opportunity to develop services in the various communities to facilitate and achieve savings from the use of existing transportation systems.



Build strong and successful relationships

- Facilitates closer relationship with the Complex Continuing Care and Long Term Care settings for the provision of all dialysis modalities in these settings.



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.
- Enhance the preservation of dialysis accesses and thereby improving the overall health of the individual as a result of the investment in vascular and interventional radiology services.



Use our resources wisely

- Facilitates the utilization of existing infrastructure with the creation of additional stations at the various NHS sites.

MOHLTC and HNHB LHIN

The ICES report identifies there will be a need to investment in chronic kidney disease services. ICES reported the “growth in dialysis patients is considerable, but fairly predictable at a provincial level”. Based on the ICES and the Niagara District Health Council Report, the number of stations in Niagara needs to increase significantly in the next eight (8) years.

8.9.5.3 Leverages Health Professional Resource Pool

Consolidation of inpatient sites allows for improved health professional utilization and specialized resource allocation (e.g., dietary, pharmacy, materials management etc.).

The satellite locations are sized to provide for improved health care delivery while ensuring efficient and effective health professional utilization.

8.9.5.4 Recognizes Changing Community Demographics and Population Health Needs

The creation of additional satellites recognizes the community and program demographics and the addresses the urban/rural transportation challenges in the Niagara.

The establishment of peritoneal dialysis services in complex continuing care and long term care recognizes the changing community demographics and integrating the community and assisted living service system into a meaningful human experience for the patient.

8.9.5.5 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

The request for support for the establishment of vascular and interventional vascular/radiology services supports the standard of care the Ministry of Health has outlined in the Provincial Haemodialysis Vascular Access Initiative and identified in best practice guidelines.

8.9.5.6 Leverages Physical Plant Capacity

The creation of satellite locations using existing infrastructure leverages existing physical plant capacity and is supported in the Ministry of Health Model of Care for Regional Centres.

8.10 Critical Care Program

8.10.1 Current State

The Niagara Health System Critical Care services spans five sites including the St Catharines General (SCG), Greater Niagara General (GNGH), Welland County General Hospital (WCGH), Port Colborne General (PCGH) and Douglas Memorial Hospital (DMH).

Across the five sites, there are a total of 75 beds however only 67 of these are staffed and in operation. Four cardiac care beds in each of PCGH and DMH sites have been closed for 10 months (DMH) and 12 months (PCGH). The table below provides an overview of how the units are organized at each of the sites.

Exhibit 70: Current NHS Critical Care Services

NHS Critical Care			
Site	Level	Number of beds	Comments
SCG	Level 3 ICU	12	Closed ICU model, Intensivist Led. Open model PCU and telemetry
	PCU	11	
	Telemetry Unit	14	
GNG	Level 2 ICU	8	Open model
	Cardiac monitored care / telemetry	6	
WCGH	Level 2 ICU	8	Open model
	Cardiac monitored care / telemetry	8	
PCGH	Level 1 Cardiac monitored care / telemetry	4	Beds closed since June 2007 due to inability to recruit nurses into multiple FT vacancies.
DMH	Level 1 Cardiac monitored care / telemetry	4	Beds closed since Sept 2007 due to inability to recruit nurses into multiple FT vacancies.

In-patient activity is profiled below. Highlights include:

- Occupancy rates are stable at GNGH and WCH but a decrease is noted at SCG, this is the expected outcome from a closed ICU model (closed model began June 2007). The cardiac monitored beds at DMH and PCGH have a low occupancy ranging from 64-68%. The optimal occupancy for an ICU's is in the range of 82 -85%.

Exhibit 71: ICU Beds Staffed And Operational 2006-2007

ICU: April 2006 – March 2007	SCG	GNG	WCGH
Avg Beds Available	12	8	8
Avg Beds Staffed and in Operation	12	8	8
Avg Beds Days Staffed and in Operation	4380	2920	2920
Patient days	4017	2646	2687
Separations	261	294	208
ALOS - excluding transfers out	15.4	9	12.9
Transfers out	693	568	676
ALOS - including transfers out	4.2	3.1	3
% occupancy	91.7%	90.6%	92.0

Exhibit 72: ICU Beds Staffed And Operational 2007-2008

ICU: April 2007 – March 2008	SCG	GNG	WCGH
Avg Beds Available	12	8	8
Avg Beds Staffed and in Operation	12	8	8
Avg Beds Days Staffed and in Operation	4392	2928	2928
Patient days	3480	2634	2632
Separations	277	368	266
ALOS - excluding transfers out	12.6	7.2	9.9
Transfers out	550	411	606
ALOS - including transfers out	4.2	3.4	3
% occupancy	79.2%	90%	89.9

Exhibit 73: CMC Beds Staffed And Operational 2006-2007

CMC/PCU: April 2006 - Mar 2007	SCGH	GNGH	WCGH	PCGH	DMH
Avg Beds Available	12	6	8	4	4
Avg Beds Staffed and in Operation	12	5	8	4	4
Avg Beds Days Staffed and in Operation	4380	1982	2920	1460	
Patient days	4053	1626	2533	1004	
Separations	451	301	442	169	
ALOS - excluding transfers out	9	5.4	5.7	5.9	
Transfers out	984	316	508	133	
ALOS - including transfers out	2.8	2.6	2.7	3.3	
% occupancy	92.5%	82%	86.7%	68.8%	

Exhibit 74: CMC Beds Staffed And Operational 2007-2008

CMC/PCU: April 2007- Mar 2008	SCGH	GNGH	WCGH	PCGH	DMH
Avg Beds Available	11	6	8	4	4
Avg Beds Staffed and in Operation	11	6	8	4	4
Avg Beds Days Staffed and in Operation	4117	2196	2928	1460	
Patient days	3734	1906	2534	1004	
Separations	447	381	546	169	
ALOS - excluding transfers out	8.4	5	4.6	5.9	
Transfers out	833	311	463	133	
ALOS - including transfers out	2.9	2.8	2.5	3.3	
% occupancy	90.7%	86.8%	86.5%	68.8%	

8.10.2 Case for Change

Access and future ICU needs. Critical care resources are expensive and scarce. In order to provide the proper service and improve the efficiency and effectiveness of critical care it is necessary to re visit how critical care services are delivered throughout the NHS. Utilization data imply that critical care services at SCGH, GNGH, and WCH is in a steady state but utilization at DMH and PCGH prior to June 2007 trended at 65%. The cardiac monitored beds in PCGH and DMH were closed in the summer of 2007 due to human resource issues and since that time patients from these

communities have been transferred to ICU or CMC beds at one of the large sites. This change in practice has not resulted in an increase in admit no bed patients or occupancy rate at the receiving sites.

Exhibit 75: CMC Beds Occupancy Rates

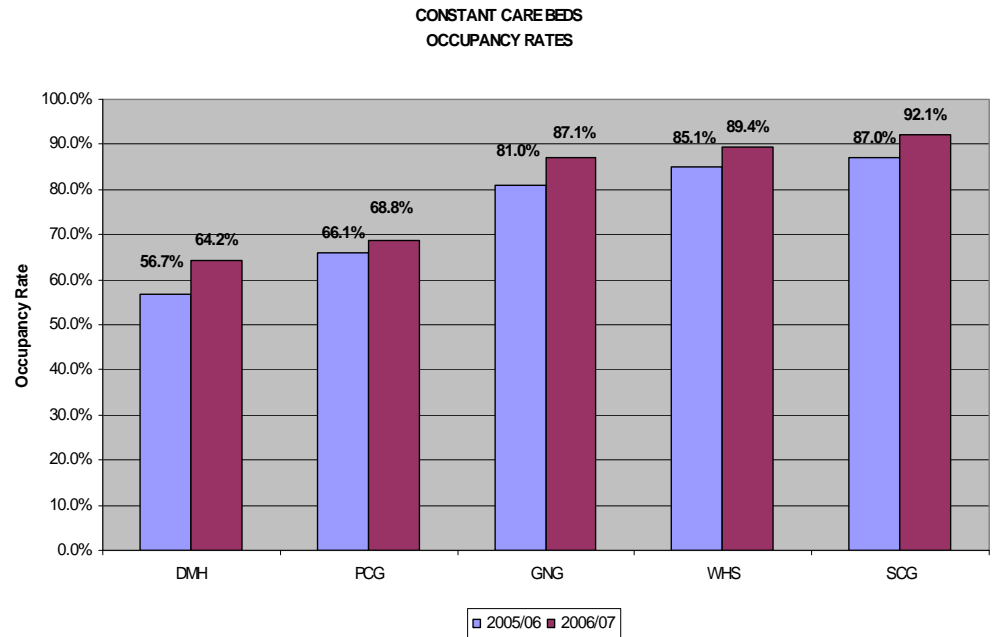
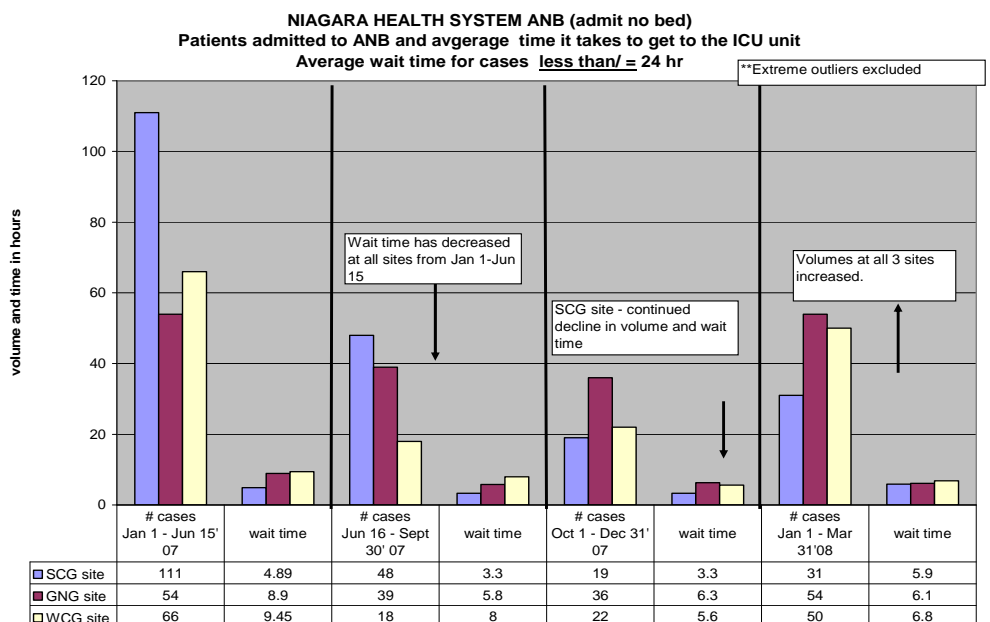


Exhibit 76: Admit No Bed Cases



Health human resources and sustainability

The shortage of critical care nurses in Niagara is compounded by the aging of the workforce. This is further aggravated by the inability to attract nurses to work in a non-traditional critical care environment such as the cardiac care units in PCGH and DMH. This added strain on critical care human resources questions the sustainability of a five site model simply from a health professional perspective.

Exhibit 77: Critical Care Staff Retirement Eligibility

Critical Care	Total Staff	% eligible to retire by 31/12/08	% eligible to retire by 31/12/13
RN	29	16%	39%

Exhibit 78: Current ICU RN Vacancies by Site

SCGH	GNGH	WCGH	PCGH	DMH
4 FT	1 FT	0	6 FT, 2 PT	2 FT, 3 PT

Best Practice

Clinical practice guidelines and order sets are rapidly becoming the method by which critical care professionals attempt to reduce variability in care, measure outcomes, reduce cost and improve quality. In June 2007 the NHS took best practice to a new level by implementing a closed ICU at the SCGH. Evidence based medicine supports that having the Right Care at the Right Time in the Right Place by the Right Team improves outcomes. To that end critical care service delivery must consider the concept of critical mass or clustering, whereby Intensivists, physician sub specialists, nurses, and allied health personnel work as “critical care teams”. This best practice initiative is in various stages of implementation at the three large ICU’s where we have the “cluster” of clinical experts to manage the complex care needs of the critical care patients. Due to the lack of physician sub specialists, critical care nurses and allied health professionals at DMH and PCGH there are no plans to roll out these guidelines and protocols.

Safety and Quality

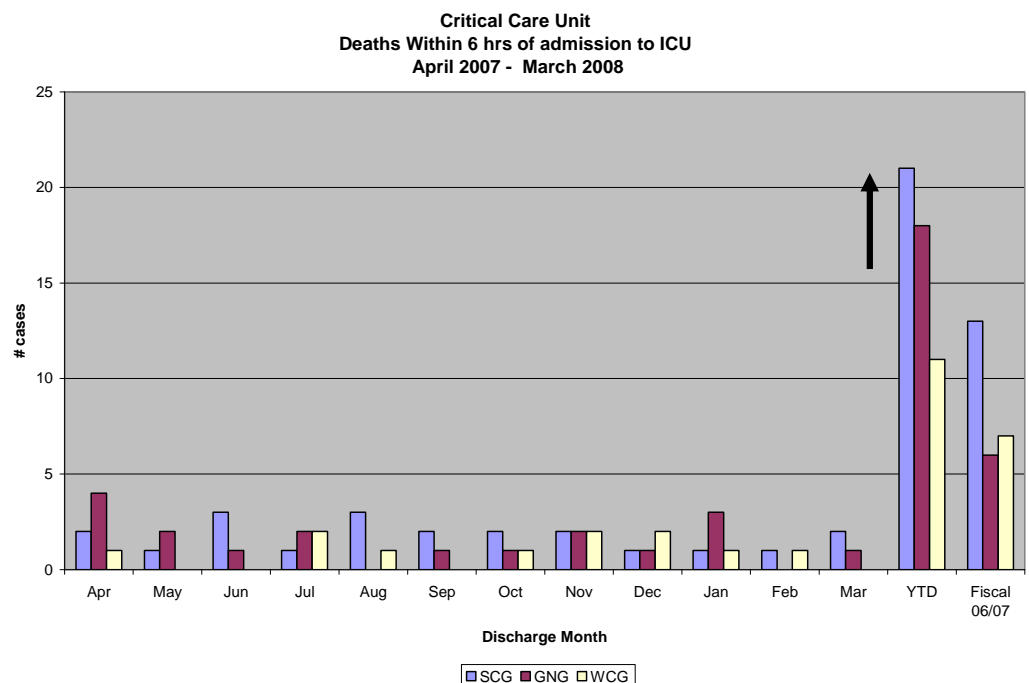
The literature clearly demonstrates the variability in both quality of care and the safety of patients in our health care system. Some measures of variability are demonstrated in hospital mortality rates, increased length of stay and adverse patient outcomes. The critical care program has been looking at the concept of *failure to rescue* and attempting to identify in our sites which of the three variables, *failure in planning*, *failure in communication* and *failure to recognize deteriorating patient conditions* is our highest risk for failing to rescue our patients. There was consensus that while we could improve on all three of these systemic issues our greatest risk to patients comes from failure to recognize deteriorating patient condition.

This is a risk in all our sites due to a number of factors:

- High portion of new graduates in the medical-surgical areas
- Limitations in providing mentorship on the job to these new graduates as there are few “seasoned” nurses in these areas.
- Limited additional resources on the off shift that nurses can call on to provide guidance.
- There is also the component of *failure to communicate*, as these novice nurses are somewhat reluctant to call physicians on the off shift when a patient may demonstrate subtle changes in condition.

The critical care program applied for and was denied funding through the first round of announcements to implement a Critical Care Response Team (CCRT). The program believes that with CCRT in place it will demonstrate an improvement in the areas of failure to recognize and failure to communicate deteriorating patient condition. This result can be achieved by the CCRT providing mentorship to front line staff to augment their assessment skills and their confidence level when communicating with physicians. As well, the implementation of clinical triggers and a communication tool along with the CCRT will allow earlier interventions in the failing patient. The following exhibit shows the number of patients arriving and dying within 6 hours of admission to ICU. This indicator is indicative of the degree to which patients have deteriorated before intervention takes place.

Exhibit 79: Deaths Within 6 Hours Of Admission To ICU



8.10.3 Proposed Service Delivery Model

The critical care program vision is adapted from the Society Critical Care Medicine (SCCM). *Right Care, Right Now, Providing the Right care at the Right moment in time to achieve optimal patient outcomes.*

The programs recommendations for critical care services are founded on this vision. In the teams deliberations key planning assumptions were determined. These included;

- Adherence to the recommendations of the “Ontario Critical Care Steering Committee” final report 2005 re “Transformation Agenda” for critical care services in Ontario
- Implementation of key strategic initiatives arising from the External Review of Critical Care Services NHS 2005 (Stewart and Kraus).
- Maintenance of critical care services in the 3 large sites.
- Retention of an Intensivist led Level 3 ICU at the SCG.
- Employment of Critical Care Response Teams at the 3 large sites with support to the small sites, as soon as funding is available.
- Reinvestment in the critical care program to sustain the Level 2 and Level 3 ICU’s.

The critical care program reviewed several options including maintaining the status quo with services at all 5 sites; closing cardiac care beds at the 2 small sites and reinvesting into critical care services at the 3 large sites. Evaluation metrics included the following indicators: quality, utilization, human resources and financial. *Following an analysis of the options the critical care program recommended:*

- Permanently closing the cardiac beds and telemetry capability at DMH and PCGH.
- Reinvesting program dollars from the closure of the cardiac beds to sustain and improve services at the three large sites.
- Implementing CCRT teams at the three large sites with CCRT support to transfer unstable patients from PCGH and DMH.

Since the cardiac beds closed (12 months ago in PCGH and 10 months ago in DMH) there has been no evidence of a decrease in quality of care at the sending sites or increase in utilization at the receiving sites, (primarily ICU in WCGH and GNGH). The human resource concerns in the critical care program are primarily related to the vacancies of qualified nurses in DMH and PCGH, this has not improved in spite of aggressive recruitment and educational opportunities afforded the staff at both sites. The nurses when interviewed will state that the “site is unsafe to manage sick patients due to lack of physician specialists and lack of supports, e.g. respiratory therapists”. From a financial perspective the operating costs to maintain the cardiac beds

(escalating overtime costs) compounded with the occupancy rate of 60% or less does not make good economic sense.

Exhibit 80: Overtime in Critical Care Units

ICU and Cardiac Monitored Care Functional Centre	07/08 Overtime Costs	% of Total	06/07 Overtime Costs	% of Total
DMH Combined Med/Surg	\$ 6,205		\$ 4,834	
PCGH Cardiac Monitored Care	\$ 688		\$ 2,100	
Total Small Sites	\$ 6,893	25.9%	\$ 6,934	22.8%
GNGH ICU	\$ 4,348		\$ 3,783	
GNGH Cardiac Monitored Care	\$ 299		\$ 249	
GNGH Sub-Total	\$ 4,647		\$ 4,032	
SCGH ICU	\$ 8,750		\$ 9,744	
SCGH Cardiac Monitored Care	\$ 40		\$ 100	
SCGH Sub-Total	\$ 8,790		\$ 9,844	
WCH ICU	\$ 5,075		\$ 7,707	
WCH Cardiac Monitored Care	\$ 1,208		\$ 1,918	
WCH Sub-Total	\$ 6,283		\$ 9,625	
Total Large Sites	\$ 19,720	74.1%	\$ 23,501	77.2%
NHS Total	\$ 26,613		\$ 30,435	

The anticipated benefits to this recommendation include but are not limited to:

- Improved quality of care for critically ill patients transferred from the small sites to sites where clinical expertise in the form of Intensivists and physician specialists are available 24/7.
- Improved quality of care within ICU's that have a relatively stable nursing workforce. Critical care nurses in the 3 large sites are fully certified in all aspects of managing critically ill patients.
- Improved quality of care with the presence of services that support critical care, i.e. *Respiratory Therapists; Physiotherapists, Pharmacists, Social Workers Diagnostic Services etc*
- Improved service delivery, *Right care, Right patient, Right time, Right place.*
- Consistency of care and standardization across the system. (Level 2 and 3 ICU's use best practice order sets and participate in Safer Health Care Now (SHN) initiatives.
- Anticipated improvement in our HSMR through the use of CCRT's. Better and earlier recognition of complications in our patients.
- Reinvestment to support the ICU's at GNGH, WCH and SCGH.
- Maximal utilization of critical care resources; better utilization of critical care beds since utilization at small sites was around 60%, less capital

equipment expenditures and fewer operating expenses. (Due to staffing problems the cardiac beds were maintained by using overtime).

- Stabilization of human resources, using critical mass theory to consolidate expertise around levels of critical care.
- Alignment with NHS success factors.

8.10.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care:		
Effective	○	●
Efficient	○	●
Equitable	●	●
Safe	○	●
Patient Centred	●	●
Timely	○	●
Work Life Focus	○	●
Population Focus	○	●
Continuity of Service Focus	○	●
B. Compliant with policy: NHS MOHLTC HNHB LHIN	●	●
C. Leverages health professional resource pool	○	●
D. Recognizes changing community demographics and population health needs	●	●
E. Supports ability to advance/promote health care i.e. introduction of new technology	○	●
F. Leverages physical plant capacity	●	●

8.10.5 Narrative Analysis of the Evaluation

8.10.5.1 Optimizes Quality of Care

Effective

Consolidation of critical care services on three sites will result in a significant critical mass of patients and care providers to support a sustainable, effective critical care system that is in keeping with best practice standards. In addition, the introduction of Critical Care Response Teams will represent a significant system enhancement designed to support care in all sites but in particular the small sites where support services are wanting.

Efficient

This proposal supports the pooling of scarce human resources. It consolidates the patients in three critical care units in sites that have the technologies and supports mandatory to provide care to patients with complex needs

Equitable

The data confirms that the citizens of these communities currently receive critical care services and cardiac monitoring services from one of the large sites. This additional volume at the 3 large sites has not resulted in an increase in admits no bed critical care patients and the occupancy levels at the 3 large sites have not changed significantly.

Safe

In order to practice safe patient care the health care team, physicians, nurses, allied health professionals requires access to practice environments that promote quality care. The introduction of a Level 3 Intensivist led ICU at SCGH has raised the standard for critical care services in the NHS. The program has implemented the recommendations of two coaching teams from the Critical Care Secretariat, has introduced morbidity and mortality rounds, grand rounds, order sets and is embarking on the implementation of an early warning system as an ICU avoidance strategy. All of these strategies requires resources that are not available in DMH and PCGH, consequently the same standard of care is not practical in these sites.

Patient Centred

The implementation of Critical Care Response Teams speaks to the patient centred model of care by providing support to the front line staff when and where they need it the most. The rapid assessment and decision making skills of the team will benefit patient care by identifying subtle changes in a deteriorating patient.

Timely

By consolidating services at 3 large sites, critical care patients throughout Niagara would benefit from timely access to clinical experts and diagnostic services that are not now available in Ft. Erie and Port Colborne. Better access to a critical care team and improved diagnostic services equates to more timely treatment and shorter lengths of stay in hospital.

Work Life Focus

Quality of worklife is heightened with the consolidation of specialized teams of health care professionals. A culture of support and mentoring improves staff satisfaction and morale.


Population Focus

The proposal for consolidation of critical care services has the potential to better meet the needs of critical care patients and their families by exposing them to “critical care interdisciplinary teams”. “Studies have shown that optimal care is provided when an integrated team of dedicated experts is present to assess, initiate and adjust treatment to ensure that the best possible care is delivered to the critically ill patient the moment it is needed”.(SCCM).

Continuity of Service Focus

A better coordinated and seamless system will improve the continuity of service for patients and their families.

Exhibit 81: PCGH and DMH Acute Transfers



PCG SITE: ACUTE TRANSFERS TO OTHER SITES

June 12, 2007 to April 1, 2008

Transfer To Site	Transfer due to Med/Surg Condition	Transfer due to Closure of Beds	Total Transfers	% Transfer due to Condition	% Transfer due to Closure of Beds	% Transfer Site To: Condition Related	% Transfer Site To: Closure Related
SCG	14	3	17	82%	18%	14%	4%
GNG	8	7	15	53%	47%	8%	9%
WHS	59	72	131	45%	55%	61%	88%
Other	16	0	16	100%	0%	16%	0%
Total	97	82	179	54%	46%	100%	100%

* PCG cardiac monitored care beds closed June 12, 2007

DMH SITE: ACUTE TRANSFERS TO OTHER SITES

September 23, 2007 to April 1, 2008

Transfer due to Med/Surg Condition	Transfer due to Closure of Beds	Total Transfers from ED/Inp	% Transfer due to Condition	% Transfer due to Closure of Beds
222	24	246	90%	10%

DMH cardiac monitored care beds closed Sept 23, 2007

8.10.5.2 Compliant with Policy

The proposal embodies the recommendations of the External Review undertaken in 2005 by Dr. Stewart and Dr. Kraus. The review was based on the MOHLTC vision for critical care in Ontario and spoke to access to care, safety and quality, human resources and technologies. “Providing timely access to the right critical care services means that the service must be both efficient and effective”. (Stewart and Kraus, 2005). This proposal would be compliant with the vision of the Critical Care Secretariat in that all critical

care patients in Niagara would have equal access to the same standard of care across the region. The proposal also would have the added benefit of ensuring that competent, qualified staff caring for the sickest patients is utilizing best practice standards such as SHN initiatives and order sets currently in place in SCGH, GNGH and WCGH ICU.

The proposed critical care services model is aligned with the NHS' Corporate *Success Factors* as outlined below:



Focus on those we serve

- Enhances provision of high quality and sustainable care.
- Facilitates investment in enhanced critical care services and supports [i.e. reinvestment to support the critical care teams and technologies at SCGH, GNGH and WCH ICU's.



Bring out the best in each other

- Enhances the quality of work life for staff by providing the necessary resources to support excellence in care.
- Provides a critical mass of staff to learn from and support one another.
- Creates potential to develop new roles in the critical care team such as Clinical pharmacists, Critical care social worker etc.



Build strong and successful relationships

- Builds upon the NHS goals to partner and link with universities and colleges to facilitate learning and research [e.g., Critical care Internship, Critical care residency)



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.



Use our resources wisely

- Facilitates efficient use scarce human resources.
- Minimizes the need for capital and operational investments at multiple sites

8.10.5.3 Leverages Health Professional Resource Pool

The proposed model leverages our health professional resource pool in that it acknowledges that critical care nurses wish to work in a practise environment where they can use their skills, acquire knowledge and have the supports at hand to allow them to practice safely. With the aging workforce, 40% of critical care nurses in Niagara eligible to retire in 5 years and the current vacancies it is imperative that we use our available resources wisely. This proposal would also allow for reinvestment in the 3 large ICU's for

program supports such as a critical care pharmacist, social worker, nutritionist. Our benchmarked critical care units all have these supports; our critical care team has done an outstanding job, however to retain and recruit staff we must look at ways to improve the working environment and to provide career enhancements to staff.

8.10.5.4 Recognizes Changing Community Demographics and Population Health Needs

This proposed model would position the NHS to better serve the health care needs of our citizens into the future. The MOHLTC report in March 2005 *“The Final Report of Ontario Critical Care Steering Committee”* states that the number of ventilator beds required in Ontario will rise to 782 by 2026 this is 70% more than in 2003. It went on to further spell out the need for future increase in critical care services: “Critical care is in a crisis situation which is impacting on other healthcare services”

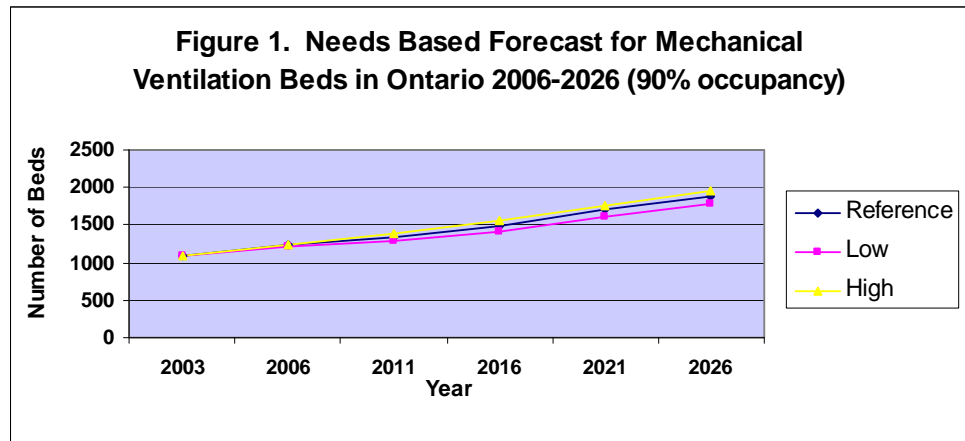
The demand for critical care is increasing dramatically for a number of reasons.

- The aging population is using high levels of critical care services
- New drugs and life-support technologies are making more treatments possible
- Public expectations to “maintain life at any cost is increasing.”

Access to critical care is also facing challenges from within: there is a shortage of specialised staff and limits to financial resources.

Given this information it makes sense to plan for the future role of critical care in Niagara by consolidating the service on 3 sites to accommodate the financial, human resource and technological requirements of the future.

Exhibit 82: Future ICU Bed Needs



By 2026, an additional 782 beds will be required or 70% more beds than in 2003.

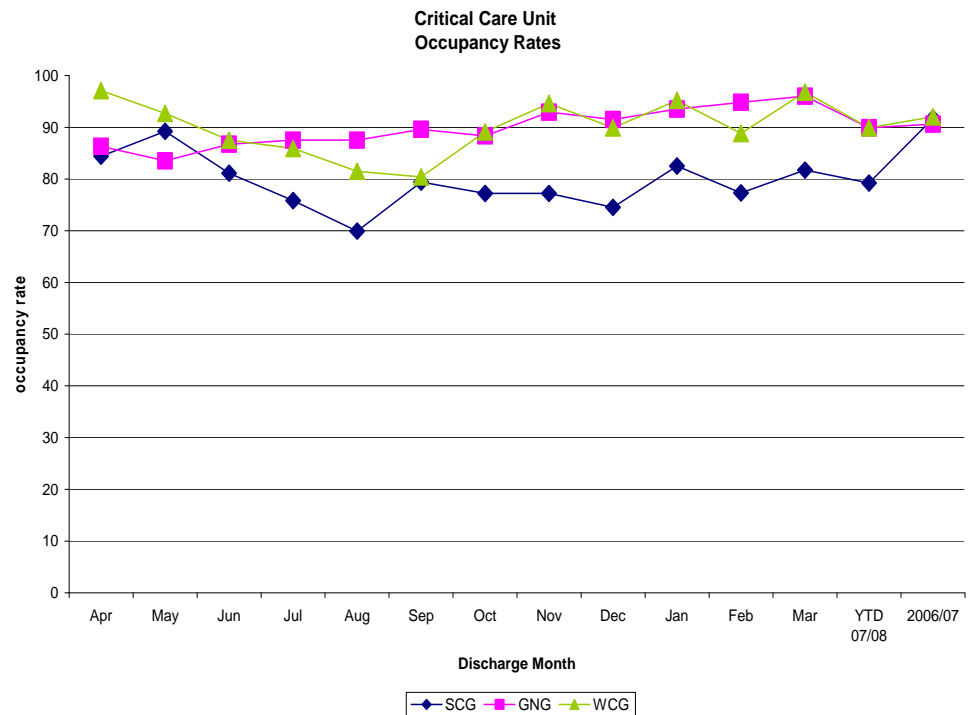
8.10.5.5 Supports Ability to Advance/Promote Health Care (i.e. Introduction of New Technology)

The type of technologies used in critical care is extensive and includes information technology, medical devices, and drugs. (*Stewart and Kraus, 2005*). The Level 3 ICU at SCGH is currently reporting raw data to the MOHLTC via the Critical Care Information Systems (CCIS) network; the Level 2 ICU's will be implementing this technology in November 2008, consistent with the provincial mandate. This technology will facilitate benchmarking with other critical care units across the province. Consolidation of services on 3 sites will raise our acuity levels as only the sickest patients will be admitted to ICU; as well the 60% utilization of cardiac care beds in the small sites will not skew our overall efficiency. Operating 3 ICU's instead of 5 while maintaining the same level of service will be more cost effective and will put us in a better position financially to meet the ever growing technology requirements in the critical care unit of the future.

8.10.5.6 Leverages Physical Plant Capacity

Currently the volumes of patients that would have been admitted to the cardiac care beds in both DMH and PCGH are being accommodated at the 3 large sites. This has not resulted in an increase in ANB for critical care patients. As well, the occupancy levels at the sites receiving the transfers from DMH and PCGH has remained stable.

Exhibit 83: Critical Care Occupancy Rate



8.11 Operative/Perioperative Program

8.11.1 Current State

The Niagara Health System's Operative/Perioperative program offers both inpatient and outpatient services at five of its sites: St. Catharines General, Greater Niagara General, Welland, Fort Erie and Port Colborne. Across these sites there are a total of 124 inpatient surgical beds with an additional 79 (med/surgical) beds at the smaller sites. There are 22 operating rooms and 4 fully functional endoscopy suites, all of which currently participate in the provincial colorectal screening program. The Length of Stay for surgical patients is at or below the 50th percentile benchmark, sometimes reaching the 25th percentile.

Exhibit 84: Surgical Services Currently Delivered By Site

Site	Surgical Services	In-Patient	Out-Patient	Clinics/ Minor Procedures	Pre-Op Clinics
SCG	Anaesthesia	✓	✓		✓
	Endoscopy	✓	✓		
	ENT	✓	✓	✓	
	General Surgery	✓	✓	✓	
	OBS/GYN	✓	✓	✓	
	Ophthalmology		✓	✓	
	Dental		✓		
	Orthopedics	✓	✓	✓	
	Plastics	✓	✓	✓	
	Urology	✓	✓	✓	
	Vascular	✓			
	Thoracic	✓			
WHS	Anaesthesia	✓	✓		✓
	Endoscopy	✓	✓		
	ENT	✓	✓	✓	
	General Surgery	✓	✓	✓	
	OBS/GYN	✓	✓	✓	
	Ophthalmology		✓	✓	
	Dental		✓		
	Orthopedics	✓	✓	✓	
	Plastics	✓	✓	✓	
	Urology	✓	✓	✓	
GNG	Anaesthesia	✓	✓		✓
	Endoscopy	✓	✓		
	ENT	✓	✓	✓	
	General Surgery	✓	✓	✓	
	OBS/GYN	✓	✓	✓	
	Ophthalmology		✓	✓	
	Dental	✓	✓		
	Orthopedics	✓	✓	✓	
	Plastics	✓	✓	✓	
	Urology	✓	✓	✓	
PC	Anaesthesia		✓		✓
	Endoscopy			✓	
	ENT				
	General Surgery				
	OBS/GYN				
	Ophthalmology		✓		
	Dental		✓		
	Orthopedics				
	Plastics				
	Urology		✓	✓	
DM	Anaesthesia		✓		✓
	Endoscopy			✓	
	ENT				
	General Surgery				
	OBS/GYN			✓	
	Ophthalmology		✓		
	Dental				
	Orthopedics			✓	
	Plastics				
	Urology			✓	

Exhibit 85: Perioperative Program – Key Statistical Indicators

KEY STATISTICAL INDICATORS						
Niagara Health System Consolidated						
		Period:		Apr-07	to	Mar-08
	Y-T-D	Y-T-D	Y-T-D		FISCAL	FISCAL
	2007/2008	2007/2008	ACT-BUD		2007/2008	2007/2008
	BUDGET	ACTUAL	VARIANCE		BUDGET	FORECAST
STATISTICS						FISCAL
						FOR-BUD
						VARIANCE
Surgical (GNG, SCG, WHS):						
Avg Beds Available	103	103	0%		103	103
Avg Beds Staffed and in Operation	99	100	1%		99	100
Avg Beds Days Staffed and in Operation	36,309	36,471	0%		36,309	36,471
Patient days	34,195	33,727	-1%		34,195	33,727
Separations	6,689	6,687	0%		6,689	6,687
ALOS	5.1	5.0	-2%		5.1	5.0
% occupancy	94.2%	92.5%	-2%		94.2%	92.5%
Surgical - Orthopedic (SCG C6):						
Avg Beds Available	21	21	0%		21	21
Avg Beds Staffed and in Operation	21	21	0%		21	21
Avg Beds Days Staffed and in Operation	7,613	7,530	-1%		7,613	7,530
Patient days	7,205	7,211	0%		7,205	7,211
Separations	1,211	1,206	0%		1,211	1,206
ALOS	5.9	6.0	2%		5.9	6.0
% occupancy	94.6%	95.8%	1%		94.6%	95.8%
TOTAL - SURGICAL:						
Avg Beds Available	124	124	0%		124	124
Avg Beds Staffed and in Operation	120	121	1%		120	121
Avg Beds Days Staffed and in Operation	43,922	44,001	0%		43,922	44,001
Patient days	41,400	40,938	-1%		41,400	40,938
Separations	7,900	7,893	0%		7,900	7,893
ALOS	5.2	5.2	0%		5.2	5.2
% occupancy	94.3%	93.0%	-1%		94.3%	93.0%
Combined Medical/Surgical (DMH, NTL, PCG):						
Avg Beds Available	79	81	3%		79	81
Avg Beds Staffed and in Operation	74	72	-3%		74	72
Avg Beds Days Staffed and in Operation	27,184	26,402	-3%		27,184	26,402
Patient days	21,278	22,275	5%		21,278	22,275
Separations	2,203	1,755	-20%		2,203	1,755
ALOS	9.7	12.7	31%		9.7	12.7
% occupancy	78.3%	84.4%	8%		78.3%	84.4%

Exhibit 86: NHS Inpatient and Outpatient OR cases by Service 2006/07

Physician Service	TOTAL		
	INP	SURG	Day Surgery
	Main OR	Main OR	Endo/ Minor OR
Dental Surgery	69	916	0
Dentistry	0	53	0
General Surgery	1,967	2,606	9,061
Obstetrics/Gynecology	1,411	2,970	474
Ophthalmology	12	5,516	59
Orthopaedic Surgery	2,600	2,469	17
Otolaryngology	149	1,731	89
Pediatrics	5		
Plastic Surgery	201	1,330	738
Urology	814	4,261	2,786
Total	7,228	21,852	13,224

8.11.2 Case for Change

Best Practice

The current array of acute in-patient and outpatient services across the five sites is *not* in keeping with best practices for surgical services as identified by the MOHLTC Coaching Teams, [e.g., standardization of policies and surgical supplies, booking practices, staff education, etc.], External Report 2006 (Taylor/Watt) and the Surgical Process Analysis and Improvement (SPAI) report.

Duplication

Within the surgical program, multiple sites are providing the same services, resulting in duplication of expensive capital equipment. This limits the NHS' ability to keep pace with acquiring new technologies across multiple sites. This also impacts our ability to take maximum advantage of standardization of equipment and supplies, tracking of our supply chain and efficiencies that result from consolidation of high volume/quick turnaround cases. Capital equipment requests for 2008/09 for the surgical program totaled \$10.7 million.

Health Human Resources

The Perioperative Program is experiencing significant challenges from a Health Human Resource perspective. The most critical area is recruiting and retaining qualified nurses; similarly, there are challenges in some areas of physician recruitment (e.g., anaesthesia and vascular). These challenges have resulted in the cancellation of elective surgeries and significant overtime costs. Nursing staff are resorting to calling in sick due to the inability to have vacation/time off granted. This has negatively impacted the quality of work life and retention of staff on the units.

Exhibit 87: NHS Surgery Overtime Cost Trends

	Inpatient Surgical	OR Suite	Total	% Change from 2005/06 base
2005/06	394,385	271,220	665,605	
2006/07	737,022	281,965	1,018,987	53%
2007/08	889,443	339,397	1,228,840	85%
Total	2,020,850	892,582	2,913,432	

Note: OT for all sites IP surgical and OR (including OR/PARR at DMH & PCGH)

When cases are cancelled they are rebooked at a later date, often resulting in a longer wait time. Surgical cancellations are mainly a result of: lack of trained and available OR staff, pressures from Admit No Beds in Emergency, and lack of availability of anaesthetists.

Exhibit 88: NHS Cancelled Surgery Cases 2006 and 2007

Service/program	Percentage of Cancelled Cases Jan 06 – Dec 06	Percentage of Cancelled Cases Jan 07 – Dec 07
Cardiovascular**	17.9 %	3.5 %
Dental	16.6 %	3.5 %
ENT	11.8 %	7.8 %
General Surgery	9.7 %	8.5 %
Gynaecology	13.5 %	10.8 %
Ophthalmology	15.7 %	8.7 %
Orthopaedic	15.1 %	13.6 %
Plastics	17.3 %	10.6 %
Thoracic	2.6 %	5.8 %
Urology	9.4 %	10.0 %

* Please note this % also includes physician cancellations when they choose to “move” a patient surgical procedure to another OR block and date (rescheduled). With the revisions in the new ORM system we will have the ability to capture cancellation reasons and remove the above chosen physician cancellation category.

** Vascular surgeon left.

The total RN/RPN staff in the Perioperative Program is 524. The chart below shows the eligibility for retirement of NHS Perioperative program staff by category in 2008 and 2013. 35% of the staff will be eligible to retire by 2013.

Exhibit 89: Eligibility for Retirement of NHS Perioperative Program Staff

Staff (RN & RPN)	Eligible to Retire in 2008	Eligible to Retire in 2013
RN	96	136
RPN	30	49
Total	126	185

The current vacancy rate in the surgical program is outlined in the following chart. Full time maternity leaves (unfilled) are counted in the temporary vacancy list. Many of the vacancies in this category are full time leaves that have had no applicants even after multiple and internal and external postings. It takes approximately 1 year to properly train nurses in the Operating Room Theatre for all services. Often nurses quit before the one year period simply because there is not enough staff and they have to work on their own without appropriate mentorship.

Exhibit 90: NHS Perioperative Program Staff Vacancies

Vacancies		June 30/06	June 30/07	June 30/08
<i>RNs</i>	FT	5	12	6
	FT Resource Nurse			5
	RPT	1	2	0
	Casual/RPTBs/Temporary	19	12	16
<i>RPNs</i>	FT	0	1	2
	RPT	0	1	3
	Casual/Temporary	4	2	3
* Includes Inpatient Surgical, OR, PARR, Day Surgery				

Physical Environment

The surgical infrastructure at many of the NHS sites reflects an older physical lay-out and design, which limits opportunities to optimize efficiencies and throughput. Due to many sites providing the same service there is a need for duplication of storage space and over stocking of inventory occurs which is very costly.

Financial

The program continues to face financial challenges which could be alleviated through consolidation of surgical activity in order to facilitate more efficient use of available OR blocks and standardization of equipment and supplies. .

Academic

The program has been actively engaged in medical teaching for many years. Creation of Centres of Excellence will serve to attract additional interns and residents to Niagara, enhancing their clinical experience and potentially their decision to remain in Niagara.

8.11.3 Proposed Service Delivery Model

The proposed service delivery model for the Operative/Perioperative Program allows us the opportunity to integrate best practice models as identified from SPAI, external reports and our MOHLTC Coaching Team.

This proposed Service Delivery model is multi-faceted:

- It articulates the need for some services to remain status quo;
- Suggests consolidation of some services to create centres of excellence; and
- Withdrawal of surgical services from some sites.

The recommendations were made considering key clinical co-dependencies, opportunities to enhance all of the dimensions of quality, and efficiencies. Based on the principles for program planning described within the External Review Report of 2006, our proposed delivery model did not take into consideration travel time of elective surgical or ambulatory cases. It was determined that the potential distances and travel time were comparable with other centres in Ontario.

A number of surgical chiefs of service were engaged to provide the Surgical Program Executive with an added level of clinical expertise to ascertain their thoughts on service delivery models and on emerging trends in their service.

8.11.4 Proposed Service Delivery Models

Exhibit 91: Vision for Distribution of Surgical Services by NHS Site

Operative/Perioperative Program					
GNGH	SCGH	WCGH	PCGH	DMH	Clinical Dependency
General Surgery	General Surgery	General Surgery			
Orthopaedics including Joint Replacements	Orthopaedics including Joint Replacements				Slow paced rehab beds
ENT	ENT				
Endoscopies	Endoscopies	Endoscopies			
	Thoracic TBD				ICU 3
	Vascular				ICU 3
		Ophthalmology			
		Urology			
Plastics	Plastics				
Oral/Dental					
	Gynaecology				

General Comments on Rationale for Decision Making on Delivery Models

A variety of reports and planning documents related to consolidation of surgical services were reviewed, including:

- Standards of accessibility and guidelines for provision of sustainable acute care services by a Health Authority. (BC)
- Understanding the impact of consolidation of surgical services in a major integrated health region. (Calgary)
- Interior Health (BC) March 2005 – publication
- PHSA Health Services Design Plan- April 2003

- Saskatoon Region Health Authority 2006-2007 Annual Report to the Minister of Health and the Minister of Healthy Living Services.

Common themes that resonated from all these reports were essentially identifying the need to work towards an integrated surgical system, focusing on patient needs, equitable access and standardization of best practices. With an expected outcome of reducing wait times, reducing duplication of expensive technologies and being more cost effective, while still maintaining all aspects of quality care.

The program as well took into consideration the recommendations from the Taylor/Watt External Review- 2006 and the MOHLTC Coaching Team - 2006.

A scan of other provincial multi-site hospitals was undertaken to ascertain how they manage/deliver surgical services. Our proposed model is a blended model taking into consideration the needs of Niagarans.

We also needed to address the question that will most likely arise – *why can some services be consolidated and others not?* General Surgery is deemed a core service and therefore must be delivered at the three large sites to support the ED program and other surgical subspecialties as appropriate. Conversely, surgical subspecialties, given issues of critical mass are better delivered in a consolidated fashion in order to maximize opportunities to increase through-put and maintain a high level of expertise.

Divestment of Surgical Services from Port Colborne and Fort Erie

The program is well aware that the question will arise: *Why not have day surgical cases in both Port Colborne and Fort Erie?* The program believes the better question is: *Should day surgery be done in those sites?* Our answer to this would be “no” because:

- it diverts equipment that can be used for both day and inpatient surgery at a large site; ;
- it results in inefficiencies;
- It puts patients who experience unanticipated complications of surgery/anesthesia [no matter how statistically small a likelihood this is] at risk.

Proposed Surgical Service Delivery Model and Rationale by Service

The proposed siting of surgical services evolved based on the following:

✓ IDENTIFICATION OF CORE SERVICES:

- Anesthesia, Endoscopy and General Surgery to be a three site model, located at St. Catharines, Greater Niagara, Welland sites. These are

core services required to support the ED and Critical Care units at those sites.

✓ **CONSIDER WHERE THERE IS CURRENT HIGH VOLUME SERVICE/EXPERTISE ALREADY IN PLACE:**

- Greater Niagara General [GNGH] has the highest volumes for Dental/Oral Surgery and sufficient expertise of staff. All dental/oral surgery will be consolidated to one site at GNGH.
- GNGH and St. Catharines sites currently have the highest volumes of orthopedic/joint surgery. The high volumes of orthopedic surgeries can sustain a two site model for joint replacements and other orthopedic surgeries; therefore, this service will be a two site model at the GNGH and St. Catharines sites.
- GNGH and St. Catharines sites currently have the highest volumes of ED patients requiring care from a plastic surgeon. The high volumes of plastic surgeries/procedures can sustain a two site model; therefore, this service will be a two site model at the GNGH and St. Catharines sites.
- GNGH has a high volume of ENT services and sufficient expertise of staff. The high volumes of adult ENT services can sustain a two site model. Therefore, adult ENT will be at the GNGH and St. Catharines site [see also codependencies below].

✓ **CODEPENDENCIES FROM OTHER CLINICAL PROGRAM RECOMMENDATIONS:**

- To support the recommendations of the Maternal/Child program consolidation, ENT for the pediatric population to be located at the St. Catharines site.
- To support the recommendations of the Maternal/Child program consolidation, gynecology to be located at the St. Catharines site.
- To support the Critical Care Program Level 3 ICU, ENT for adults to be located at the St. Catharines site, given the high volumes, the GNGH site will also provide ENT for adults.
- Thoracic surgery to remain status quo as a one site model at the St. Catharines site. Requires the support of a Critical Care Level 3 Unit.
- Vascular surgery to remain status quo as a one site model at the St. Catharines site. Requires the support of a Critical Care Level 3 Unit.

✓ **OPTIMIZE SURGICAL CAPACITY TO CREATE AMBULATORY SURGERY CENTRES OF EXCELLENCE:**

- Ophthalmology to be consolidated to one site at the Welland site where there is sufficient operating room capacity to sustain all of the ophthalmology surgical volume.

- Urological surgery to be consolidated to one site at the Welland site where there is sufficient operating room capacity to sustain all of the urology surgical volume.

The following table presents the proposed service delivery model for each surgical specialty and more detail regarding the rationale for the proposed model.

Exhibit 92: Proposed Surgical Service Delivery Model and Rationale by Service

Service	Proposed Service Delivery Model	Rationale
Anesthesia	Status quo and introduction of Anesthetic Care Team (ACT) (3 large sites)	Anesthesia is a core service for general hospitals and provides support to not only surgery but also the Emergency Department and Critical Care Units. Therefore our rationale for status quo is – core service in community hospitals .
Endoscopy	Status quo (3 large sites)	High volume service utilized by both Internal Medicine and Surgeons- this allows us to utilize our existing infrastructure. Rationale for status quo is to ensure general surgeons to do not have to leave primary site to perform endoscopies . Thus being at site to perform the “essential support services”
ENT	2 site model (St. Catharines and Niagara Falls sites)	Required to have ENT at the SC site to support the Mat/Child program recommendations as well to support the Level 3 ICU. ENT Adult and Pediatric will be done at the site. High historical volumes and expertise at Niagara Falls. Recommendation of a 2-site model was based on the following considerations: support of the maternal/child recommendations and the Level 3 unit in SC. Ample critical mass to support service at second site to allow for the efficiencies in the delivery of this service.

Service	Proposed Service Delivery Model	Rationale
General Surgery	Status quo (3 large sites)	Required at the 3 large sites to support other surgical specialties, the ED and Critical Care Units. The rationale for status quo was this service has been identified as a core service for community general hospitals.
Gynecology	One site model (St. Catharines site)	To support the recommendations from Mat/Child The rationale for consolidation is outlined in the Mat/Child Case for Change. The operative/preoperative supports this case for change.
Ophthalmology	One site model (Welland site)	Consolidation of this high volume/fast turnaround service is considered best practice. The rationale for consolidation of this service is that it is an outpatient program and siting it at Welland will allow for access 24/7 to emergency eye care. This high volume service would develop into a center of excellence and with volume comes opportunities to improve processes – that in turn will enhance access and quality.
Dental/oral surgery	One site model (Niagara Falls site)	Historical data validates that GNGH has the highest volumes already for this outpatient service, and has demonstrated expertise. The rationale for this recommendation is by further developing into a center of excellence, with increased volumes will come opportunities to improve processes – that in turn will enhance access and quality.

Service	Proposed Service Delivery Model	Rationale
Orthopedics	Two site model for joints and other orthopedic surgeries. (St. Catharines and Niagara Falls sites)	Consolidation to two sites will allow us to optimize our standardization of care through protocols, equipment and supplies. It allows us to have a critical mass to optimize clinical expertise. The sites identified (NF and SC) currently have the highest volumes of joints and critical mass of expertise. Rationale for this recommendation of a two site model. The rationale for this recommendation is there is critical mass to support a two site model.
Plastics	Two site model (St. Catharines and Niagara Falls sites)	Required to support the high volume emergency departments The rationale for this recommendation is there is critical mass to support a two site model. The siting is based on high ED volumes at SC and NF – ED is the access point for most patients requiring care from a plastic surgeon. Ample critical mass to support service at both sites to allow for the efficiencies in the delivery of this service. On call system 24/7 that allows for timely access to care for patients.
Urology	One site model- for both inpatient and outpatient services. (Welland site)	A large segment of urological procedures are day stay (82%), so by consolidating to a one site model to create a centre of excellence, it was identified that it would not impact residents access to service. The other compelling reason for consolidation is that we will meet emerging standards of care, i.e. more minimally invasive techniques. Consolidation will decrease unnecessary duplication of this expensive technology.

Service	Proposed Service Delivery Model	Rationale
Vascular	Status quo re siting. We will be requesting consideration for the support of a funded endovascular service. (St. Catharines site)	Rationale of status quo siting was that this service requires support from a Level 3 Critical Care Unit. This service is a critical support to our Chronic Kidney Disease Program. We have had challenges with recruitment-specifically around access to endovascular services. The evidence states that for every 100,000 citizens there should be 1 vascular surgeon - currently we have none. Currently our patients are not receiving timely access to care. Given our rates of diabetes, cardiovascular disease and CKD we need to request that consideration be given to having a funded endovascular services in Niagara.
Thoracic	Status quo (St. Catharines site)	Rationale of status quo siting was that this service requires support from a Level 3 Critical Care Unit.

The following table shows the proposed distribution of NHS surgical clinics by site.

Exhibit 93: Proposed Distribution of Surgical Clinics

Site	Ortho Clinic and Minor Procedures	Urology Clinic and Minor Procedures (i.e. cystoscopy)	Urology Clinic (i.e. catheter changes)
SCGH	X	X	
WCH	X	X	
GNGH	X	X	
PCGH			X
DMH			X

8.11.5 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care:		
▪ Effective	○	●
▪ Efficient	○	●
▪ Equitable	●	●
▪ Safe	●	●

Evaluation Criteria	Current State	Proposal/ Recommendation
<ul style="list-style-type: none"> ▪ Patient Centered ▪ Timely ▪ Work Life Focus ▪ Population Focus ▪ Continuity of Service Focus 	<p style="text-align: center;">○ ● ○ ● ●</p>	<p style="text-align: center;">● ● ● ● ●</p>
B. Compliant with: NHS Success Factors MOHLTC Policy HNHB LHIN Policy	<p style="text-align: center;">○ ○ ○</p>	<p style="text-align: center;">● ● ●</p>
C. Leverages health professional resource pool	<p style="text-align: center;">○</p>	<p style="text-align: center;">●</p>
D. Supports ability to advance/promote health care [e.g., introduction of new technology]	<p style="text-align: center;">○</p>	<p style="text-align: center;">●</p>
E. Leverages physical plant capacity	<p style="text-align: center;">○</p>	<p style="text-align: center;">●</p>

8.11.6 Narrative Analysis of the Evaluation

The philosophy statement for the Operative/Perioperative Program is *Enhancing Perioperative Processes to Improve Access and Reduce Wait Times for Safe, High Quality Care*. The program believes that if the proposed service delivery models are implemented we will achieve this end state.

8.11.6.1 Optimizes Quality of Care

Effective

The proposed changes in service delivery will allow us the opportunity to develop and consolidate clinical expertise. Building on that expertise, evidence based practices will be enhanced to ensure the care we deliver is effective. Our practices will be monitored to demonstrate we are achieving our goal of effective care.

Efficient

The evidence based literature reviews demonstrate that with increase volumes there are more opportunities to become efficient in the provision of care. *“Volume is a structural component to develop efficiency and quality” World Journal of Surgery, Kraus et al, September 2005.* The proposed delivery models will consolidate increased volumes of surgical sub specialties at one or two sites. Along with consistent application of best practice processes and standardized protocols it enhances our ability to provide services more efficiently. (SPAI)

Equitable

The proposed service delivery model meets the standard for equity. They allow for all residents of Niagara access to timely, appropriate and safe care.

Safe

The proposed models provide for an enhanced level of safety. Consolidation of services will allow for more standardized protocols and processes. It will allow us to develop staff expertise in specific surgical sub specialties. Consolidation will allow us the opportunity to ensure our equipment is the most up to date in regards to technology.

Patient-Centred

Our current nursing model of care is patient focused, our proposed changes in our delivery will enhance that concept- as well as deliver the right care, at the right place at the right time by the right healthcare providers.

Timely

By consolidation of services we will be enhancing access to appropriate surgery, hence providing timely access to care. The delivery models proposed would allow us to put into place the critical enablers required to meet this standard of quality. This will be accomplished by utilizing our staffing resources more efficiently through changing skill mix

An outcome measurement in this dimension of quality will be our wait time statistics.

Work Life Focus

Our proposed service delivery model supports improved quality of work life for staff and physicians. Though a number of different strategies, organizing our elective blocks to decrease overtime, provide an environment that allows us to comply with the standards for emergency codes which is another enabler for meeting a balance between patient need and quality of work life.

Population Focus

The program believes that the proposed models of service delivery will better meet the needs of our population. Moving in the direction that has been articulated by not only the program but validated thru an External Review and Coaching Team we will be positioning the NHS to deliver cost effective, timely quality surgical services.

Continuity of Service Focus

The proposed models of service delivery will put in place the critical enablers we need to maintain and grow the surgical services. This is an

important consideration as the province and the LHIN emphasize the Wait List Strategy.

8.11.6.2 Compliant with Policy

NHS

The Perioperative Program Proposal and the Centres of Excellence Model are aligned with the NHS' Corporate *Success Factors* as outlined below:



Focus on those we serve

- Enhances provision of high quality and sustainable care at the right time, in the right place by the right provider.
- Facilitates investment to meet the needs of patients as close to home as possible.
- Provides us opportunities to repatriate surgical services back into Niagara.



Bring out the best in each other

- Enhances the quality of work life for staff by improving relationships and increasing teamwork within the perioperative program.
- Creates the potential to develop new opportunities to move novice staff to expert staff within each specific program/service area.



Build strong and successful relationships

- Facilitates closer relationship within the perioperative process to improve access and reduce wait times for safe high quality care.
- Enhances opportunities to partner and link with universities and colleges to facilitate learning [e.g., student placements] as well as research.



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.
- Puts new knowledge, understanding and skill to practical use on the job and enhance learning.



Use our resources wisely

- Facilitates efficient and effective use of scarce human resources.
- Minimizes the need for duplication of capital equipment at multiple sites.
- Allows us to utilize our existing surgical infrastructure at each of our 3 large sites to their fullest potential.

MOHLTC and HNHB LHIN

It is largely acknowledged that the focus of both the MOHLTC and the LHIN is on timely access to surgical care and our proposed model enhances our opportunities to meet the wait list targets. In conjunction with the MOHLTC Wait List Strategies Initiative the expectation is that hospitals comply with Best Practice processes as identified in the SPAI Report. Our proposed model will allow us to become more compliant with these Provincial Initiatives.

Our proposed services delivery model provides improvement opportunities to become more compliant with after-hours emergency codes.

Our current service delivery model challenges us to be compliant with the above outlined policies, however the proposed model will put the enablers in place to ensure compliance and sustainability.

8.11.6.3 Leverages Health Professional Resource Pool

By 2013, 35% of all Perioperative staff will be eligible for retirement. Clearly, from a health human resource perspective, the sustainability of the Operative-Peri-Operative Program is in jeopardy.

The plan to create Centres of Excellence for Operative/Perioperative Program will aid in recruitment efforts for surgeons, nurses and anaesthetists. A more manageable call schedule will enhance the quality of work life for our healthcare professionals and assist us with retention of staff.

8.11.6.4 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

Introduction of Standardized Best Practices and Clinical Protocols will aid in the enhancement of patient health outcomes. Our proposed delivery model will allow us a better opportunity to acquire emerging/state-of-the-art equipment i.e. minimally invasive surgery.

Advancement in technology and maintaining Best Practices will also help with recruitment efforts for specialized and expanded services in the future.

8.11.6.5 Leverages Physical Plant Capacity

Our proposed model along with the plans for the new hospital allows us to maximize existing infrastructure with the exception of the GNGH site. It has been identified previously that redevelopment of the GNGH operating rooms is required, whether we change our delivery model or not.

8.12 Inpatient Rehabilitation - Stroke

8.12.1 Current State

Niagara has an older population, inferior social and economic conditions and fewer resources to maintain and improve population health status. As a result, Niagara residents display higher rates of chronic disease (stroke included), hospitalization and death rates compared to the provincial average (District Health Council February 2004)

There are a number of neurologists in Niagara. The majority have elected to not have hospital privileges and their medical practice is on a consultation only basis. As a result there is a significant community wait time (approximately 2-3 months) to be assessed by a neurologist.

Currently, stroke clients who are admitted to inpatient medical units in the Niagara Health System have no stroke specific care. In 2003-2004 the Niagara Health System admitted approximately 875 stroke and transient ischemic attack patients.

In 2002, to combat the increasing number of strokes occurring in Niagara, the NHS launched the Stroke Prevention Clinic as a pilot project under the MOHLTC Stroke Initiative.

In 2005, the NHS launched a tPA program for stroke patients. If a patient on presentation to the Emergency Department is a candidate for tPA, they are transferred to the Greater Niagara Site for assessment and thrombolysis. Approximately 35-40 patients are assessed each month and 23-25 patients are thrombolized yearly. This program has generated Stroke Alert protocols, destination and repatriation protocols and order sets for tPA and non-tPA patients that include clinical pathways.

Once a patient has completed their acute phase of their illness and they are not eligible for discharge home with community supports, they are repatriated back to the referring centre/community hospital closest to their residence. Those who are redirected to the Greater Niagara General Site for a tPA eligibility assessment, and do not receive thrombolysis, are repatriated within 72 hours or less to their referring centre.

8.12.2 Case for Change

Best Practice

The current array of acute in-patient services across the NHS is *not* in keeping with the best practice or the Ontario Stroke Strategy.

Duplication

Inherent in a current service delivery model is duplication of core services, resulting in little residual ability to invest increasingly scarce resources in

enhanced acute care/supports. In addition, the current in-patient units function as separate and distinct services as opposed to a regional integrated program.

Special Populations

Special populations with stroke survivor health needs continue to grow in Niagara and there are insufficient resources to invest in appropriate services to meet the demand. For example, the number of patients with aphasia, the current the physical environments and care model is not capable of adequately supporting their needs in a timely manner.

Acute Roles

The need to facilitate specialization within stroke services is increasingly being identified as a need both from a quality of care perspective but also to aid in recruitment and retention of health professionals

Optimizing Patient Functioning with the goal of Aging in Place Strategy

With a specialized team there would be a smoother transition from inpatient to outpatient care, which is critical to stroke survivors and their caregivers. The creation of the Unit would lead to improved linkages and integration with community partners.

8.12.3 Proposed Service Delivery Model

Proposal to Develop 10-Bed Stroke Rehabilitation Unit at GNGH Site

The proposal is to develop a 10 bed designated stroke rehabilitation unit at the Greater Niagara Hospital site. All acute strokes would be admitted to this site and treated by an interdisciplinary team. This continues to be aligned with the joint Hotel Dieu Shaver Health and Rehabilitation Centre and NHS proposal, submitted to the MOHLTC in 2006 for siting of rehabilitation beds in Niagara. As is shown later in this report (section 10.6.2), the projected need for inpatient rehabilitation beds in Niagara greatly exceeds the current supply. The table below shows that application of the Health Services Restructuring Commission (HSRC) inpatient rehabilitation planning standard suggests a need for 37 neurology and stroke in patient rehabilitation beds in Niagara.

**Exhibit 94: Projected Niagara Region (excluding Grimsby and Lincoln)
Requirement for Inpatient Rehabilitation Beds**

Rehabilitation Program	Target Beds Per 100,000	2012 Niagara Beds
Paediatric (Combined)	0.404	1.6
Acquired Brain Injury	1.478	6.0
Amputee	1.167	4.7
Specialized Respiratory	-	-
Spinal Cord	1.002	4.0
Trauma	1.185	4.8
Total Regional Programs	5.237	21.1
Burns	-	-
Cardiac	1.126	4.5
Chronic Pain	0.238	1.0
Geriatric Acute	3.278	13.2
Geriatric Long Term	-	-
Musculoskeletal & General	14.205	57.3
Neurology & Stroke	9.178	37.0
Respiratory	0.713	2.9
Total Local Programs	28.738	115.8
Total Local Plus Regional	33.975	136.9

The continuum of stroke care changes over the course of an inpatient stay. Screening and/or assessments are conducted in the first 48 hours to prevent stroke progression, recurrent stroke and development of common post-stroke issues while ensuring early mobilization and rehabilitation. Initial assessments are completed and management plans developed by the medical and interdisciplinary team members in the following areas:

- Level of consciousness and cognitive status (arousal, alertness and orientation)
- National Institute of Health Stroke Scale (NIHSS) to determine stroke severity
- Modified Rankin Scale to determine extent of disability
- Medical co-morbidities and risk factors for stroke recurrence, or progression
- Swallow / dysphagia screening
- Nutritional status and hydration screening
- Continence – bowel and bladder function
- Risk for venous thrombosis / DVT
- Skin integrity and risk for developing pressure areas
- Speech, language and other communication areas as needed

- Visual neglect/ inattention or other perceptual difficulties
- Appropriate moving, handling, and positioning of the person with stroke, with respect to the person's abilities and need for assistance
- Risk for falls / safety

All patients with acute stroke would have a rehabilitation screen within 48 hours of admission for appropriate assessments and management strategies for dysphagia screening and management, rehabilitation interventions and the need for ongoing stroke rehabilitation in other settings.

The primary focus of rehabilitation in the acute phase will be management of common post-stroke issues, factors related to stroke severity (e.g. positioning to avoid skin breakdown and aspiration) as well as improving the patients' capacity for functional independence.

Once the acute phase has passed rehabilitation staff on the acute stroke unit shall assess the need for provision of coordinated stroke rehabilitation in the community, at Shaver Rehab or within the NHS Complex Continuing Care. The care in these settings is directed at the management of stroke related activity limitations and enhancing participation in new life roles. Given the limited number of rehabilitation beds in Niagara and the difficulties with respect to transportation, the NHS is proposing the development of a 10 bed Rehabilitation Unit at the Greater Niagara General Site.

Discharge planning needs to begin early. A smooth transition from inpatient to community, rehabilitation centres and outpatient care is a critical element to ensure stroke survivors are well supported once they leave the acute care unit. Discharge plans shall include:

- Available supports on discharge (formal and informal) - caregiver / family support and involvement
- Need for community care / home care services (pre-stroke and post-stroke functional status)
- Referrals to Stroke Prevention Clinic and other health, recreation/leisure and community social support programs to promote self-management (e.g., Niagara Aphasia Program), access to education and information, and caregiver support services
- Medication management
- Requirements for optimizing nutritional status
- Driving status: ability to drive safely on discharge, need for alternate means of transportation, and/or need for referral for driving assessment

8.12.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
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Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care:		
▪ Effective	●	●
▪ Efficient	●	●
▪ Equitable	●	●
▪ Safe	●	●
▪ Patient Centred	●	●
▪ Timely	○	●
▪ Work Life Focus	●	●
▪ Population Focused	●	●
▪ Continuity of Service Focus	●/○	●
B. Compliant with policy:		
NHS	●	●
MOHLTC	●	●
HNHB LHIN	●	●
C. Leverages health professional resource pool	●	●
D. Recognizes changing community demographics and population health needs	●	●
E. Supports ability to advance/promote health care [e.g., introduction of new technology]	○	●
F. Leverages physical plant capacity	●	●

8.12.5 Narrative Analysis of the Evaluation

The creation of a designated acute stroke rehabilitation unit and a low tolerance, longer rehabilitation, complex continuing care capacity will ensure efficient use of resources which result in safe, timely, effective patient care. An interdisciplinary team to develop plans of care will maximize the use of specialized knowledge and resources. The interdisciplinary team will improve the higher morbidity and mortality rates that exist in Niagara related to the older population and poorer social economic conditions. This alignment will also ensure improved utilization and follow up in the outpatient clinics and community supports.

8.12.5.1 Optimizes Quality of Care

Effective

Meta-analyses of randomized controlled trials have shown that stroke unit care is superior to conventional stroke management in general medical, neurological or geriatric wards. Early case fatality, functional outcome and the need for long-term hospitalization among survivors are all improved.

Efficient

The creation of a Designated Stroke Program allows for the implementation of best practice guidelines and it is congruent with the Ministry of Health Ontario Stroke Strategy.

Equitable

The enhancement of the NHS Stroke Program to include a designated Stroke Unit will provide the continuum of services to all patients in Niagara who suffer a cerebrovascular accident (CVA).

Patient Centred

The recognition of the specialized needs of patients suffering a stroke and organizing a consistent, best practice guided approach to their care ensures that patient needs are driving our services.

Safe

A consistent approach to stroke care using treatment protocols will ensure safe high quality stroke care.

Timely

The NHS Stroke Program, with the addition of a designated Stroke Unit, will provide specialized stroke care through a dedicated team using best practices guidelines which will result in a timely delivery of services. Inherent in this proposal is the need to continue to engage our EMS partners to ensure timely access to service is provided.

Work Life Focus

The creation of a designated Stroke Unit provides opportunities for specialized training and skill enhancement for our health care professionals.

Quality of worklife will be enhanced with increased inter-professional teamwork increasing staff satisfaction and morale

Population Focus

The Centre of Excellence for Stroke Care better meets the needs of patients requiring stroke care and improve patient outcomes.

Continuity of Service Focus

The continuum for stroke care will be greatly enhanced with the addition of a dedicated Stroke Unit.

8.12.5.2 Compliant with Policy

The enhancement of our District Stroke Program to include an acute stroke unit is aligned with the NHS' Corporate *Success Factors* as outlined below:



Focus on those we serve

- Enhances provision of high quality and sustainable care.
- Facilitates investment in enhanced services to meet the needs of patients/clients and facilitate improved function outcomes.



Bring out the best in each other

- Enhances the quality of work life for staff by improving relationships and increasing teamwork within the Program.
- Provides a critical mass of staff to learn from and support one another.
- Creates potential to develop new roles such as Advance Practice Nurses/Clinical Nurse Specialists/Nurse Practitioners.



Build strong and successful relationships

- Facilitates closer relationship with community service providers in providing care and support to patients/clients.
- Creates more opportunities to partner and link with universities and colleges to facilitate learning [e.g., student placements] as well as research.



Create a better way

- Provides an opportunity to develop services that are in keeping with best practice standards.
- Facilitate fewer strokes and improved stroke outcomes.



Use our resources wisely

- Facilitates efficient use scarce human resources.
- Minimizes the need for capital renovations at multiple sites in order to meet best practice standards.

MOHLTC and HNHB LHIN

The enhancement of our District Stroke Program to include a dedicated Stroke Unit is consistent with the Ontario Stroke Strategy which was adopted by the Ontario government. The Ontario Stroke Strategy recognizes improvements in stroke prevention and in stroke care are dependent on the provision of excellent education, mentoring and support for the health care professionals and providers devoted to persons with stroke, their families, and their caregivers.

8.12.5.3 Leverages Health Professional Resource Pool

The creation of specialized inter-professional stroke teams maximizes knowledge, skill and expertise with the patient population requirements.

8.12.5.4 Recognizes Changing Community Demographics and Population Health Needs

Consolidation of resources to address the needs of this patient population will improve care and outcomes.

8.12.5.5 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

The NHS Stroke Strategy seeks to create a co-coordinated system of care. The coordinated system of stroke care would link the different services across the continuum of care and across Niagara. These linkages would help prevent duplication of service and emphasize utilization of existing resources

8.12.5.6 Leverages Physical Plant Capacity

The creation of a designated acute stroke rehabilitation unit maximizes the use of medical beds for an improved patient outcome.

8.13 Non Acute/Transitional Care Program

8.13.1 Current State

The NHS Transitional Care Program provides patient-focused services and programs that offer non acute care to maintain, improve and support patients and families. This program provides an integrated approach to care delivery to optimize a successful transition through facility and community based environments. The program provides a full spectrum of Complex Continuing Care, Long Term Care and Rehabilitation services for inpatients and out-patients. Currently there are CCC beds at 5 sites within the NHS, and the Welland Hospital site also has 75 LTC and 40 interim LTC beds as illustrated below:

Exhibit 95: Current Distribution of NHS CCC, Interim LTC, and Nursing Home Beds by Site

NHS Site	CCC beds	Interim LTC	Nursing Home
SCGH	0	0	0
GNGH	53	0	0
WCH	56	40	75
PCGH	24	0	0
DMH	24	0	0
NOTL	13	0	0

TOTAL	170	40	75
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The scope of services in Transitional Care is supported by an interdisciplinary team of professionals including Family Physicians, Hospitalists, Registered Nurses, Registered Practical Nurses, Health Care Aides, Physiotherapists/Assistants, Occupational Therapists, Speech Pathologists, Recreation Therapists, Social Workers and Discharge Planners.

The patient and family are integral partners in care delivery.

8.13.2 Case for Change

The face of Complex Continuing Care (CCC) has changed. Historically CCC was seen as a final destination. The reality today is a diverse population requiring the spectrum of care including Rehabilitation, slow placed recovery where the destination is home to the medically complex and palliative patients requiring end of life care. A large group of patients are awaiting placement in a Long Term Care Facility.

The following breakdown of patients in *Complex Continuing Care* in the NHS illustrated these trends:

Exhibit 96: Distribution of NHS CCC Patients by Service Required (2008)

NHS CCC	Awaiting Placement	Rehab	Palliative	Slow paced	CCC
170 beds	109	7	4	36	14
%total	64%	4%	2%	21%	9%

To further exemplify the consistency of demand the following breakdown of Alternate Level of Care (ALC) patients in *Acute Care Beds* for the same time period:

Exhibit 97: Distribution of NHS Acute Care ALC Patients, and Percent of Total Acute Beds Used for ALC, by Service Required (2008)

NHS Total Beds Used for ALC	LTC	Rehab	Palliative	Slow paced recovery	Other	Chronic
133	31	5	8	76	9	4
28.4%	6.6%	1.1%	1.7%	16.2%	1.9%	0.9%

This increasingly shorter length of stay (LOS) in CCC confirms the changing demographics. In 1995 the target length of stay within the pre-NHS CCC beds was in excess of 500 days. In 2006/07 the LOS was 79.4 days and in 2007/08 the average LOS was 59 days.

Currently our CCC Units have a mixture of all categories of patients. The care provided necessarily is generalized in nature. Given the large subgroup of Slow Paced Recovery the Transitional Program must reposition itself to

provide the specialized expertise and supports to best meet these patient needs.

Demand for appropriate services will increase in Niagara based population health data:

- In 2006/07 the average age of patients in CCC was 78.35 years. We know that Niagara has a higher than average aging population and 20.1% of Niagarans will be over 65 years of age by 2016 compared to 15.5% in Ontario.
- Chronic Health conditions, particularly diabetes , heart disease, chronic kidney disease, stroke and respiratory conditions are more prevalent in Niagara
- Inadequate access to primary, preventative care and services to support seniors in their homes which leads to higher than average rates of Emergency Department (ED) use and significantly high rates of hospitalization
- Consistently high occupancy rates in CCC:

Exhibit 98: NHS CCC Bed Occupancy for 2006/07 and 2007/08

CCC Bed Occupancy Rates		
	FY 06/07	FYTD 07/08
GNG	99.6	99.6
GAU	80.6	89.3
WCGH WWW	96.4	91.6
WCGH 5TH		82.3
WCGH ILTC	97.2	95.6
WCGH ECU	97.6	97.1
PCGH	98.1	99.4
DMH	93.8	94.9
NOTL	99.8	97.8
AVERAGE	95.4	94.2

Additional challenges for NHS CCC include:

- Increasing
 - Care of the Dialysis patient
 - Chronic Ventilation patients
 - Dementia
 - Acquired brain injury
- Competition with Acute Care for human and financial resources

- Lack of community funded supports (e.g.; homemaking, transportation etc.)

Exhibit 99: Relationship Between Community Services Pressures and Hospital Pressures

Community Service Pressures	Hospital Pressures
Lack of affordable and decent supportive housing to support ongoing community care	Aging workforce – nursing and allied health
Infection control	Isolation practices
Lack of LTC capacity	1900 in community waiting for bed; over 100 in hospital beds waiting for placement
CCAC service provision hours	CCAC maximums do not provide the support required to maintain individuals in their homes
Lack of family physicians	Patients admitted to hospital due to lack of primary care support
Lack of geriatric/psycho geriatric assessment and treatment services	Lack of geriatricians/geriatric psychiatrists to manage geriatric population

8.13.3 Proposed Service Delivery Model

The NHS CCC/Transitional Care Program recommends the following:

1. Continue to provide Complex Continuing Care at Greater Niagara General, Welland Hospital, Port Colborne General, Douglas Memorial and Niagara-on-the-Lake sites. Cluster clinical groupings and develop specialized care teams, to create centres of excellence for:
 - Slow Paced Recovery and Rehabilitation - it is recommended that both Douglas Memorial and Port Colborne General Sites of the NHS be centres of excellence for Slow Paced Rehabilitation and Recovery and that resources be reallocated to provide the level of rehabilitative services necessary to facilitate discharge home.
 - Cognitive/Dementia Care - create specialized teams to assist staff in assessing and managing patients with cognitive impairments.
 - Regionalize Geriatric Assessment Program and In-patient Assessment Unit at GNGH Site to serve the needs of the NHS. Develop Geriatric Day Programs to align and enhance the Geriatric Assessment Program
 - Improved use of NHS Palliative Care Program to provide physician support, staff education and implementation of best practice guidelines related to end of life care and pain management.
2. Reallocate CCC beds to facilitate a critical mass for slow paced recovery/rehabilitation at both Port Colborne and Douglas Memorial sites. The recommended bed reallocation is outlined in the table below:

Exhibit 100: Proposed Distribution of NHS CCC Beds by Site

NHS Site	Present CCC	Proposed CCC	Net change
GNG	53	37	-16
WCGH	56	34	-22
PCH	24	46	+22
DMH	24	40	+16
NOTL	13	21	+8 (conversion of acute)

3. Collaborate and enhance partnerships with community providers to provide clinics to support aging at home, i.e. CCAC, Alzheimer's Society, continence clinic, wound management, falls prevention etc.
4. Explore the provision of 'respite services' with community partners to address individuals who have "high intensity needs" living in the community.
5. Transfer chronic ventilation patients to a recognized Regional Chronic Ventilation Service as outlined by the MOHLTC, the closest being St. Joseph's Hospital in Hamilton. Presently the NHS supports 2 chronic ventilation patients at the WCH. These beds are not funded 'chronic ventilation beds' and not supported by the required programming as identified by the MOHLTC for this specialized patient group.

8.13.4 Evaluation Using Decision Matrix

Evaluation Criteria	Current State	Proposal/ Recommendation
A. Optimizes Quality of Care: <ul style="list-style-type: none"> Effective Efficient Equitable Safe Patient Centred Timely Work Life focus Population Focus Continuity of Service Focus 	<ul style="list-style-type: none"> ○ ○ ○ ○ ○ ○ ○ ○ ○ 	<ul style="list-style-type: none"> ● ● ● ● ● ● ● ● ●
B. Compliant with policy: <ul style="list-style-type: none"> NHS MOHLTC HNHB LHIN 	<ul style="list-style-type: none"> ○ ○ ○ 	<ul style="list-style-type: none"> ● ● ●
C. Leverages health professional resource pool	○	●
D. Recognizes changing community demographics and population health needs	○	●
E. Supports ability to advance/promote health care [e.g., introduction of new	○	●

Evaluation Criteria	Current State	Proposal/ Recommendation
technology]		
F. Leverages physical plant capacity	●	●

8.13.5 Narrative Analysis of the Evaluation

The Niagara Health System is an active participant working within the LHIN to identify and implement strategies that will improve access to appropriate levels of care for those individuals in need across the Hamilton, Niagara, Haldimand, Brant (HNHB) LHIN area;

There are a number of recommendations related to the appropriate use of both acute and CCC beds. Patient flow and alternate level of care collaborative processes have been the focus to improve bed utilization and patient flow across the continuum. The NHS is committed to providing equitable and timely access for people throughout Niagara to a wide range of patient focused care and services.

The LHIN has supported a number of initiatives to reduce reliance on hospital beds for individuals waiting for the “right level of care” e.g. Aging at Home strategies, Crisis 1A Designation for hospital patient waiting LTC placement, enhanced Home Care Services and Supportive Housing.

Slow paced recovery represents a significant number of patients requiring lower intensity support. An opportunity exists at the Port Colborne and Douglas Memorial sites to co-hort patients with like needs to provide concentrated programming for recovery and strengthening and to promote discharge home. These services would reduce acute hospital length of stay.

The enhancement of Geriatric Services and the provision of Day Hospital programming should be developed collaboratively with community partners including CCAC, Regional Niagara, Alzheimer’s Society etc.... The NHS has the physical space and expertise to support these programs. Seniors living in our community would benefit from these supportive services to improve or maintain their ability to age at home.

The needs of patients waiting placement to LTC homes differs in intensity to other levels of care. To better utilize our scarce health human resources, the NHS will cluster appropriately and provide the right skill mix. An opportunity exists to develop centres of excellence within CCC i.e. Palliative Care, reactivation, slow paced recovery and respite care.

8.13.5.1 Optimizes Quality of Care

Effective

As a whole, the health care system will benefit through: an improvement in patient flow from hospital to community; a reduction in inappropriate

utilization of hospital services, in particular on the Emergency Dept; and, through reduction in Alternate Level of Care days.

Efficient

From the system perspective, seniors will benefit from enhanced programming and will be discharged from hospital when it is appropriate with needed supports in place. Through an integrated approach service providers will work together to resolve issues, identify gaps and improve

Equitable

This model allows all residents of Niagara access to a consistent standard of transitional care.

Safe

It is recognized that CCC units will have the supports in place to adequately address the senior's needs in a safe environment. Programming and supports will support a safe environment for patients / clients and staff.

Patient Centred

Our interdisciplinary team's vision is committed to providing patient focused services and programs that offer non-acute care to maintain, improve and/ or support the physical, spiritual, psychosocial and cognitive well-being for patients and their families using a comprehensive and interdisciplinary approach to optimize successful transitions for patients and families through facility or community based environments.

Timely

The timing is right for change. There is a convergence of ideas and broad agreement about what needs to be done to address the issues. Through an Integrated Approach this will support improve patient flow, access, care and services options and system capacity. With the senior population increasing, and improved treatments and technology promising to prolong life, the number of seniors requiring ongoing care can be expected to grow. Healthier lifestyles, effective prevention of illness and disability and improved chronic disease management are important but alone will not be enough to keep seniors ageing at home. The goal is to provide the right care at the right time in the right place.

Work Life Focus

This mode supports improved quality of work life for staff. Program clusters will produce an environment that has patient and staff safety as a major focus will significantly increase staff satisfaction and morale.

Population Focus

The distribution of CCC beds across Niagara will meet the needs of patients and families as there will be an opportunity to provide “care close to home.”

Continuity of Service Focus

To ensure that hospital beds are assessable to those in need, and to promote the best use of health care resources, hospital beds must be used appropriately. The CCC programs support transitioning to the right level of care.

8.13.5.2 Compliant with Policy

NHS: the 5 success factors:



Focus on those we serve

- Creation of centres of excellence for Complex Continuing Care recognizes the specialized needs of our population and better aligns our care delivery model to improve outcomes.



Bring out the best in each other

- Enhance quality of work life for staff by improving relationships and increasing team work within the community and hospital.



Build strong and successful relationships

- Recognizes the value and potential for partnerships with community service providers in improving the seamless continuum for our patients.



Create a better way

- Confirms our role in the provision of specialized services for the elderly i.e. slow stream rehabilitation, geriatric services allowing us to focus our care based on evidence based best practice standards.



Use our resources wisely

- The creation of centres of excellence in Complex Continuing Care brings with it the opportunity for staffing changes related to skill mix and maximizing the cope of practice for all interdisciplinary team members.

MOHLTC/HNHB LHIN

It is anticipated that the LHIN 4 Complex Continuing Care Working Group will provide recommendations that will further inform the clinical programming related to Slow Paced Rehabilitation and Recovery at the Port Colborne and Fort Erie sites.

8.13.5.3 Leverages Health Professional Resource Pool

By 2013, 61% of all Transitional care RNs and 39% of all transitional care RPNs will be eligible for retirement. Clearly, from a health human resource perspective, the sustainability of the transitional care service is in jeopardy.

Also included in the Transitional Care Program are the allied health group which includes PT, OT, SLP, Rec. Therapy and Pastoral Care of which 34% of all providers are eligible for retirement.

8.13.5.4 Recognizes Changing Community Demographics and Population Health Needs

The Niagara Region has the oldest age structures of the 11 Census Metropolitan Areas (CMA) in the province. Seventeen percent (17%) of the population is greater than 65 years of age compared to the provincial average of 12.9%. As Niagara continues to be a preferred retirement destination, it is estimated that this figure will increase to 20.1% by 2016, as compared to the provincial average of 15.5%. By 2031, it is projected that 27.5% of Niagara's population will be over 65 years of age. With the high prevalence of chronic disease, heart disease, cancer and kidney disease in Niagara, the poor socio-economic status of the region and the significant shortage of family practitioners, the NHS is seeing more and more patients coming into hospital at advanced stages in their illness.

Our experience in our five Emergency Departments (ED) and One Prompt Care Centre across the region demonstrates the serious impact of a lack of primary care in our community. The shortage of 90 family physicians in the Niagara community is putting additional pressure on the hospital system, resulting in both increased patient visits and acuity, and therefore creating backlogs in the EDs. Our seniors population, among others, is increasingly reliant on ED care as the gateway into the health-care system. Niagara demographics demonstrate that the leading causes of death for both men and women in Niagara are heart disease, lung cancer, cerebrovascular disease and chronic lung disease. In the Niagara Health System, the utilization of resources mirrors these demographics, with congestive heart failure, chronic obstructive lung disease, and stroke among our highest volume cases. The Niagara Health System also sees a high volume of patients with diabetes and chronic kidney disease and mental health disease. In the elderly, there can be complex co-morbidities that require more intensive resources and care and longer lengths of stay in hospital. This underscores the need for a robust chronic disease prevention and self-management strategy. Such a strategy would support seniors to maintain independence, improve quality of life and reduce reliance on acute care.

8.13.5.5 Supports Ability to Advance/Promote Health Care [e.g., Introduction of New Technology]

Introduction of new and enhanced programs will enhance quality care for seniors.

Recruitment difficulties are further challenged in that new graduates prefer to work in areas that are higher acuity. By delivering specialized programs across the system will provide opportunities for health care workers with an interest in geriatric management.

8.13.5.6 Leverages Physical Plant Capacity

The infrastructure across all sites supports the proposed model of care for transitioning patients through the system.

The opportunity to leverage the clustering of programs provides space for the transition to centres of excellence and best practice.

The current distribution of CCC beds reinforces the role of small and large sites playing a role in the delivery of health care services across Niagara

Continuity of Service Focus

To ensure that hospital beds are assessable to those in need, and to promote the best use of health care resources, hospital beds must be used appropriately. The CCC programs support transitioning to the right level of care.

8.14 Diagnostic & Therapeutic Services

8.14.1 Current State

Diagnostic and Therapeutic Services is comprised of Diagnostic Imaging, Laboratory and Pharmacy Services. Both Diagnostic Imaging and Laboratory Services provide services under the medical direction of a Radiologist and a Pathologist. In addition, each service has a number of disciplines within their portfolio. The service model at each of the NHS sites is dependant on the clinical programs being provided at the site.

Diagnostic Imaging provides the following services across the NHS:

- Magnetic Resonance Imaging (MRI)
- CAT Scan
- Ultrasound
- Bone Densitometry
- Mammography
- Ontario Breast Screening Program

- General Radiography
- Nuclear Medicine
- Interventional Radiology
- C-Arm Fluoroscopy
- Fluoroscopy

With the introduction of Picture Archiving and Communication System (PACS), it has become feasible to provide services remotely with the use of electronic images and Web technology. The department is currently implementing 'voice recognition' technology as another technological advancement which will enhance patient care by improving report turnaround time.

Quality and safety within Diagnostic Imaging rests with the Regional Chief of Diagnostic Imaging who in collaboration with the Site Chiefs act as the Radiation Protection Officers responsible for establishing appropriate policies and procedures with regards to radiation safety in adherence with the Ontario Healing Arts Radiation Protection Act (HARP) to ensure the safety of the patients, staff, physicians, volunteers and visitors at all sites. A Regional Medical Director for Nuclear Medicine and Regional Radiation Safety Officer ensure compliance with the Canadian Nuclear Safety Commission regulations for the safe provision of Nuclear Medicine services and a Regional Medical Director for MRI oversees the safe provision of MRI services. All mammography services are accredited by the Canadian Association of Radiologists (CAR) and are also accredited OBSP Assessment Centres. There is also compliance with the Ontario Ministry of Labour for Occupational Health and Safety requirements for the workplace and workers.

The Radiologists and the Medical Radiation Technologists are all regulated professionals and are governed by their respective regulatory colleges. The Ultrasonographers are all credentialed through the American Registry of Diagnostic Medical Sonographers. Clinical placements for medical imaging students are provided for radiology, ultrasound, MRI and PACS.

Laboratory Services provides the following services across the NHS:

- Pathology Services
- Frozen Sections
- Surgical Pathology
- Cytology
- Chemistry
- Haematology
- Transfusion Medicine

- Point Of Care Testing (POCT)

There are a number of services that have been centralized to obtain higher efficiency levels, maximize clinical expertise and enhance service levels. These services are currently centralized at the St Catharines General Hospital and they are:

- Histology Processing
- Immunohistochemistry
- Cytology screening
- Autopsy Services:
- Hospital
- Coroners Cases

Microbiology services are provided by a private laboratory with in the Niagara Region. The Laboratory Services is an active participant in the HNHB LHIN regional lab discussions.

Quality and safety within the Laboratory Services rests with the Regional Chief of Laboratory Services. In addition, the MOHLTC Ontario Laboratory Accreditation Program has established a requirement for all private and public laboratories that they must be surveyed every five years and evaluated against 650 standards. The NHS Laboratory Services was surveyed in January 2008 and obtained a 5 year accreditation award. In addition, there are weekly quality tests provided by the MOHLTC under the direction of the QM PLS. Worker and workplace safety is regulated by the Ministry of Labour.

The physicians and Medical Laboratory Technologists are regulated professionals and must be in 'good standing' with their respective colleges to provide services in the laboratory. The Laboratory has partnered with McMaster University to provide clinical placements for Pathology Residents. Clinical placements are also offered for Medical Laboratory Technologists as well as Medical Laboratory Assistants.

Pharmacy Services are provided at all sites and service levels will vary depending on programs provided at the specific sites.

The service has recently implemented computerized medication administrative records (MARS) for patients as part of it's implementation strategy for implementing 'automated unit dose delivery system' (AUDD) which will enhance patient safety and reduce and in some cases prevent medication adverse events from occurring. The implementation of AUDD should be completed by the fall of 2008. A Pharmacy based Intravenous Admixture program has also been implemented at the three large sites to also include Total Parenteral Nutrition. Pharmacy services receive direction from the Pharmacy & Therapeutic Committee which is a sub committee of the

NHS Medical Advisory Committee. The current quality and safety initiatives underway are:

- Antibiotic Utilization
- Medication Reconciliation
- Oncology Drug Utilization
- Non-Formulary Drug utilization

All Pharmacists are regulated professionals and member of the college.

8.14.2 Proposed Service Delivery Model

The proposed service delivery model for the Diagnostic and Therapeutic Services will be dictated by the clinical programs. Services can be scaled in either direction to meet the future clinical program delivery models. In addition to meeting the requirements of the clinical programs, services may be sited to support community programs if there is a revenue generating opportunity for the NHS. With the enactment of the Independence Health Facilities Act, it may be difficult for a community to attract a private provider of Diagnostic Imaging services to the community and these type of situations will be evaluated on a case by case basis.

9.0 Overview of Proposed Service Distribution by NHS Site

9.1 Proposed Service Distribution

Exhibit 101: Distribution of 2012/13 Emergency, Maternal Child, Medicine, and Operative/Perioperative Services by NHS Site

Program/Service	GNGH	SCGH	WCH	PCGH	DMH	NOTL	Clinical Dependency
Emergency	ED With Clinical Decision Unit (incl. Pediatrics)	ED With Clinical Decision Unit (incl. Pediatrics)	ED With Clinical Decision Unit (incl. Pediatrics)	Primary Care / CHC	Primary Care/ CHC	Walk-In	General Surgery
Maternal Child		Maternal Child, Level 2 Nursery, Paediatrics					
Medicine	Inpatient Beds	Inpatient Beds	Inpatient Beds				
	Level 2 Intensive Care	Level 3 Intensive Care	Level 2 Intensive Care				
	Complex Continuing Care		Complex Continuing Care	Complex Continuing Care	Complex Continuing Care	Complex Continuing Care	
	Hospitalist	Hospitalist	Hospitalist	Hospitalist			
	Cardio Diagnostics	Cardio Diagnostics	Cardio Diagnostics	Electro-Cardiogram	Electro-Cardiogram		
	District Stroke Program – 10 Rehab Beds						
	Regional Geriatric assessment						
Oncology	Oncology Clinics	Inpatient Oncology	Oncology Clinics				
Cardiology	District Stroke Centre	Cardiac Cath/ Angioplasty					
	Pacemaker	Pacemaker	Pacemaker				
Operative/ Peri-Operative	General Surgery	General Surgery	General Surgery				
	Total Joint Replacement Center	Total Joint Replacement Center					Slow paced rehab and CCC services
	Ambulatory Ortho	Ambulatory Ortho	Ambulatory Ortho				
	Ear, Nose, & Throat	Ear, Nose, & Throat					
	Plastics	Plastics					
		Thoracic					Level 3 Intensive Care
		Vascular					Level 3 Intensive Care
		Gynaecology					
			Ophthalmology				
			Urology				
	Oral and Dental						
	Endoscopies	Endoscopies	Endoscopies				
	Urology Clinic	Urology Clinic	Urology Clinic				
	Surgical Ambulatory Clinics	Surgical Ambulatory Clinics	Surgical Ambulatory Clinics	Surgical Ambulatory Clinics	Surgical Ambulatory Clinics		

Note: The existing services at the Ontario Street Site will continue until the new St. Catharines hospital opens.

Exhibit 102: Distribution of 2012/13 NHS Mental Health, Addictions, Ambulatory, Pharmacy, Imaging, and Laboratory Services by Site

Program/Service	GNGH	SCGH	WCH	PCGH	DMH	NOTL	Clinical Dependency
Mental Health	Outpatient	Tertiary and Acute Mental Health	Outpatient	Outpatient	Outpatient		
Addictions		Residential and Outpatient Addictions					
Ambulatory Clinics	Ambulatory Clinics (to be determined)	Ambulatory Clinics (to be determined)	Ambulatory Clinics (to be determined)	Ambulatory Clinics (to be determined)	Ambulatory Clinics (to be determined)		
Chronic Disease Prevention and Management (CPDM)	CDPM Clinics (e.g. COPD, Heart Function, Asthma)	CDPM Clinics (e.g. COPD, Heart Function, Asthma)	CDPM Clinics (e.g. COPD, Heart Function, Asthma)	CDPM Clinics (e.g. COPD, Heart Function, Asthma)	CDPM Clinics (e.g. COPD, Heart Function, Asthma)		
	Dialysis (Satellite)	Dialysis – Hub & Community Satellite	Dialysis (satellite)		Home Hemo-Dialysis		
	Diabetes spoke	Diabetes spoke	Diabetes spoke	Diabetes Hub	Diabetes spoke		
Pharmacy	Daily Onsite & After Hours Coverage	Daily Onsite & After Hours Coverage	Daily Onsite & After Hours Coverage	Weekday Onsite Coverage	Weekday Onsite Coverage		
Laboratory Medicine	Frozen Sections, Surgical Pathology & Cytology	Frozen Sections, Surgical Pathology & Cytology, Autopsies	Frozen Sections, Surgical Pathology & Cytology	Point of Care Testing e.g. Glucose, Arterial Gases	Point of Care Testing e.g. Glucose, Arterial Gases		
	Chemistry	Chemistry	Chemistry	Specimen Collection	Specimen Collection	Private Lab Outpatient Services	
		Histology Processing, Cytology Screening, Immunohistochemistry					
	Transfusion Medicine	Transfusion Medicine	Transfusion Medicine				
	Haematology	Haematology	Haematology				
Diagnostic Imaging	MRI	MRI					
	CT	CT	CT				
	Ultra Sound	Ultra Sound	Ultra Sound	Ultra Sound	Ultra Sound	Ultra Sound	
	Bone Densitometry	Bone Densitometry	Bone Densitometry				
	Mammography	Mammography	Mammography	Mammography	Mammography		
	Breast Screening	Breast Screening	Breast Screening	Breast Screening	Breast Screening	Breast Screening	
	Nuclear Medicine	Nuclear Medicine	Nuclear Medicine				
	Interventional Radiology	Interventional Radiology, Angiography	Interventional Radiology				
	C-Arm (mobile Fluoroscopy)	C-Arm (mobile Fluoroscopy)	C-Arm (mobile Fluoroscopy)				
	Fluoroscopy	Fluoroscopy	Fluoroscopy				
	General Radiology	General Radiology	General Radiology	General Radiology	General Radiology	General Radiology	

Note: The existing services at the Ontario Street Site will continue until the new St. Catharines hospital opens.

10.0 Projected NHS Activity Volumes for 2012/13

The HNHB LHIN request for an HIP from the NHS asked that the NHS achieve a balanced budget by fiscal year 2011/12. However, some of the consolidation and efficiency initiatives contained in the NHS HIP are dependent on the completion of the new St. Catharines hospital, which is not scheduled to be fully operational until the 2012/13 fiscal year. For purposes of projecting activity volumes and assessing cost impacts of the plan, we have used the 2012/13 fiscal year as the planning horizon. The approaches to projecting NHS hospital service volumes and the assumptions guiding the projections are presented in this chapter of the HIP.

10.1 Approach to Projecting Acute Care Activity Volumes

A detailed acute care projection model was created using the 2006/07 CIHI inpatient and day surgery data for the NHS and other Ontario hospitals. The model calculates future activity volumes for each individual acute care program cluster category (PCC), for Primary/Secondary and Tertiary/Quaternary cases, by patient age (0 to 17, 18 to 69, and 70 years and older). The components of the model include:

- The 2006/07 estimated and 2012/13 projected population for the Niagara region
- The actual 2006/07 inpatient and day surgery activity for residents of Niagara
- The actual 2006/07 inpatient and day surgery activity for the NHS, separated into Niagara region residents and patients from outside Niagara region
- Actual 2006/07 population-based utilization rates for each PCC, level of care, and age combination
- Target 2012/13 population-based utilization rates for each PCC, level of care, and age combination
- NHS actual 2006/07 and target 2012/13 market share (i.e. percent of cases for Niagara residents treated in the NHS) for each PCC, level of care, and age combination
- Actual 2006/07 NHS percent day surgery rates and target 2012/13 percent day surgery targets, based on the “best quartile” performance of large community hospitals in Ontario
- Actual 2006/07 NHS acute care length of stay and target 2012/13 acute length of stay targets based on “best quartile” acute length of stay performance of large Ontario community hospitals

- Target ALC days, based on the average percent ALC, by PCC, level of care, and age, in large Ontario community hospitals in 2006/07
- Program-specific target bed occupancy rates
- Targets for percent of acute care days to be allocated as intensive care days (based on true intensive care beds, i.e. not monitored or step-down beds)
- Operating room utilization targets based on average procedure times, standard turnaround allowances, and estimated prime time hours available per OR. Only main ORs and obstetrical case rooms are included in the OR theatre estimates.

Population Growth

Estimates of population growth were based on the Ontario Ministry of Finance population estimates for the Niagara region for 2006 and the population projections for Niagara for 2012. Calculations of the impact of population growth for each PCC were based on application of projected growth rates for each 5 year cohort.

Target Utilization Rates

The target utilization rates (i.e. Niagara resident hospitalizations per 10,000 population) for 2012/13 were set equal to the actual 2006/07 utilization rates except for the following programs:

- The paediatric Primary/Secondary utilization rate was reduced by 2% to reflect the impact of CDUs at the NHS large acute care sites to redirect potential inpatient admissions to primary and community care. The exception was for paediatric mental health where the utilization rate was increased by 100% to adjust for historical unavailability of adolescent mental health beds.
- The adult medicine Primary/Secondary utilization rate was reduced by 10% to reflect the opportunities to reduce medical admissions through enhanced primary and community services, better chronic disease management, and the use of CDUs in the NHS emergency departments.
- The adult surgery Primary/Secondary utilization rate was reduced by 2% to reflect opportunities to reduce the need for surgery through improved primary and community based care. Exceptions were for Primary/Secondary Orthopaedics (increased by 2%) and Tertiary/Quaternary Orthopaedics (increased by 5%) to accommodate the unmet need that has caused NHS joint replacement wait times to exceed provincial targets.
- Obstetrical utilization rates were reduced by 2% to reflect declining population fertility rates.
- Adult Primary/Secondary Mental Health utilization rate was reduced by 2% to reflect increased availability of community and outpatient services.

Target NHS Market Share

The target NHS market share for the percent of hospital services required by Niagara residents was set equal to the actual 2006/07 market share except for:

- The lower limit for the Paediatric Primary/Secondary market share by PCC was set to 80%, reflecting the expected increased reliance of Niagara residents on a consolidated Maternal/Child program in the new St. Catharines hospital. The exception was for Orthopaedics, where the target market share was set at 60%.
- The Paediatric Mental Health market share was set to 85%.
- The market share for Obstetrics was set to a minimum of 80% to reflect increased Niagara resident reliance on the new Maternal/Child program.
- The market share for adult Cardiology, Oncology, and Vascular Surgery was set to a minimum of 80% to reflect the consolidated and expanded services (e.g. cardiac catheterization, endovascular surgery) available in the new St. Catharines hospital.
- The market share for Cardio-Thoracic was set to 60% to reflect the planned availability of angioplasty in the new St. Catharines hospital

Efficiency Targets

The projection model incorporates “best quartile” targets, based on 2006/07 large Ontario community hospitals for:

- Percent use of day surgery
- Acute care length of stay

The “best quartile” day surgery targets had minimal impact, since NHS is already providing most surgery that could be performed as day surgery via day surgery. The “best quartile” acute length of stay targets had greater impact on the NHS projected length of stay. The average peer hospital acute length of stay for Medicine, after application of the “best quartile” targets was used, instead of the NHS “best quartile” length of stay, to reflect the projected impact of reduction of short-stay medical cases at NHS.

Very Aggressive ALC Reduction Target

The efficiency target with the greatest impact on the NHS activity projection for 2012/13 was the target to achieve peer (large Ontario community hospital) average percent ALC days. While in 2006/07 24.0% of all NHS acute care inpatient days were reported as ALC, the application of the peer targets to the 2012/13 inpatient days generated an estimate that only 11.0% of NHS inpatient days would be ALC days. Achieving the 11.0% ALC rate is dependent on:

Pre-Requisites for ALC Reduction

- Success of the HNHB LHIN Aging at Home initiatives
- The planned introduction of new LTC beds in south Niagara
- Diversion of medical inpatient from admission to hospital through use of the planned CDUs

- Enhanced primary care and chronic disease management
- Refocusing of chronic care beds on reactivation and slow-stream rehabilitation
- Increase in availability of inpatient rehabilitation beds at the Hotel Dieu Shaver and at GNGH

10.2 Overall Projected Acute Care Volumes

The resulting projected NHS acute care volume estimate includes the impacts of population growth and aging, changes in utilization rates, increases in NHS market share, and application of efficiency targets to reduce reliance on inpatient days of care. The following tables compare the 2006/07 actual NHS acute care activity by program with the projected 2012/13 activity volumes.

Exhibit 103: 2006/07 Actual and 2012/13 Projected NHS Acute Care Activity by Program

Program	2006/07 NHS Actual										
	IP Cases	IP Days	Acute LOS	ALC Days	% ALC	SDS Cases	IP RIW	Avg. IP RIW	SDS RIW	Avg. SDS RIW	Total RIW
Medicine	13,741	110,160	5.56	33,791	30.7%	12,832	18,823	1.37	1,148	0.09	19,971
Mental Health	205	1,527	4.91	520	34.1%	0	258	1.26	0	0.00	258
Neonates	3,218	8,334	2.59	2	0.0%	0	1,135	0.35	0	0.00	1,135
Paed MH	63	164	2.60	0	0.0%	0	52	0.82	0	0.00	52
Paediatrics	1,927	4,594	2.36	51	1.1%	1,839	1,050	0.54	322	0.18	1,372
Obstetrics	3,469	7,813	2.25	0	0.0%	2,293	2,238	0.65	328	0.14	2,566
Surgery	8,800	58,631	5.36	11,436	19.5%	22,782	15,221	1.73	3,314	0.15	18,535
Grand Total	31,423	191,223	4.63	45,800	24.0%	39,746	38,777	1.23	5,112	0.13	43,889

Program	2012/13 NHS Projected Volume										
	IP Cases	IP Days	Acute LOS	ALC Days	% ALC	SDS Cases	IP RIW	Avg. IP RIW	SDS RIW	Avg. SDS RIW	Total RIW
Medicine	13,891	101,318	6.30	13,764	13.6%	12,401	18,379	1.32	1,111	0.09	19,490
Mental Health	213	1,469	4.90	425	28.9%	0	267	1.25	0	0.00	267
Neonates	3,268	7,110	2.18	1	0.0%	0	1,152	0.35	0	0.00	1,152
Paed MH	119	331	2.77	0	0.0%	0	103	0.87	0	0.00	103
Paediatrics	1,887	3,612	1.91	6	0.2%	1,776	1,013	0.54	310	0.17	1,323
Obstetrics	3,532	6,923	1.96	1	0.0%	2,332	2,277	0.64	335	0.14	2,611
Surgery	9,514	51,293	4.90	4,658	9.1%	23,836	16,987	1.79	3,469	0.15	20,456
Grand Total	32,424	172,056	4.72	18,856	11.0%	40,346	40,178	1.24	5,225	0.13	45,403

Program	Projected Change from 2006/07 to 2012/13										
	IP Cases	IP Days	Acute LOS	ALC Days	% ALC	SDS Cases	IP RIW	Avg. IP RIW	SDS RIW	Avg. SDS RIW	Total RIW
Medicine	1.1%	-8.0%	0.7	-20,027	-55.7%	-3.4%	-2.4%	-0.05	-3.2%	0.00	-2.4%
Mental Health	4.0%	-3.8%	0.0	-95	-15.0%	0.0%	3.5%	-0.01	0.0%	0.00	3.5%
Neonates	1.6%	-14.7%	-0.4	-1	-15.4%	0.0%	1.5%	0.00	0.0%	0.00	1.5%
Paed MH	89.4%	101.9%	0.2	0	0.0%	0.0%	99.6%	0.04	0.0%	0.00	99.6%
Paediatrics	-2.1%	-21.4%	-0.4	-45	-84.2%	-3.4%	-3.5%	-0.01	-3.8%	0.00	-3.6%
Obstetrics	1.8%	-11.4%	-0.3	1	0.0%	1.7%	1.8%	0.00	2.0%	0.00	1.8%
Surgery	8.1%	-12.5%	-0.5	-6,778	-53.4%	4.6%	11.6%	0.06	4.7%	0.00	10.4%
Grand Total	3.2%	-10.0%	0.1	-26,944	-54.2%	1.5%	3.6%	0.01	2.2%	0.00	3.4%

The overall projection is for a 3.2% increase in inpatient cases and a 2.2% increase in day surgery cases. The acute length of stay is projected to increase by 0.1 days in spite of application of “best quartile” targets because the reduction of short stay medical inpatient cases increases the average length of stay of the residual cases. The overall RIW weighted cases are projected to increase by 3.4%. The following table shows the projected 2012/13 activity volumes for the NHS by program cluster category.

Exhibit 104: Projected 2012/13 NHS Acute Care Activity Volume by PCC

Program Cluster	2012/13 NHS Projected Volume										
	IP Cases	IP Days	Acute LOS	ALC Days	% ALC	SDS Cases	IP RIW	Avg. IP RIW	SDS RIW	Avg. SDS RIW	Total RIW
Cardio/ Thoracic	897	5,941	6.39	208	3.5%	0	2,826	3.15	0	0.00	2,826
Cardiology	3,595	19,761	5.06	1,579	8.0%	105	3,997	1.11	35	0.34	4,032
Dental/Oral Surgery	4	9	2.25	0	0.0%	935	2	0.59	214	0.23	216
Dermatology	51	525	7.95	117	22.3%	0	66	1.29	0	0.00	66
Endocrinology	675	3,778	4.82	525	13.9%	34	693	1.03	1	0.02	694
Gastro/Hepatobiliary	2,754	12,767	4.35	779	6.1%	11,801	2,272	0.82	1,002	0.08	3,273
General Medicine	2,519	22,726	7.16	4,694	20.7%	55	3,905	1.55	3	0.05	3,908
General Surgery	2,298	16,644	6.64	1,390	8.4%	2,069	4,705	2.05	516	0.25	5,221
Gynaecology	844	2,179	2.58	7	0.3%	968	752	0.89	138	0.14	890
Haematology	370	2,005	5.13	106	5.3%	169	375	1.01	48	0.29	423
Neonatology	3,268	7,110	2.18	1	0.0%	0	1,152	0.35	0	0.00	1,152
Nephrology	387	3,477	7.37	625	18.0%	0	661	1.71	0	0.00	661
Neurology	1,150	9,844	6.56	2,297	23.3%	9	1,719	1.49	0	0.02	1,719
Neurosurgery	33	112	3.13	8	7.3%	358	57	1.73	56	0.16	113
Not Generally Hosp.	40	65	1.63	0	0.1%	0	5	0.12	0	0.00	5
Obstetrics	3,532	6,923	1.96	1	0.0%	2,332	2,277	0.64	335	0.14	2,611
Oncology	803	8,956	9.73	1,148	12.8%	42	1,543	1.92	2	0.05	1,545
Ophthalmology	78	265	3.02	30	11.2%	5,823	48	0.61	917	0.16	965
Orthopaedics	2,042	8,580	3.85	725	8.5%	2,842	3,531	1.73	610	0.21	4,142
Otolaryngology	315	791	2.39	38	4.9%	1,652	207	0.66	308	0.19	515
Plastic Surgery	151	517	2.95	72	13.9%	2,970	153	1.02	325	0.11	478
Psychiatry	333	1,800	4.13	425	23.6%	0	371	1.11	0	0.00	371
Pulmonary	2,851	18,906	6.03	1,705	9.0%	233	3,711	1.30	26	0.11	3,737
Rehabilitation	19	458	19.24	88	19.3%	0	31	1.62	0	0.00	31
Rheumatology	84	731	7.49	104	14.3%	0	115	1.37	0	0.00	115
Trauma	1,678	9,234	4.65	1,425	15.4%	0	2,507	1.49	0	0.00	2,507
Ungroupable	7	13	1.86	0	0.0%	431	1	0.17	33	0.08	34
Urology	1,320	4,613	3.18	421	9.1%	7,173	1,346	1.02	572	0.08	1,918
Vascular Surgery	327	3,324	9.13	336	10.1%	345	1,151	3.52	85	0.25	1,236
Grand Total	32,424	172,056	4.72	18,856	11.0%	40,346	40,178	1.24	5,225	0.13	45,403

10.3 Proposed Distribution of Acute Care Activity by NHS Site

The table above shows the total volume of inpatient and day surgery acute care to be accommodated in the NHS hospitals for 2012/13. The following table shows the projected distribution of acute care among the three NHS acute care sites. All Maternal/Child and inpatient Mental Health activity will be consolidated at the new St. Catharines hospital (the Mental Health activity shown in the table above does not include the acute care or tertiary mental health activity not reported via the CIHI discharge abstract database).

Medical program activity is distributed according to the actual 2006/07 distribution by site, with DMH activity reassigned to the GNGH site, and PCGH activity reassigned to the WCH site. Surgical program activity is allocated by site according to the Surgical program plan for activity consolidation, or according to the 2006/07 distribution where no consolidation is planned (e.g. General Surgery).

Exhibit 105: Projected Distribution of 2012/13 NHS Day Surgery and Inpatient Activity by Site

Program	Program Cluster	Default SDS % Distribution by Site					Default Inpatient % Distrib.by Site				
		SCGH	GNGH	WCH	DMH	PCGH	SCGH	GNGH	WCH	DMH	PCGH
Medicine											
	Cardiology	59.6%	22.3%	18.1%	0.0%	0.0%	45.0%	28.0%	27.0%	0.0%	0.0%
	Dermatology	0.0%	0.0%	0.0%	0.0%	0.0%	57.7%	15.4%	26.9%	0.0%	0.0%
	Endocrinology	0.0%	0.0%	100.0%	0.0%	0.0%	46.3%	27.8%	26.0%	0.0%	0.0%
	Gastro/Hepatobiliary	45.3%	34.9%	19.8%	0.0%	0.0%	41.7%	29.6%	28.7%	0.0%	0.0%
	General Medicine	22.0%	6.0%	72.0%	0.0%	0.0%	43.0%	26.1%	31.0%	0.0%	0.0%
	Haematology	63.0%	4.8%	32.1%	0.0%	0.0%	60.1%	15.9%	24.0%	0.0%	0.0%
	Nephrology	0.0%	0.0%	0.0%	0.0%	0.0%	75.0%	0.0%	25.0%	0.0%	0.0%
	Neurology	50.0%	0.0%	50.0%	0.0%	0.0%	40.0%	33.0%	27.0%	0.0%	0.0%
	Not Generally Hosp.	0.0%	0.0%	0.0%	0.0%	0.0%	69.2%	25.6%	5.1%	0.0%	0.0%
	Oncology	52.8%	2.8%	44.4%	0.0%	0.0%	49.0%	29.0%	22.0%	0.0%	0.0%
	Pulmonary	89.4%	2.1%	8.5%	0.0%	0.0%	45.3%	26.7%	28.0%	0.0%	0.0%
Rehabilitation	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	61.9%	23.8%	0.0%	0.0%	
Rheumatology	0.0%	0.0%	0.0%	0.0%	0.0%	41.9%	20.9%	37.2%	0.0%	0.0%	
Mental Health		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Neonates		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Paed MH		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Paediatrics		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Obstetrics		100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Surgery											
	Cardio/ Thoracic	90.0%	5.0%	5.0%	0.0%	0.0%	90.0%	5.0%	5.0%	0.0%	0.0%
	Dental/Oral Surgery	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
	General Surgery	46.5%	31.9%	21.6%	0.0%	0.0%	49.3%	24.5%	26.3%	0.0%	0.0%
	Gynaecology	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
	Neurosurgery	14.5%	52.9%	32.7%	0.0%	0.0%	93.8%	0.0%	6.3%	0.0%	0.0%
	Ophthalmology	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Orthopaedics	30.0%	50.0%	20.0%	0.0%	0.0%	39.0%	61.0%	0.0%	0.0%	0.0%
	Otolaryngology	20.0%	80.0%	0.0%	0.0%	0.0%	20.0%	80.0%	0.0%	0.0%	0.0%
	Plastic Surgery	40.0%	60.0%	0.0%	0.0%	0.0%	40.0%	60.0%	0.0%	0.0%	0.0%
	Trauma	0.0%	0.0%	0.0%	0.0%	0.0%	48.6%	25.9%	25.5%	0.0%	0.0%
	Ungroupable	48.6%	22.9%	28.6%	0.0%	0.0%	57.1%	0.0%	42.9%	0.0%	0.0%
	Urology	40.0%	0.0%	60.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Vascular Surgery	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%

Application of this projected distribution of NHS activity by site to the projected 2012/13 NHS activity volume generates the estimated activity by site shown in the tables on the following pages.

Exhibit 106: Projected 2012/13 Acute Care Activity for New St. Catharines Hospital

Hospital:	St. Catharines									
Program	IP Cases	SDS Cases	IP Days	ICU Beds	Non-ICU Beds	Total Beds	Main ORs	IP RIW	SDS RIW	Total RIW
Medicine	6,290	5,737	45,939	9.3	113.2	122.5	0.23	8,366	527	8,893
Cardiology	1,611	62	8,872	3.6	21.8	25.4	0.01	1,795	21	1,816
Dermatology	26	0	295	0.0	0.7	0.7	0.00	36	0	36
Endocrinology	277	0	1,669	0.2	4.2	4.4	0.00	301	0	301
Gastro/Hepatobiliary	990	5,328	5,085	0.5	14.1	14.6	0.07	886	452	1,338
General Medicine	980	12	9,553	1.6	21.6	23.2	0.04	1,620	1	1,620
Haematology	204	102	1,122	0.1	3.2	3.2	0.03	212	29	241
Nephrology	284	0	2,592	0.3	6.2	6.5	0.03	493	0	493
Neurology	416	4	3,865	0.5	8.6	9.0	0.00	667	0	667
Not Generally Hosp.	22	0	27	0.0	0.1	0.1	0.00	3	0	3
Oncology	391	22	4,383	0.2	11.5	11.7	0.04	755	1	756
Pulmonary	1,052	206	8,113	2.3	20.4	22.7	0.02	1,547	23	1,570
Rehabilitation	3	0	65	0.0	0.2	0.2	0.00	4	0	4
Rheumatology	33	0	297	0.0	0.8	0.8	0.00	47	0	47
Mental Health	213	0	1,469	0.1	3.3	3.4	0.00	267	0	267
Neonates	3,268	0	7,110	10.6	0.1	10.7	0.00	1,152	0	1,152
Paed MH	119	0	331	0.0	1.8	1.8	0.00	103	0	103
Paediatrics	1,887	1,776	3,612	1.1	13.2	14.4	0.96	1,013	310	1,323
Obstetrics	3,532	2,332	6,923	0.1	27.0	27.1	1.59	2,277	335	2,611
Surgery	4,708	7,375	27,034	11.6	69.7	81.3	6.97	9,405	1,027	10,432
Cardio/ Thoracic	807	0	5,347	6.2	11.2	17.4	0.93	2,543	0	2,543
Dental/Oral Surgery	0	0	0	0.0	0.0	0.0	0.00	0	0	0
General Surgery	1,088	934	8,107	3.0	21.2	24.3	1.50	2,283	233	2,516
Gynaecology	837	948	2,164	0.1	6.9	7.0	1.16	749	135	884
Neurosurgery	30	52	103	0.1	0.2	0.3	0.14	53	8	61
Ophthalmology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Orthopaedics	775	808	3,297	0.1	9.6	9.7	1.49	1,363	173	1,536
Otolaryngology	51	151	142	0.0	0.4	0.4	0.10	36	30	66
Plastic Surgery	55	1,133	194	0.0	0.5	0.5	0.38	56	125	182
Trauma	733	0	4,348	0.5	11.3	11.9	0.66	1,171	0	1,171
Ungroupable	4	193	8	0.0	0.0	0.0	0.01	1	15	16
Urology	0	2,820	0	0.0	0.0	0.0	0.00	0	223	223
Vascular Surgery	327	336	3,324	1.5	8.3	9.8	0.60	1,151	84	1,236
Grand Total	20,018	17,220	92,418	32.7	228.4	261.1	9.76	22,583	2,198	24,781

Average LOS:	4.62
Average IP RIW:	1.13

The new St. Catharines hospital will require 261 beds in 2012/13 to accommodate the projected acute care activity volume. There will need to be 21 medical/surgical ICU beds available, and at least 10 ORs (including obstetrical case rooms). Obstetrics (for c-sections), General Surgery, Gynaecology, and Orthopaedics (including one third of the projected elective joint replacements) will require the greatest allocation of OR blocks. The St. Catharines hospital will have the shortest inpatient length of stay and lowest average RIW value because of the consolidation of paediatric and obstetrical care at the site.

Exhibit 107: Projected 2012/13 Acute Care Activity for Greater Niagara General Hospital

Hospital:		Greater Niagara General Hospital								
Program	IP Cases	SDS Cases	IP Days	ICU Beds	Non-ICU Beds	Total Beds	Main ORs	IP RIW	SDS RIW	Total RIW
Medicine	3,760	4,151	27,320	5.6	67.3	72.8	0.12	4,930	359	5,289
Cardiology	1,003	23	5,521	2.3	13.6	15.8	0.01	1,117	8	1,125
Dermatology	7	0	79	0.0	0.2	0.2	0.00	10	0	10
Endocrinology	167	0	1,002	0.1	2.5	2.6	0.00	181	0	181
Gastro/Hepatobiliary	703	4,110	3,611	0.3	10.0	10.3	0.05	629	349	978
General Medicine	594	3	5,791	1.0	13.1	14.1	0.02	982	0	982
Haematology	54	8	298	0.0	0.8	0.9	0.01	56	2	58
Nephrology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Neurology	343	0	3,189	0.4	7.1	7.5	0.00	550	0	550
Not Generally Hosp.	8	0	10	0.0	0.0	0.0	0.00	1	0	1
Oncology	232	1	2,594	0.1	6.8	6.9	0.02	447	0	447
Pulmonary	621	5	4,793	1.4	12.0	13.4	0.01	914	1	915
Rehabilitation	12	0	284	0.0	0.7	0.7	0.00	19	0	19
Rheumatology	17	0	148	0.0	0.4	0.4	0.00	23	0	23
Mental Health	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Neonates	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Paed MH	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Paediatrics	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Obstetrics	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Surgery	2,481	5,239	12,666	2.5	34.7	37.1	4.84	4,260	944	5,205
Cardio/ Thoracic	45	0	297	0.3	0.6	1.0	0.05	141	0	141
Dental/Oral Surgery	4	667	9	0.0	0.0	0.0	0.39	2	151	153
General Surgery	540	642	4,024	1.5	10.5	12.1	0.74	1,133	160	1,293
Gynaecology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Neurosurgery	0	189	0	0.0	0.0	0.0	0.00	0	30	30
Ophthalmology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Orthopaedics	1,212	1,347	5,157	0.2	15.0	15.2	2.33	2,131	288	2,420
Otolaryngology	206	603	567	0.1	1.6	1.7	0.41	143	120	262
Plastic Surgery	82	1,700	290	0.0	0.8	0.8	0.56	85	188	272
Trauma	391	0	2,321	0.3	6.0	6.3	0.35	625	0	625
Ungroupable	0	91	0	0.0	0.0	0.0	0.00	0	7	7
Urology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Vascular Surgery	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Grand Total	6,241	9,390	39,985	8.1	101.9	110.0	4.96	9,190	1,304	10,494

Average LOS:	6.41
Average IP RIW:	1.47

The GNGH site will need 110 inpatient beds to accommodate the projected 2012/13 activity volume, at least 8 of which will be ICU beds. At least 5 ORs will be required to accommodate the projected surgical activity, particularly for Orthopaedic surgery since two thirds of elective joint replacements are projected to be performed at the GNGH site. GNGH is projected to have the highest average RIW per inpatient case.

Exhibit 108: Projected 2012/13 Acute Care Activity for Welland County Hospital

Hospital:	Welland County Hospital									
Program	IP Cases	SDS Cases	IP Days	ICU Beds	Non-ICU Beds	Total Beds	Main ORs	IP RIW	SDS RIW	Total RIW
Medicine	3,841	2,513	28,059	5.7	68.9	74.6	0.13	5,083	225	5,308
Cardiology	967	19	5,323	2.2	13.1	15.3	0.01	1,077	6	1,083
Dermatology	12	0	138	0.0	0.3	0.3	0.00	17	0	17
Endocrinology	156	34	936	0.1	2.3	2.5	0.00	169	1	170
Gastro/Hepatobiliary	682	2,326	3,506	0.3	9.7	10.0	0.05	611	197	808
General Medicine	705	39	6,878	1.1	15.6	16.7	0.03	1,166	2	1,168
Haematology	82	52	449	0.0	1.3	1.3	0.01	85	15	100
Nephrology	95	0	864	0.1	2.1	2.2	0.01	164	0	164
Neurology	281	4	2,609	0.3	5.8	6.1	0.00	450	0	450
Not Generally Hosp.	2	0	2	0.0	0.0	0.0	0.00	0	0	0
Oncology	176	19	1,968	0.1	5.1	5.2	0.02	339	1	340
Pulmonary	650	20	5,013	1.4	12.6	14.1	0.01	956	2	958
Rehabilitation	5	0	109	0.0	0.3	0.3	0.00	7	0	7
Rheumatology	29	0	264	0.0	0.7	0.7	0.00	41	0	41
Mental Health	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Neonates	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Paed MH	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Paediatrics	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Obstetrics	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Surgery	2,325	11,222	11,594	2.7	31.1	33.9	4.16	3,321	1,498	4,819
Cardio/ Thoracic	45	0	297	0.3	0.6	1.0	0.05	141	0	141
Dental/Oral Surgery	0	0	0	0.0	0.0	0.0	0.00	0	0	0
General Surgery	581	434	4,326	1.6	11.3	13.0	0.80	1,218	108	1,327
Gynaecology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Neurosurgery	2	117	7	0.0	0.0	0.0	0.01	4	18	22
Ophthalmology	30	5,789	147	0.0	0.4	0.4	1.71	21	913	934
Orthopaedics	0	539	0	0.0	0.0	0.0	0.00	0	115	115
Otolaryngology	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Plastic Surgery	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Trauma	385	0	2,282	0.3	5.9	6.2	0.34	615	0	615
Ungroupable	3	114	6	0.0	0.0	0.0	0.01	1	9	9
Urology	1,279	4,230	4,528	0.5	12.8	13.3	1.24	1,322	335	1,656
Vascular Surgery	0	0	0	0.0	0.0	0.0	0.00	0	0	0
Grand Total	6,165	13,735	39,652	8.5	100.0	108.5	4.30	8,405	1,723	10,127

Average LOS:	6.43
Average IP RIW:	1.36

The WCH site will need 109 inpatient beds to accommodate the projected 2012/13 activity volume, at least 9 of which will be ICU beds. At least 5 ORs will be required to accommodate the projected surgical activity, particularly for the Ophthalmology and Urological surgery that are projected to be consolidated at the WCH site. WCH will have the highest volume of adult day surgery cases and the longest inpatient length of stay.

10.4 Projected Mental Health Program Activity

The projected number of inpatient mental health beds (88 at the new St. Catharines hospital, including 4 paediatric mental health beds, 54 tertiary

mental health beds, and 30 acute mental health beds) was previously presented in section 8.3. The projected beds represent a significant increase from the current inpatient mental health capacity available to Niagara residents (both in the NHS and in St. Joseph's in Hamilton) and will be accompanied by increase outpatient service. The HNHB LHIN has established enhancement of community mental health services as a priority, and increased investment in community mental health (and addictions) services in Niagara will also reduce reliance on inpatient mental health beds.

10.5 Projected Emergency Department Volumes

The following table shows the projected NHS ED visit volume by triage category by site for 2012/13. Increases in CTAS 1 and 2 visits are projected, along with decreases in CTAS 3, 4, and 5 visit volumes.

**Exhibit 109: Projected 2012/13
NHS ED Visit Volume by Triage Category by Site**

NHS Site	Projected 2012/13 ED Visits by Triage Category					
	1	2	3	4	5	Total
Greater Niagara	342	6,489	23,957	13,996	3,923	48,707
St. Catharines	382	8,176	33,969	25,541	4,170	72,237
Welland County	325	4,066	14,860	11,527	2,791	33,568
Total	1,049	18,731	72,786	51,063	10,884	154,513
% Change from 2007/08	5.5%	3.6%	-13.6%	-36.7%	-31.4%	-22.7%

The projected ED volumes are based on the following assumptions:

- By 2012/13 there will be no hospital-based ED or prompt care service provided at the DMH and PCGH sites. During the day shift and early evening, on-site primary care clinics or CHCs will accommodate the CTAS 4 and 5 visits, and half of the CTAS 3 visits that would historically have been accommodated by the DMH and PCGH EDs. After the early evening, ED patients who would have otherwise gone to DMH will rely on GNGH, and patient who would have gone to PCGH will rely on WCH.
- By 2012/13, investments in chronic disease prevention and management will allow a reduction in ED visit rates of 10% for each of CTAS 3 and CTAS 4 triage categories.
- By 2012/13, enhanced primary care for Niagara residents will support a further reduction of 10% for ED visit rates for each of CTAS 4 and CTAS 5 triage categories.

10.6 Projected Non-Acute Inpatient Volumes

Requirements for non-acute hospital beds (chronic and rehabilitation) have been estimated by applying population-based standards based on Health Service Restructuring Commission (HSRC) methodologies to the 2012 Niagara population, excluding the municipalities of Grimsby and West Lincoln. Grimsby and West Lincoln have been excluded since these communities rely almost exclusively on non-NHS hospitals for their acute care.

10.6.1 Chronic

The following table shows the result of application of the HSRC targets for complex continuing care, respite, and palliative care to the projected Niagara region population aged 75 years and older (excluding Grimsby and West Lincoln) for 2012.

Exhibit 110: Projected Chronic Bed Requirement for Niagara Region for 2012

Type	Std.	Popn (1,000 75+)	Beds
CCC	7.62	35.553	270.9
Respite	0.2	35.553	7.1
Palliative	0.41	35.553	14.6
Total	8.23	35.553	292.6

The estimated required beds exceed the current supply (shown below) by 20 beds. However, the role of chronic beds in Ontario is in flux, and the NHS does not plan to increase the number of chronic beds it provides, beyond the conversion of 8 acute care beds at NOTL to chronic.

Exhibit 111: Current Chronic Beds in NHS and Hotel Dieu Shaver

Hospital Site	Current Chronic Beds
Hotel Dieu	102
Fort Erie	24
GNGH	53
NOTL	13
Port Colborne	24
Welland County	56
Total	272

The NHS HIP does incorporate planned redistribution of chronic beds (16 beds from GNGH to DMH, and 22 beds from WCH to PCGH) to increase the critical mass of chronic beds in Fort Erie and Port Colborne and to support refocusing of the chronic beds to reactivation and slow-stream rehabilitation.

10.6.2 Rehab

The recent OHA ALC survey showed that many Niagara ALC patients were waiting for access to an inpatient rehabilitation bed. Using the HSRC rehabilitation bed planning targets²² with the projected Niagara 2012 population (excluding the Grimsby and Lincoln populations) the estimated inpatient rehabilitation bed requirement for 2012 is 136.9 beds. As of 2008, there are only 37 inpatient rehabilitation beds in Niagara, all located at the Hotel Dieu Shaver site in St. Catharines.

Exhibit 112: Projected Niagara Region (excluding Grimsby and Lincoln) Requirement for Inpatient Rehabilitation Beds

Rehabilitation Program	Target Beds Per 100,000	2012 Niagara Beds
Paediatric (Combined)	0.404	1.6
Acquired Brain Injury	1.478	6.0
Amputee	1.167	4.7
Specialized Respiratory	-	-
Spinal Cord	1.002	4.0
Trauma	1.185	4.8
Total Regional Programs	5.237	21.1
Burns	-	-
Cardiac	1.126	4.5
Chronic Pain	0.238	1.0
Geriatric Acute	3.278	13.2
Geriatric Long Term	-	-
Musculoskeletal & General	14.205	57.3
Neurology & Stroke	9.178	37.0
Respiratory	0.713	2.9
Total Local Programs	28.738	115.8
Total Local Plus Regional	33.975	136.9

The bed requirement calculation above includes both local and regional rehabilitation beds. If only local rehabilitation beds were provided in Niagara, the total beds required would be 115.8, primarily for Musculoskeletal and General and Neurology and Stroke rehabilitation programs.

In 2006 the Boards of the NHS and Hotel Dieu Shaver Health and Rehabilitation approved a joint plan to add 63 new inpatient rehabilitation

²² The rehabilitation bed standards used are the detailed HSRC standards by program and age group, rather than the overall 20 bed per population standard published by the HSRC. The 20 bed per population standard does not take into account the age composition of the population and would be inappropriate to use with a population such as Niagara's with a greater concentration of population in the older age groups.

beds at Hotel Dieu Shaver and 10 inpatient rehabilitation beds (focused on stroke rehabilitation) at the NHS GNGH site. The HIP includes the addition of the 10 new inpatient rehabilitation beds at GNGH. Further addition of inpatient rehabilitation beds at the Hotel Dieu Shaver, in accordance with the previously submitted proposal, will be a critical enabler for reduction of ALC days in the NHS acute care hospitals.

10.7 Comparison of Current (2008) and Projected (2012/13) NHS Inpatient Beds

The following table compares the current number of inpatient beds within the NHS with the projected number of inpatient beds in the NHS after implementation of the HIP.

**Exhibit 113: Comparison of 2007/08
NHS Actual Inpatient Beds and Projected 2012/13 NHS Inpatient Beds**

Type of Inpatient Bed	2007/08 NHS Beds	2012/13 NHS Beds	Change	% Change
Acute Care	537	478	(59)	-11%
Paediatric Mental Health	0	4	4	
Adult Mental Health	58	84	26	45%
Chronic (CCC)	170	178	8	5%
Rehabilitation	0	10	10	
Total	765	754	(11)	-1%

Reduction in Acute Beds Reflects Both Growth and Efficiencies

The projected reduction of acute care beds reflects the combined impacts of the projected growth in inpatient cases, the application of “best quartile” targets for length of stay, and the target to reduce ALC days.

4 New Paediatric Mental Health Beds

The 4 paediatric mental health beds (included in the functional program for the new St. Catharines hospital) would offer a service not historically available (as a formal program) in the NHS.

Increased Adult Mental Health Beds

The increased adult mental health beds reflect the consolidated of acute mental health beds and the new tertiary mental health beds at the new St. Catharines hospital.

Conversion of 8 Beds at NOTL to CCC

The increase in chronic care beds is a result of the conversion of the 8 beds at NOTL (formally considered to be acute beds, but functionally operating as CCC beds) to chronic care.

10 New NHS Rehab Beds and Support for HDS Proposal

The 10 rehabilitation beds at the GNGH site would be the only inpatient rehabilitation beds within the NHS. The NHS supports the Hotel Dieu Shaver proposal to add additional inpatient rehabilitation beds.

11.0 Enablers

11.1 Community Enablers

Government Transformation Agenda

The Government of Ontario's Health Transformation Agenda, launched in 2004, included a vision for a sustainable health system:

"A health care system that keeps people healthy, gets them good care when they are sick and will be there for our children and grandchildren."

The goals of the Transformation Agenda are:

- A system that is better integrated and easier for patients to navigate.
- Reduced wait times for cardiac care, cancer care, hip and knee replacement, cataract surgery, and diagnostic imaging.
- Better access to comprehensive, round-the-clock care to people in their own communities.
- Expanded access to home care and long-term care to free up hospitals and speed up treatment.

The Ministry of Health and Long-Term Care [MOHLTC] is also developing a 10-year strategic plan. Although not officially released, the draft strategic directions speak to strengthening partnerships in the local health system, improving the health status of Ontarians, providing equitable access to care, improving the quality of health outcomes, and ensuring sustainability of the health system that achieves the best results.

HNHB LHIN Integrated Health Service Plan [IHSP]

The HNHB LHIN released its first IHSP in October 2006 which sets out the LHIN's framework/priorities for a three year period beginning in the Fall 2006. The service integration priorities contained within the IHSP are outlined below:

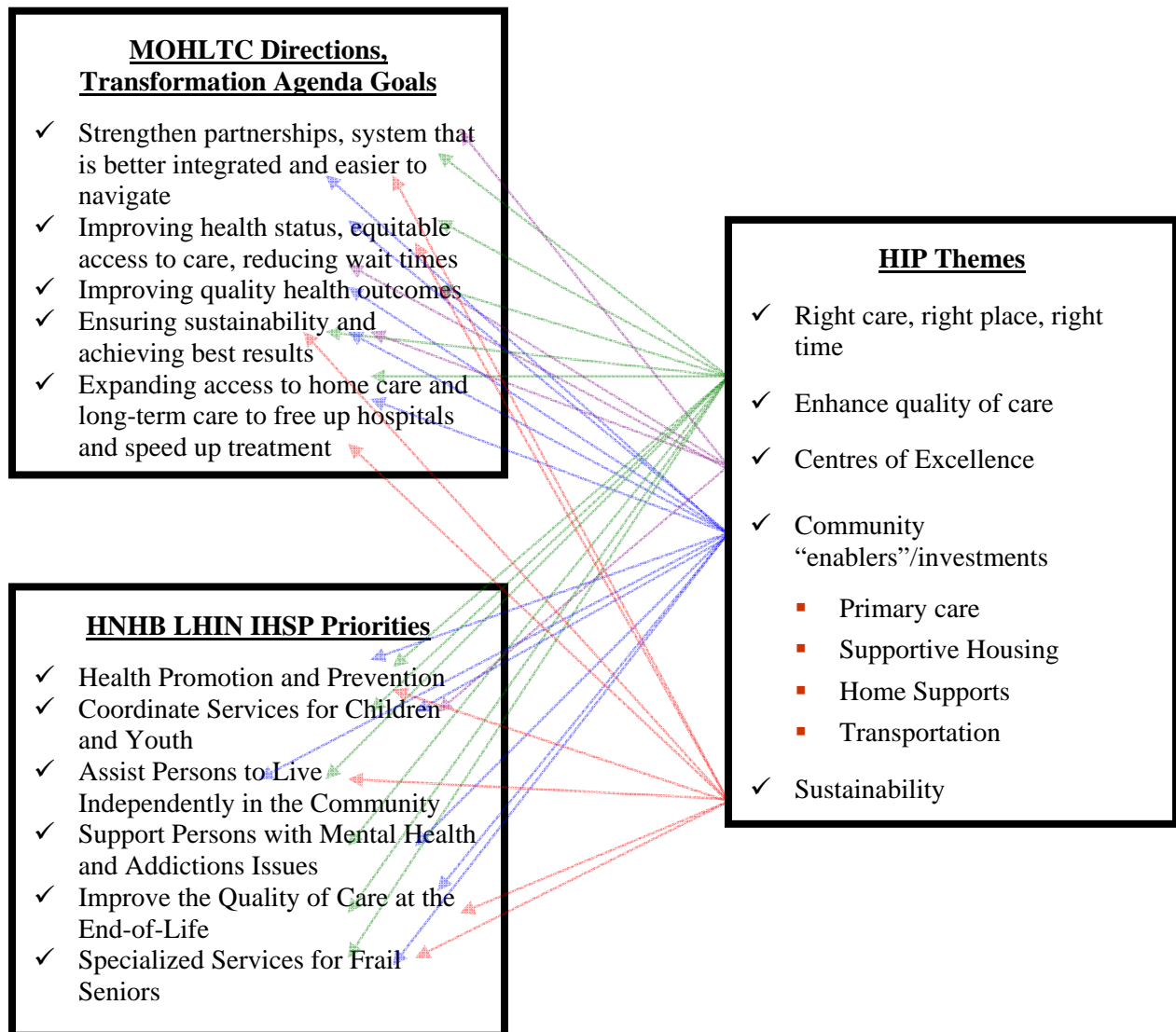
Health Promotion and Prevention	<ul style="list-style-type: none"> ■ Coordinate and connect primary health care and occupational health sector activities to reduce workplace injury and illness.
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Coordinate Services for Children and Youth	<ul style="list-style-type: none"> ■ Improve the capacity of community-based child and youth mental health services to effectively assess and treat clients locally. ■ A Child-Youth Rehabilitation Network to share information and best assessment and care standards. ■ A child knowledge exchange program to ensure all child health professional have access to current best practice information. ■ Information and communication technology to improve access to patient information and support professional development.
Assist Persons to Live Independently in the Community	<ul style="list-style-type: none"> ■ Develop care plans that include the appropriate mix, sequence, and continuity of services to support people's recovery and reduce risk of hospital readmission.
Support Persons with Mental Health and Addictions Issues	<ul style="list-style-type: none"> ■ Coordinate approaches to assessment and treatment for persons with concurrent disorders to improve health outcomes.
Improve the quality of Care at the End-of-Life	<ul style="list-style-type: none"> ■ Implement specialized education and training programs for volunteer caregivers and health care professionals to support end-of-life care. ■ Implement best practice assessment, treatment and symptom management for people with palliative care needs.
Specialized Services for Frail Seniors	<ul style="list-style-type: none"> ■ A network to coordinate LHIN wide strategies to improve the quality of care for seniors.

The IHSP also identified “enabling strategies” to support the plan, including e-Health to plan, arrange, deliver, manage, and account for care as well as encouraging collaboration among human services to build healthy communities.

This HIP submission is aligned with the key tenets of the MOHLTC goals and HNHB LHIN IHSP priorities, as outlined below.

Exhibit 114: Alignment of HIP with LHIN Priorities and MOH



Aging at Home Strategy

In August 2007, the MOHLTC announced a \$700 million *Aging at Home* Strategy that is designed to provide support to ‘seniors to stay healthy and live with dignity and independence’. The strategy is intended to deliver innovative solutions that respond to the diverse aging population and to provide the opportunity to change the way that services and supports are delivered to provide more equitable access with an emphasis on community-based partnerships and integrated continuum of services.

Subsequently, in October 2007, the HNHB LHIN’s released its *Aging at Home Directional Plan* that identified key objectives and priorities. The following table aligns the HNHB LHIN Priorities linked to the Aging at Home strategy [Directional Plan, October 2007] and further identifies community enablers to support the program vision outlined in this HIP

submission, the beginning of a blueprint to guide for future community-based investment in Niagara. This is in keeping with the overarching assumption that significant community “enablers”, investments, “preconditions” are required to support the implementation of the HIP and the viability and long-term sustainability of the health care system – hospital and community - in Niagara.

Exhibit 115: Alignment of Enablers with LHIN Priorities

HNHB LHIN Priority	Link with Aging at Home [AAH] Strategy	Enablers: HOSPITAL AVOIDANCE STRATEGIES	Enablers: TRANSITIONING STRATEGIES back into community	Enablers: CONTINUITY OF CARE, INTEGRATION STRATEGIES
Assist Persons to Live Independently in the Community	The overall goals of AAH are to develop the appropriate mix, sequence and continuity of services to support people aging at home.	<ul style="list-style-type: none"> Additional supportive housing and in-home supports and assistance including enhanced homemaking, food access [meals-on-wheels and wheels to meals] 	<ul style="list-style-type: none"> Evening and weekend adult day programs Additional supportive housing and in-home supports and assistance including enhanced personal care/support, homemaking, food access [meals-on-wheels and wheels to meals] 	<ul style="list-style-type: none"> Health promotion activities to encourage regular exercise for community-dwelling seniors Transportation networks – medical and non-medical that are affordable, accessible, timely Enhanced access to primary care eHealth – improving flow of clinical patient information
Advance Specialized Services for Frail Seniors	Elderly individuals with chronic physical and/or mental conditions may also be socially isolated and at high risk of institutionalization; yet hard to place at the same time. In the HNHB LHIN there are 26,397 people, age 85 or over.	<ul style="list-style-type: none"> Falls prevention interventions, including seniors' exercise programs Nurse continence advisors in community-based clinics Psychosocial interventions for dementia Evening and weekend adult day programs for seniors with complex needs [e.g., early onset dementia, etc.] 	<ul style="list-style-type: none"> Transitional Care Team [facilitate and support medically complex frail elders' transition between acute and primary care (family physicians)] Social engagement – volunteer visiting, recreation In-home therapies 	<ul style="list-style-type: none"> Caregiver education, support and relief programs Caregiver respite eHealth – improving flow of clinical patient information

HNHB LHIN Priority	Link with Aging at Home [AAH] Strategy	Enablers: HOSPITAL AVOIDANCE STRATEGIES	Enablers: TRANSITIONING STRATEGIES back into community	Enablers: CONTINUITY OF CARE, INTEGRATION STRATEGIES
Improve Quality End-of-Life Care	Skills training to improve collaborative and coordinated palliative care in the community and standardized pain symptom management is underway in the HNHB LHIN to support choice and dying at home.	<ul style="list-style-type: none"> ▪ Interdisciplinary Palliative Care Outreach Teams ▪ Care giver support/respice ▪ Access to Hospice Palliative Care where appropriate ▪ 24 hour access for advice and intervention 	<ul style="list-style-type: none"> ▪ Community based nursing care teams 	<ul style="list-style-type: none"> ▪ Caregiver respice – in-home and off-site ▪ eHealth – improving flow of clinical patient information
Support Persons with Mental Health and Addiction Challenges: Concurrent Disorders	The priority will be broadened to include 'at risk' seniors with mental health and or addictions issues.	<ul style="list-style-type: none"> ▪ Emergency Psychiatry Team, including addictions specialists ▪ Mobile Crisis team with mental health and addiction specialists ▪ Outreach Psychogeriatric Interdisciplinary Assessment Team for both community and long term care homes 	<ul style="list-style-type: none"> ▪ Assertive Community Treatment Teams ▪ Establishment of shared care model with primary care ▪ Supportive housing including harm reduction approaches 	<ul style="list-style-type: none"> ▪ Intensive case management ▪ Day programs ▪ Enhanced access to primary care ▪ eHealth – improving flow of clinical patient information
Improve Patient Flow	The AAH Strategy will enhance the overall capacity of the community to support right care in the right place in a timely way and build on current improved patient flow initiatives in the LHIN.	<ul style="list-style-type: none"> ▪ Education for seniors and caregivers regarding access to service ▪ Community response teams to initiate comprehensive assessment and planning 	<ul style="list-style-type: none"> ▪ Transitional Care Programs – ▪ Slow paced recovery programs 	<ul style="list-style-type: none"> ▪ Increased in home services- service provision hours ▪ Day programs ▪ eHealth – improving flow of clinical patient information
Coordinate Chronic Disease Prevention Management [CDPM]	An individual's overall health status impacts on their quality of life and their ability to live independently at home.	<ul style="list-style-type: none"> ▪ Targeted self-management strategies 	<ul style="list-style-type: none"> ▪ Community clinics with teams of providers to coordinate support, ongoing education and compliance ▪ Group programs 	<ul style="list-style-type: none"> ▪ Coordination of CDPM activities among FHTs and CHCs ▪ Enhanced access to primary care ▪ eHealth – improving flow of clinical patient information
Coordinate Services for Children and Youth	n/a	<ul style="list-style-type: none"> ▪ Assertive Community Treatment Teams to support children and their families in psychiatric crisis 		<ul style="list-style-type: none"> ▪ eHealth – improving flow of clinical patient information

Validating Community “Enablers” – Perspective of the Health Advisory Committee

The Health Advisory Committee (HAC) is a recently formed group of community partners in Niagara. Its mandate is to identify existing and emerging population health needs and to provide feedback on health policy and service plans as they affect the residents of Niagara. The HAC’s accountability is to members’ respective organizations.

The NHS requested that the HAC contribute to the development of the HIP by identifying key community investment opportunities that would enable the NHS to focus on its core business. It is widely recognized that no single organization or group can address the complex and inter-related health issues and trends facing residents of Niagara. It will take a concerted effort on the part of hospitals, community providers, health care professionals, regional and local governments, the LHIN, and the people who live and work in Niagara to help assess and determine the type and scope of community services required to strengthen the healthcare system.

Fortunately, the health partners in Niagara are not starting from a blank slate. Through past and current collaborative efforts, many community partners have planned and/or developed programs aimed at providing the appropriate health and healthcare services throughout the Niagara region. Some of these initiatives are in the planning stage, some approved and awaiting funding, while others are being implemented.

Similarly the LHIN has developed an Integrated Health Service Plan (2006), an Aging at Home Directional Strategy (2007) and an Environmental Scan (2007) that identify key health issues, priorities and directions, all of which provide the context for the future development and investment of community-based health care programs and services.

Community Investments

Considering key service trends and pressures affecting the hospital system in Niagara, the HAC focused attention on addressing the following challenge - what specific investments in the community would:

- prevent ED visits for non urgent patients?
- help people avoid unnecessary hospital admissions?
- support the appropriate flow of patients to the most appropriate setting once hospitalization is no longer required?

The HAC identified six key priority areas as opportunities for community investment, outlined below.

Investment strategy	Key Drivers	Enabler/Investment Strategies
<i>Invest in Chronic Disease Management</i> * consistent with HNHB LHIN priority to support coordinated chronic disease management strategies	<ul style="list-style-type: none"> ▪ Inpatient admissions for primary and secondary medical patients are higher in Niagara than in the rest of Ontario. Admissions are also higher than the HNHB LHIN average. ▪ The highest admission rates are for residents of Welland, Port Colborne, and Fort Erie. ▪ These types of hospital admission are primarily related to chronic illnesses. Much of the in-patient care provided for patients with a chronic disease is reactive in nature, through responding to an acute exacerbation of the illness rather than directed at the cause. 	<ul style="list-style-type: none"> ▪ <i>Outcome:</i> expected to lower the rates of inpatient admissions for primary and secondary medical patients. <i>Strategies:</i> ▪ Development of a Transitional Care Team ▪ Strengthening and expanding hospice and end of life care services across Niagara;
<i>Strengthen Primary Care Capacity</i> * The need for improved access to primary care was identified as a priority by the HNHB LHIN in its Environmental Scan (February 2007).	<ul style="list-style-type: none"> ▪ High rates of admissions to hospital for Niagara residents with ambulatory care sensitive conditions. People are accessing the acute system because there are no alternative community-based options available to them. ▪ The highest rates of admission are associated with residents from Welland, Port Colborne and Fort Erie. 	<ul style="list-style-type: none"> ▪ <i>Outcome:</i> lower rates of hospital admission for ambulatory sensitive conditions. <i>Strategies:</i> ▪ Develop and promote a shared care model for primary care focusing on mental health, end of life care and geriatrics; ▪ Develop additional Family Health Teams; ▪ Increase the availability of nurse practitioners in LTC facilities (currently there are two); ▪ Assess the viability of creating stand alone Nurse Practitioner clinics; ▪ Encourage the expansion of a McMaster Medical Campus for primary health.
<i>Preventing ED visits for less urgent patients</i> * Preventing ED visits for less urgent patients reflects one of the basic tenets upon which the HNHB LHIN has based its Integrated Health Services Plan and its Aging at Home Strategy - to support the right care in the right place at the right time.	<ul style="list-style-type: none"> ▪ Niagara ED visit rate per population (age/gender standardized) for triage category 4 (less urgent) patients is almost 40% higher than the provincial average. The highest rates are in Port Colborne and Fort Erie. 	<ul style="list-style-type: none"> ▪ <i>Outcome:</i> prevent unnecessary ED visits for less urgent patients. <i>Strategies:</i> ▪ Increase and enhance role of CCAC case managers to have an expanded role in the ED by avoiding admission and providing education to geriatric patients/families to prevent further ED visits for non urgent conditions. ▪ Strengthen the partnership between the CCAC and Hospice Niagara for pain and symptom management to avoid unnecessary ED visits by people receiving end-of-life care. ▪ Develop an enhanced link between Ambulance Services and Telehealth to provide people with information and support to help minimize non-urgent visits to the ED. ▪ Foster "Successful Aging" and geriatric outreach programs, aimed at prevention activities such as falls.

Investment strategy	Key Drivers	Enabler/Investment Strategies
Transitional Supports * The inability to move patients through the health system to the most appropriate setting signals the need for a LHIN-wide approach to leverage all resources and opportunities in hospitals, the CCAC, LTC facilities and retirement homes, supportive housing, community support services and transportation programs for early and longer-term solutions. (HNHB LHIN Integrated Health Services Plan 2006).	<ul style="list-style-type: none"> Alternate Level of Care [ALC] days in hospitals are rising throughout the HNHB LHIN. There are insufficient options to facilitate discharge of patients to the most appropriate care setting (e.g., slow paced rehabilitation, home with appropriate supports, supportive housing, long-term care, chronic care). 	<ul style="list-style-type: none"> <i>Outcome:</i> improve patient flow to receive appropriate care/supports. <i>Strategies:</i> Continue funding for the Slow Stream Pilot project [Aging at Home Strategy, pilot funding expires in December]. CCAC to provide enhanced/longer services to palliative, convalescent and rehabilitation clients [recent CCAC regulation change to facilitate this]. Create transitional beds for people waiting for the right level of care. Increase the number of supportive housing units.
Mental Health and Addictions * One of the service priorities of the HNHB LHIN is to support coordinated approaches to assessment and treatment for persons with concurrent disorders to improve health outcomes.	<ul style="list-style-type: none"> Hospital admission rates are particularly high for mental health and addictions patients 	<ul style="list-style-type: none"> <i>Outcome:</i> avoid unnecessary hospital admissions. <i>Strategies:</i> Creation of a dedicated, 24 hour a day/7 day a week Emergency Psychiatric Team. Addition of Assertive Community Treatment Teams to Niagara. Increase number of community psychiatrists. Consider joint recruitment strategy among community providers and the hospital to create more attractive opportunities for psychiatrists to come to Niagara.
Transportation * One of the requirements for healthy aging at home as identified in the HNHB Aging at Home Directional Plan is the need for coordinated transportation arrangements within and across the LHIN.	<ul style="list-style-type: none"> A consistent theme across all programs/services is the need for enhanced medical and non medical transportation. 	<ul style="list-style-type: none"> <i>Outcome:</i> Implementation of the Region's inter-municipal transportation plan for Niagara, particularly linking the southern tier of the region (Fort Erie, Port Colborne and Welland). <i>Strategies:</i> Support the inter-municipal and inter-agency transportation network to improve capacity, coordination and efficiency of specialized and volunteer transport services.

Conclusion

The ideas generated by the HAC are a starting point in thinking about community investments that will enable the NHS to focus on its core business. Although the ideas were compiled in a very short timeframe (a few hours) and by no means represent the definitive list of what priority investments should be, the suggestions do build on the wealth of experience and knowledge of members of the HAC -- some of the proposed investments are already works-in-progress while others are seeds of ideas that will need to be nurtured and developed further. All are based on the assumption that it is only through joint efforts and continued collaboration that accessible and quality care will be available for the citizens of Niagara.

There was a strong commitment to continue this collaborative process, to further refine, describe and prioritize the proposed investment strategies and to better understand how all community partners can work together to leverage resources and expertise to develop a true continuum of services for the residents of Niagara.

12.0 Impact of Proposed Clinical Service Model on NHS Costs

NHS Commitment to Make Best Use of Available Resources

The request by the HNHB LHIN that the NHS provide a Hospital Improvement Plan (HIP) was prompted by NHS's inability to submit a balanced budget and sign the 2008/09 Hospital Services Accountability. While the focus of the HIP has been to ensure that high quality hospital services will be available for the Niagara community, this must be done while making the best use of available resources.

High Level, Order of Magnitude Cost Estimates

This section of the HIP outlines and approach and preliminary results of the assessment of the cost implications of implementing the proposed hospital clinical service model presented earlier in this report. The identified cost impacts should be considered to be high level, order of magnitude estimates, which will be further refined in partnership with the HNHB LHIN as detailed implementation plans are developed.

Costing Analysis Based on HIP Target Date of 2012/13 and Assumes Full Operation of New St. Catharines Hospital

The costing analysis shown in this chapter is based on an assumption that the services to be provided in the new St. Catharines hospital will be open and available to the Niagara community for 2012/13 (one year after the end date identified by the HNHB LHIN for the HIP). Many of the new services identified in the HIP are to be provided in the new St. Catharines hospital. Some of the projected operational and clinical efficiencies are contingent on consolidation of services that will be facilitated by the new hospital.

Section 12.4 Shows Impact on Financial Position if Access to New Hospital Delayed until 2012/13

Because the services of the new St. Catharines hospital may not actually be fully operational until fiscal year 2012/13, the estimate of the impact of the HIP on the financial position of the NHS (shown in section 12.4) extends the costing analysis to fiscal year 2012/13.

12.1 Operating Costs

Cost Estimates Presented in 2007/08 Dollars

The operating cost impacts of implementation of the proposed have been estimated by projecting the volume of activity to be provided at each NHS hospital site in 2012/13 and applying recent (2007/08) cost estimates by service to the projected volume. The projected operating costs are based on 2007/08 dollars, and do not incorporate estimates of inflation due to labour cost increases or increases in costs for medications, supplies, or equipment.

Exhibit 1 in Appendix E shows the actual NHS 07/08 activity costs and volumes used to calculate service cost parameters. Costs and activity are categorized using the cost groupings used with the Ontario Hospital Cost Distribution Methodology (OCDM) by service recipient.

Acute Inpatient, Day Surgery, and Chronic Costs Estimated Using Target Cost per Equivalent Weighted Case

Target Equivalent Weighted Cases for 2012/13 Projected Based on NHS Achievement of “Best Quartile” Targets for Clinical Efficiency

Centres of Excellence Support Achievement of “Best Quartile” Performance

Target Cost per EWC Includes HCM Savings

Almost 65% of total NHS operating costs are for acute and newborn inpatient care, day surgery, and inpatient chronic and respite care. Activity in these cost centres is combined to calculate the “equivalent weighted cases” (EWC) used in the JPPC cost per equivalent weighted case calculations. Comparison of the actual cost per EWC with the expected EWC is a routinely used performance metric for Ontario hospitals.

To estimate the 2012/13 operating costs associated with acute and newborn inpatient care, day surgery, and inpatient chronic and respite care, the equivalent weighted cases for each NHS site have been projected, and a target cost per EWC has been applied. The projected inpatient and day surgery equivalent weighted cases, calculated using the CIHI RIWs, were derived using the methodology presented in chapter 10 of this report. The calculated equivalent weighted cases reflect the impact of the application of “best quartile” Ontario experience in shifting inpatient surgery to day surgery, and reducing the acute care length of stay.

The achievement of this “best quartile” performance will be very dependent on the proposed concentration of services and the establishment of “centres of excellence” at each NHS site.

The following exhibit shows the actual 2007/08 cost per EWC and the calculation of a target 2012/13 cost per EWC, based on the potential reduction in 2007/08 costs if the \$12.26 million of operational savings for NHS identified in the HCM review are achieved. The NHS is committed to achieving the HCM cost reductions, and has incorporated these savings in the projected cost per EWC.

Exhibit 116: Calculation of 2012/13 Target Cost per Equivalent Weighted Case

Item	Acute, Newborn, Day Surg, Chronic Cost	Equiv. Weighted Cases	Cost per EWC
2007/08 Actual	\$ 233,817,617	49,307	\$ 4,742.08
HCM & Other Identified Savings	\$ (12,260,000)		
Target Cost per EWC	\$ 221,557,617	49,307	\$ 4,493.43

Recent Kingston General Hospital Review Found that KGH Weighted Cases Were Inflated by ALC Days

The recent review of Kingston General Hospital²³ (KGH) found that:

“KGH has a high percentage of the outlier cases, some of which are ALC. The average length of stay (ALOS) and average RIW of these outlier cases is extremely high. Therefore, it is the outliers that drive up overall acuity, not the normal cases.”

NHS Weighted Cases Are Not Inflated by ALC Days

Because of the very high percent of NHS acute care beds used for ALC patients, one would expect the NHS to also have an artificially high average RIW, since the ALC days would cause many cases to be considered to be outliers and to be assigned a higher RIW. However, the opposite is true. The following table shows that the contribution to the NHS's total RIW weighted cases from outliers is much lower than for most peer hospitals.

Exhibit 117: Contribution of RIWs from Outlier Cases to Total RIW Weighted Cases for Large Ontario Community Hospitals (2006/07)

Hospital	% RIWs from Outliers
Humber River Regional Hosp-Humber Mem	20.2%
Queensway-Carleton Hospital	13.9%
Peterborough Regional Health Centre	12.9%
Humber River Regional Hosp-York-Finch	12.8%
St Joseph's Health Centre	12.5%
Hotel-Dieu Grace Hospital-St Joseph's	11.4%
Halton Healthcare Services Corp-Oakville	10.8%
Scarborough Hospital (The)-General	10.7%
Windsor Regional Hospital-Metropolitan	10.4%
William Osler Health Centre-Etobicoke	10.2%
William Osler Health Centre-Brampton	9.8%
Large Ontario Community Hospital Average	9.8%
Toronto East General Hospital (The)	9.6%
Royal Victoria Hospital Of Barrie (The)	9.3%
Scarborough Hospital (The)-Grace	9.1%
Credit Valley Hospital (The)	9.0%
North York General Hospital	8.6%
York Central Hospital	8.6%
Joseph Brant Memorial Hospital	8.6%
Grand River Hospital Corp-Waterloo	8.3%
Rouge Valley Health System-Centenary	8.1%
Trillium Health Centre	7.9%
Southlake Regional Health Centre	6.2%
Niagara Health System	6.1%
Lakeridge Health Corporation-Oshawa	5.6%

²³ “Investigation into the Governance and Management of Kingston General Hospital”. Report Submitted to the Minister of Health and Long-Term Care by Graham Scott, Investigator, June 16, 2008.

NHS Achieves Good Cost per EWC Performance In Spite of Low Contribution of Outlier Cases

Contrary to the findings at Kingston General Hospital, where the investigator concluded that KGH was not as efficient as it claimed because the RIW weighted cases were inflated by ALC days, the NHS demonstrates efficient cost per equivalent weighted case performance in spite of the extremely low contribution of outlier cases to the total weighted cases.

Calculation of 2012/13 Operating Costs Shown in Appendix E

Exhibit 2 in Appendix E shows the detailed calculation by site of the projected operating costs for 2012/13. The projected activity volumes include:

Projected Increases in NHS Activity Volumes

- Increased inpatient and day surgery activity to accommodate anticipated increased demand due to aging of the Niagara Region population
- Increased NHS market share anticipated as a result of the enhanced services to be provided in the new St. Catharines hospital (e.g. oncology, paediatrics, adolescent mental health)
- Expanded services, such as endovascular surgery and angioplasty, subject to LHIN approval
- An increase in the case mix index (CMI) for complex continuing care beds so as to generate increased costs per bed to reflect the plans to enhance reactivation and slow stream rehab services in these beds
- 10 inpatient neurological rehabilitation beds proposed for the GNGH site (subject to LHIN and MOHLTC approval and funding)
- Increased hospital ambulatory clinic visit volume projected for the new St. Catharines hospital
- Substantially increased oncology outpatient visits associated with the enhanced oncology program at the new St. Catharines hospital
- Increased dialysis visit volumes associated with the expanded dialysis services at GNGH, and community satellite in St. Catharines and Grimsby/Beamsville²⁴ (subject to LHIN and MOHLTC approval and funding)
- Addition of 54 tertiary mental health inpatient beds in St. Catharines, subject to LHIN and MOHLTC approval and funding
- Increased ambulatory mental health support for the GNGH and Welland County Hospital emergency departments to offer crisis intervention and admission avoidance

Projected Reductions in NHS Services

The projected volumes also include a reduction in emergency department visits, based on the assumption that enhanced primary care (e.g. CHC, family health teams) at the small NHS sites can accommodate some of the

²⁴ For purposes of the site-specific costing shown in Appendix E the costs of the community satellite dialysis stations in St. Catharines and Grimsby/Beamsville have been included in the St. Catharines hospital costs column.

less urgent and non-urgent cases, and the assumption that improved community chronic disease prevention and management services can reduce demands on the EDs. While the overall volume of inpatient mental health services is projected to increase, fewer of the beds will be staffed as acute care mental health beds.

Estimated Increase in Operating Costs of \$41.7 Million (11.5%) by 2012/13

Exhibit 2 in Appendix E shows that the overall projected change in NHS operating costs from 2007/08 to 2012/13 is an increase of \$41.7 million, or 11.5%. However, while the operating cost is projected to increase, this does not mean that the proposed clinical services model would increase the NHS deficit. The table on the following page shows the breakdown of the projected change in costs by cost centre and reason for change in costs.

\$8.1 Million Increase Due to Response to Population Needs Due to Aging

\$8.1 million of the increased operating cost is attributable to increased NHS service volumes to respond to the anticipated increase in demand from the aging of the Niagara population. This represents an increase of 2.2% in operating costs.

\$65.5 Million Increase for New Services (Only Provided if Approved and Funded)

A further \$65.5 million increase is for new services to be provided by NHS, such as inpatient rehabilitation beds for the GNGH site; new regional services included in the new St. Catharines healthcare complex, such as the Walker Family Cancer Centre, cardiac catheterization and tertiary inpatient mental health beds; and new satellite dialysis services at the GNGH and St. Catharines and Grimsby/Beamsville community sites. **All of these new services will only be introduced if LHIN and MOHLTC approval and funding is received.**

\$31.9 Million Savings Due to Cost Reduction Opportunities

The projected change in operating costs includes a target for reduction in costs of \$31.9 million through achievement of efficiencies and enhancement of health system capacity outside the hospital system. These savings targets include:

- \$12.6 million from operational efficiency savings for acute care, day surgery, and complex continuing care, from application of the savings targets identified through the HCM review (i.e. application of lower cost per EWC target to projected equivalent weighted cases) and achievement of “best quartile” targets for use of ambulatory surgery and acute care length of stay
- \$10.6 million from reduced ED visit volumes from enhanced primary care, chronic disease prevention and management, and conversion of the Fort Erie and Port Colborne emergency departments to community based primary care centres
- \$9.7 million from reduction in NHS ALC days from 24% of acute care inpatient days (06/07) to 11% by 2012/13, through increased community service investment, Aging at Home strategies, new LTC beds, and expanded home care services

Exhibit 118: Projected Change in NHS Operating Costs from 2007/08 to 2012/13 by Service Category and Reason for Change

Service	07/08 Actual	Increase Due to Population Change	Increase Due to New Service	Cost Reduction Opportunities	2012/13 Projection (07/08 Dollars)	Change	% Change	Comment
Acute, Day Surgery	\$ 207,812,064	\$ 2,617,627	\$ 4,614,041	\$ (11,023,977)	\$ 204,019,755	\$ (3,792,309)	-1.8%	Includes expanded volume to due growth and new services in new hospital (e.g. endovascular, oncology, angioplasty, and efficiency targets (due to establishment of Centres of Excellence)
Chronic	\$ 26,005,553	\$ 1,652,802	\$ 2,672,981	\$ (1,590,394)	\$ 28,740,942	\$ 2,735,388	10.5%	Includes projected increased case mix index to support restoration/reactivation role
Inpatient Rehabilitation	\$ -	\$ -	\$ 2,427,250	\$ -	\$ 2,427,250	\$ 2,427,250		New beds at GNGH (only if funded)
Emergency Department	\$ 44,716,598	\$ 861,976	\$ 2,042,474	\$ (10,552,567)	\$ 37,068,480	\$ (7,648,118)	-17.1%	Reduction in CTAS 3, 4, 5, and primary care services @ Fort Erie, Port Colborne. Increased \$/visit for CDU.
Hospital Outpatient	\$ 35,592,163	\$ 2,363,925	\$ 3,545,888	\$ -	\$ 41,501,976	\$ 5,909,813	16.6%	New clinic activity associated with cardiac, paediatric
Dialysis/Oncology Outpatient	\$ 33,655,331	\$ -	\$ 32,709,302	\$ -	\$ 66,364,633	\$ 32,709,302	97.2%	Addition of dialysis stations to 93 for 2011/12 (subject to funding). Expanded oncology at new hospital.
Community Outpatient	\$ 3,620,585	\$ -	\$ 1,070,061	\$ -	\$ 4,690,646	\$ 1,070,061	29.6%	Expansion of OBSP. Nurse practitioner at small sites.
Mental Health Outpatient	\$ 2,569,192	\$ 205,535	\$ 2,825,273	\$ -	\$ 5,600,000	\$ 3,030,808	118.0%	Increased clinic volume @ Welland and Niagara Falls, clinics to support new tertiary program. Addition of emergency psychiatry team & crisis beds.
Acute Mental Health Inpatient	\$ 9,169,319	\$ 366,773	\$ -	\$ (3,404,092)	\$ 6,132,000	\$ (3,037,319)	-33.1%	Synergies from addition of tertiary beds, enhanced ambulatory & ED support, community mental health services
Tertiary Mental Health Inpatient	\$ -	\$ -	\$ 13,575,263	\$ -	\$ 13,575,263	\$ 13,575,263		New program; divestment of provincial psychiatric beds in Hamilton
Small Site Overhead Allowance	\$ -	\$ -	\$ -	\$ 4,400,000	\$ 4,400,000	\$ 24,113,206		Allowance to support fixed costs of small sites
Total Costs (pre ALC Savings)	\$ 363,140,805	\$ 8,068,637	\$ 65,482,533	\$ (22,171,031)	\$ 414,520,944	\$ 51,380,139	14.1%	
Savings from ALC Reduction	\$ -	\$ -	\$ -	\$ (9,711,300)	\$ (9,711,300)	\$ (9,711,300)		Reduction from 24% ALC to 11% ALC through community investments, Aging at Home
Total Costs	\$ 363,140,805	\$ 8,068,637	\$ 65,482,533	\$ (31,882,331)	\$ 404,809,644	\$ 41,668,839	11.5%	
Projected Change in Costs as % of 07/08 Actual Costs		2.2%	18.0%	-8.8%				

- \$3.4 million from reduction in acute mental health beds (with reinvestment of potential savings to support tertiary mental health services and an emergency psychiatric team) from synergies due to collocation of acute and tertiary mental health beds, and increased investment in community mental health services. A parallel increase in outpatient mental health costs of \$3.0 million is included to cover the costs of the emergency psychiatric team and the increased ambulatory clinic visits.

Cost Estimated Based on Expansion of Service to Meet Population Demands and Efficient Use of Resources

Thus the estimated operating costs for 2012/13 are based on plans to ensure that NHS services will expand to meet the growing needs of the Niagara population, while ensuring that there will be efficient use of available resources by establishing operational and clinical efficiency targets based on the benchmark performance of large community hospitals in Ontario.

If New Services Not Approved, Operating Cost Estimate Reduced by \$65.5 Million

If approval and funding is not obtained for the new services identified in the plan, then these services will not be introduced, and the projected NHS 2012/13 operating cost will be reduced by \$65.5 million to \$339.8 million, a reduction of \$23.4 million from the 2007/08 actual operating costs of \$363.4 million.

Other Opportunities to Reduce Costs through Divestment of Unfunded Services

The operating cost estimate does not include the potential savings associated with divestment of services historically provided by NHS for which NHS is not funded, such as the chronic ventilator services provided in chronic beds.²⁵

Cost Estimate Does Not Include Changes in Medical Transport Costs (\$2.4 Million in 07/08)

The operating cost estimate also does not include any potential increased investment in medical transport costs incurred by the NHS. There may actually be a decrease in medical transport costs, since a very large portion of current NHS medical transport costs are associated with transport of NHS patients to Hamilton to access ambulatory cardiac and oncology services that are planned to be provided in the new St. Catharines hospital. NHS patient transport costs for 2007/08 were \$2.4 million.

Cost Estimates should be Refined in Conjunction with Development of Detailed Implementation Plans

As stated previously, the operating cost estimates should be considered to be preliminary, high level estimates. As the proposed clinical service delivery model is refined, and detailed implementation plans are developed, the projected operating cost estimate will also be refined.

²⁵ St. Joseph's in Hamilton is funded to provide chronic ventilator care for complex continuing care patients in the HNHB LHIN. In the absence of a plan to transfer this funding to the NHS, the NHS will work with the LHIN to repatriate these patients back to St. Joseph's and cease to provide chronic ventilator services.

12.2 Capital Costs

There will be capital costs associated with the implementation of the proposed clinical service delivery plan. A large portion of the capital investment will be facilitated through the construction of the new St. Catharines healthcare complex, including the new regional services of cancer, cardiac catheterization and tertiary mental health. Other capital investments (not yet costed) will include:

Potential Capital Costs

- Addition of 10 neurological rehabilitation beds at the GNGH site
- Relocation of residential addictions care to St. Catharines
- Conversion of acute care beds at DMH and PCGH to complex continuing care beds
- Preparation of ambulatory care space for new clinic services
- Renovation of operating rooms at the GNGH site
- Proposed dialysis stations at GNGH and DMH sites and St. Catharine's community-based dialysis satellite

Savings Due to Reduced Duplication of Equipment and Facilities

There will also be reductions in the costs of acquiring and maintaining duplicate equipment for those programs where the proposed service delivery model consolidates services to fewer sites.

Capital Cost Estimates to be developed with Implementation Plan

Upon review of the HIP by the HNHB LHIN, and the development of a detailed implementation plan, the necessary capital projects will be identified and cost estimates developed.

12.3 Restructuring Costs

There will be one-time costs associated with the implementation of the proposed clinical services delivery plan. Estimates of these costs will be developed as part of implementation, after review of the plan by the HNHB LHIN. These costs could include:

Potential Restructuring Costs

- Project management and implementation costs
- Change management
- Recruitment of staff to support expanded services
- Redeployment/early retirement costs
- Moving and transportation costs
- Training and orientation expenses
- Signage and communications
- Minor renovations

12.4 Projected Impact on NHS Deficit

The estimated 2012/13 NHS operating cost estimate was based on 2007/08 dollars and included no assumptions with respect to annual funding changes, labour cost changes, or supply/equipment cost inflation. It also did not differentiate between service growth that would need to be accommodated within the NHS base budget, and growth (particularly at the new St. Catharines hospital) that, if approved by the HNHB LHIN and the MOHLTC, would be fully funded.

***HIP Would Generate
Operating Surplus of \$1.5
Million for Fiscal Year
2012/13***

The following table shows the projected impact on the NHS deficit of implementation of the HIP. Based on the assumptions described below, the NHS would have an operating surplus of \$1.5 million for the 2012/13 fiscal year. The 2012/13 fiscal year has been used as the end point for the HIP since the new St. Catharines hospital will be fully operational for that year.

Exhibit 119: NHS 5 Year Financial Outlook As A Result of HIP

NHS 5 YEAR FINANCIAL OUTLOOK	2007/2008 Actual	2008/2009 Forecast	2009/2010 Plan	2010/2011 Plan	2011/2012 Plan	2012/2013 Plan
REVENUE						
MOHLTC Base Allocation	\$ 284,039,781	\$ 291,634,700	\$ 298,211,700	\$ 307,158,100	\$ 316,372,800	\$ 325,864,000
MOHLTC Allocation - Interest Carrying Costs		\$ 1,900,800	\$ 2,570,000	\$ 3,055,000	\$ 3,085,000	\$ 2,985,000
PCOP-New Hospital and Rehab				\$ 2,600,000	\$ 2,600,000	\$ 65,482,500
One-time payments	\$ 15,256,845	\$ 8,275,150	\$ 8,275,150	\$ 9,275,150	\$ 10,275,150	\$ 11,275,150
Paymaster	\$ 8,837,100	\$ 9,448,250	\$ 9,903,950	\$ 10,382,450	\$ 10,884,850	\$ 11,381,850
Other Revenue from MOHLTC	\$ 6,779,284	\$ 7,269,850	\$ 7,269,850	\$ 7,269,850	\$ 7,269,850	\$ 7,269,850
Sub total MOHLTC	\$ 314,913,010	\$ 318,528,750	\$ 326,230,650	\$ 339,740,550	\$ 350,487,650	\$ 424,258,350
Other Revenue - Patient/Differential/ Recoveries/ Amortization	\$ 56,580,502	\$ 54,646,850	\$ 54,924,350	\$ 55,401,850	\$ 55,879,350	\$ 56,356,850
TOTAL REVENUE	\$ 371,493,512	\$ 373,175,600	\$ 381,155,000	\$ 395,142,400	\$ 406,367,000	\$ 480,615,200
EXPENSE						
Compensation and Benefits	\$ 244,168,679	\$ 244,281,700	\$ 245,415,200	\$ 252,390,800	\$ 252,637,500	\$ 303,766,700
Medical Staff Remuneration	\$ 35,173,312	\$ 33,817,600	\$ 33,367,600	\$ 33,367,600	\$ 33,367,600	\$ 33,367,600
Supplies and Other Expenses incl med/surg /drugs/amortization	\$ 108,330,340	\$ 109,104,700	\$ 111,115,500	\$ 114,427,000	\$ 117,772,800	\$ 138,986,300
Interest - short term	\$ 1,676,789	\$ 1,900,800	\$ 2,570,000	\$ 3,055,000	\$ 3,085,000	\$ 2,985,000
TOTAL EXPENSE	\$ 389,349,120	\$ 389,104,800	\$ 392,468,300	\$ 403,240,400	\$ 406,862,900	\$ 479,105,600
SURPLUS/(DEFICIT) FROM HOSPITAL OPERATIONS	\$ (17,855,608)	\$ (17,830,000)	\$ (11,313,300)	\$ (8,098,000)	\$ (495,900)	\$ 1,509,600
Change in Financial Position		\$ 25,608	\$ 6,516,700	\$ 3,215,300	\$ 7,602,100	\$ 2,005,500
Ratio: Total Margin as % of Revenue	-4.8%	-4.8%	-3.0%	-2.0%	-0.1%	0.3%
Working Capital Deficit	\$ (116,800,000)	\$ (134,630,000)	\$ (145,943,300)	\$ (154,041,300)	\$ (154,537,200)	\$ (153,027,600)

Key assumptions incorporated in the 5 year financial outlook are:

- Base funding increases will not match the annual labour cost increases and supply cost inflation. Years 1 and 2 use the announced MOHTC base funding percent increases, and years 3, 4, and 5 assume an average base funding increase of 3%
- In years 3, 4, and 5 there will be a small amount (\$1 million per year) of volume driven funding (e.g. priority program, growth, wait time procedures) available to the NHS

- The HCM savings will be achieved in years 1 and 2, with further efficiencies and revenues providing an additional \$1.6 million in years 3, 4, and 5
- The savings from full conversion of the Fort Erie and Port Colborne to CHC/primary care centres will be achieved in years 4 and 5
- ALC reduction will be spread over years 3, 4, and 5 as Aging at Home, increased reactivation focus in CCC beds, and other community investments take effect
- The current budget for years 1 and 2 already incorporates the impact of the increased demand on the NHS caused by population aging. One fifth of the estimated cost impact of population change is included in each of years 3, 4, and 5
- All new services provided at the new St. Catharines hospital, and other new services such as the proposed 10 rehabilitation beds at GNGH and the new dialysis stations will only be added if full operating funding is approved and provided. Thus the substantial costs associated with these new services (\$65.5 million) will have no impact on the deficit.

13.0 Next Steps

Submission of the HIP is just the beginning. The HIP will now be reviewed by the HNHB LHIN and its External Advisor to assess the feasibility of the plan. We anticipate receiving feedback by the early fall. At that point, we will initiate the development of an implementation plan, recognizing that implementing the changes will be a significant undertaking and many of the details still need to be determined.

As part of the HIP development, we had an opportunity to hear from our communities – but we appreciate that we need to hear more. We heard from many people in Niagara that they support change, change that will lead to improved quality of care and patient experiences. And now that we have specific recommendations formed, we want to hear from the people of Niagara on these specific recommendations

Upon submission of the HIP to the HNHB LHIN on July 15, NHS will commence a comprehensive roll-out of information meetings, documents and website to share and inform its stakeholders of the recommendations contained within the submission.

NHS will publicly share its HIP submission through posting on website and making printed copies available for reading through its sites.

A second set of consultation questions will be posted on the micro-site for public input commencing on July 17th. These questions will ask for comment on the recommendations that have been contained in the HIP submission. The input to these questions will be provided to the NHS Board of Trustees, as well as to the HNHB LHIN and its Advisor.

Appendix A – May 30, 2008 HNHB LHIN Request for Hospital Improvement Plan

Hamilton Niagara Haldimand Brant
LOCAL HEALTH INTEGRATION NETWORK
RÉSEAU LOCAL D'INTÉGRATION DES SERVICES DE SANTÉ
de Hamilton Niagara Haldimand Brant

270 Main Street East, Units 1-6
 Grimsby ON L3M 1P8
 Tel: 905-945-4930
 866-363-5446
 Fax: 905-945-1992
 www.hnhblhin.on.ca

270, rue Main Est, unités 1-6
 Grimsby ON L3M 1P8
 Tél : 905-945-4930
 866-363-5446
 Téléc: 905-945-1992
 www.hnhblhin.on.ca

May 30, 2008

Ms. Betty-Lou Souter
 Chair
 Niagara Health System
 155 Ontario Street
 St. Catharines L2R 5K3

Dear Ms. *Betty Lou* Souter:

At the May 20, 2008, meeting of the Board of Directors, of the Hamilton Niagara Haldimand Brant Local Health Integration Network (LHIN), a motion was passed that a letter be sent requesting the Niagara Health System to submit a Hospital Improvement Plan (HIP). This is pursuant to Section 9 of the 2007/08 Hospital Accountability Agreement (HAA). The Niagara Health System has not met the performance obligation to achieve a balanced budget for 2007/08. The LHIN is waiving the requirement to submit, the HIP within thirty days and extends the date for submission to no later than July 15, 2008.

The HIP should be a clinical services plan that ensures that the necessary expertise and resources are available to provide accessible, quality care for the citizens of Niagara, identifies current and future hospital based services by site, establishes timeframes and specific targets for each year of the HIP and links the proposed strategies of the HIP, the public interest and achieves a balanced operating budget by 2011/12.

.../2

-2-

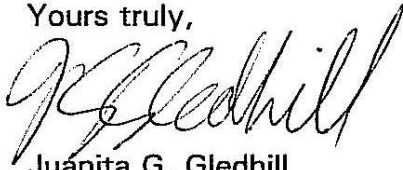
Ms. Betty-Lou Souter

The NHS should include information regarding the community engagement that has informed the creation of the HIP. It is not expected that additional community engagement between receipt of this letter and submission of the HIP to the LHIN be carried out.

The LHIN Board also approved a motion to extend the current HAA to July 31, 2008. At which time, the Board will be in a better position to assess next steps.

The LHIN will continue to work with the NHS to address the deficit and the use of resources required to meet current needs.

Yours truly,



Juanita G. Gledhill
Chair

c: Debbie Sevenpifer, President and CEO, Niagara Health System
Pat Mandy, CEO, Hamilton Niagara Haldimand Brant LHIN



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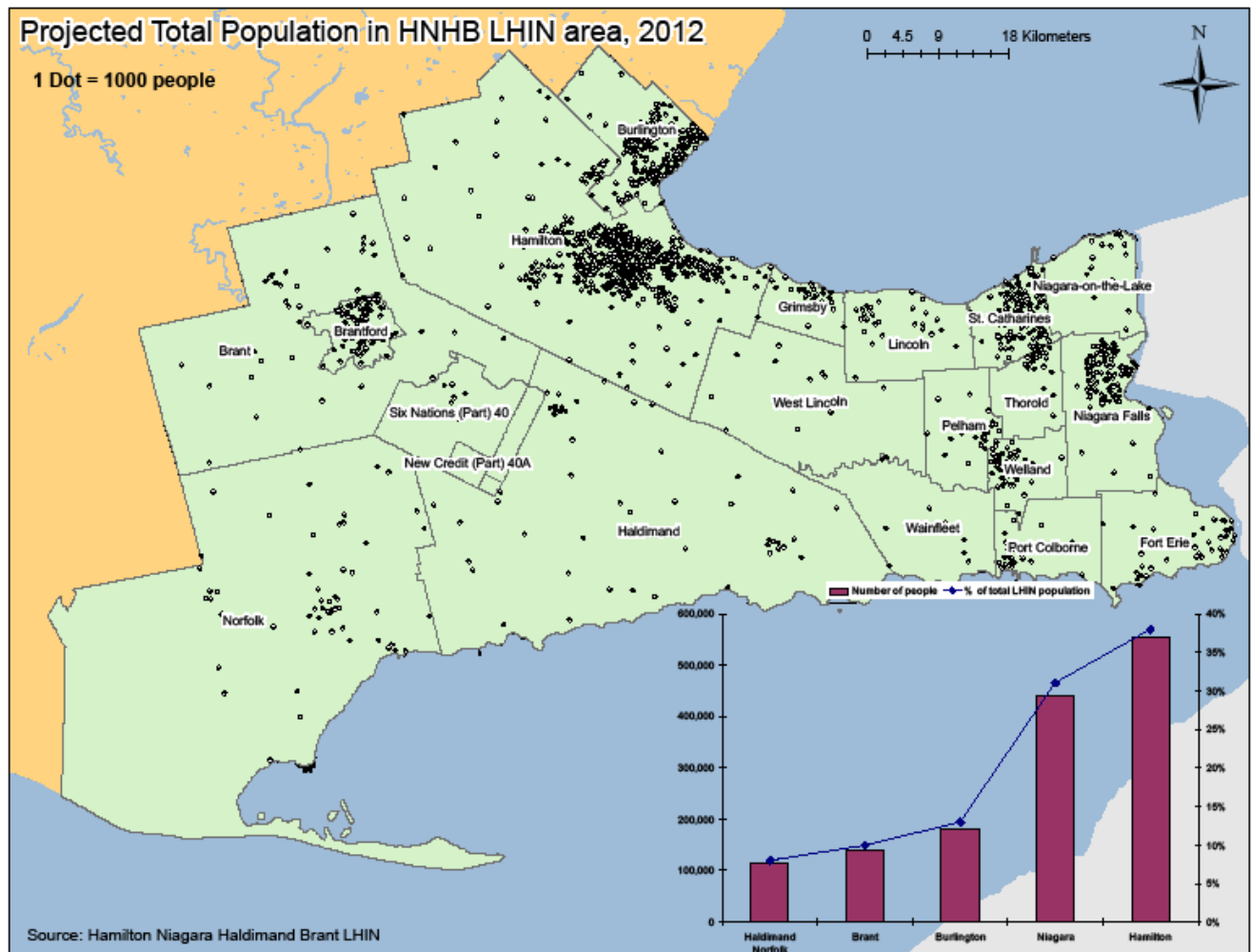
Appendix C – Population Characteristics, Health Status, and Hospital Utilization by Niagara Municipality

The maps on the following pages show the distribution of the Niagara region population for all ages, for mothers of birthing age, and for the elderly population.

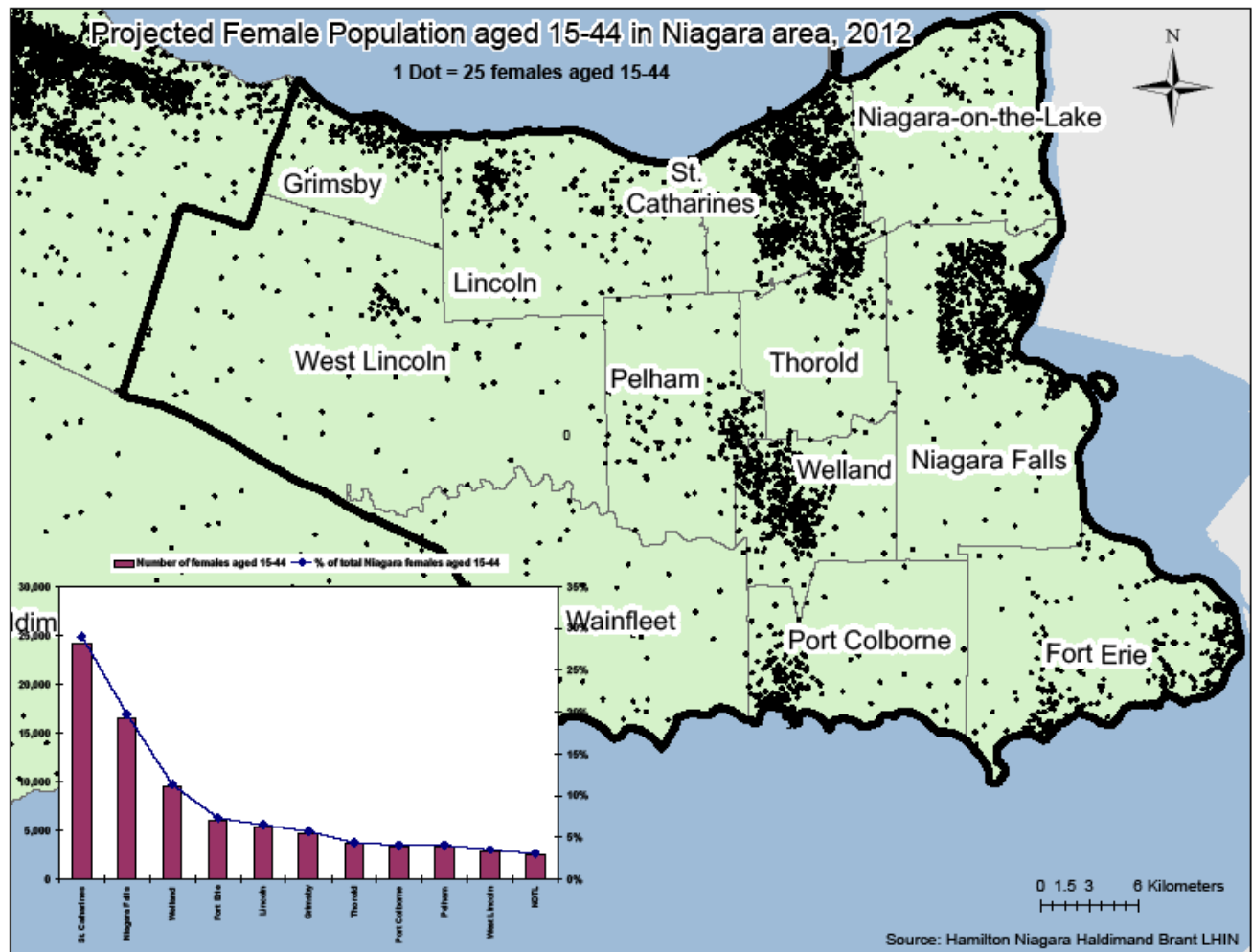
The charts following the maps show selected population characteristics, health status measurements, and hospital utilization statistics for the communities most reliant on the Niagara Health System for their hospital care:

- Summary for Niagara Region
- Fort Erie
- Niagara Falls
- Niagara-on-the-Lake
- Pelham
- Port Colborne
- St. Catharines
- Thorold
- Wainfleet
- Welland

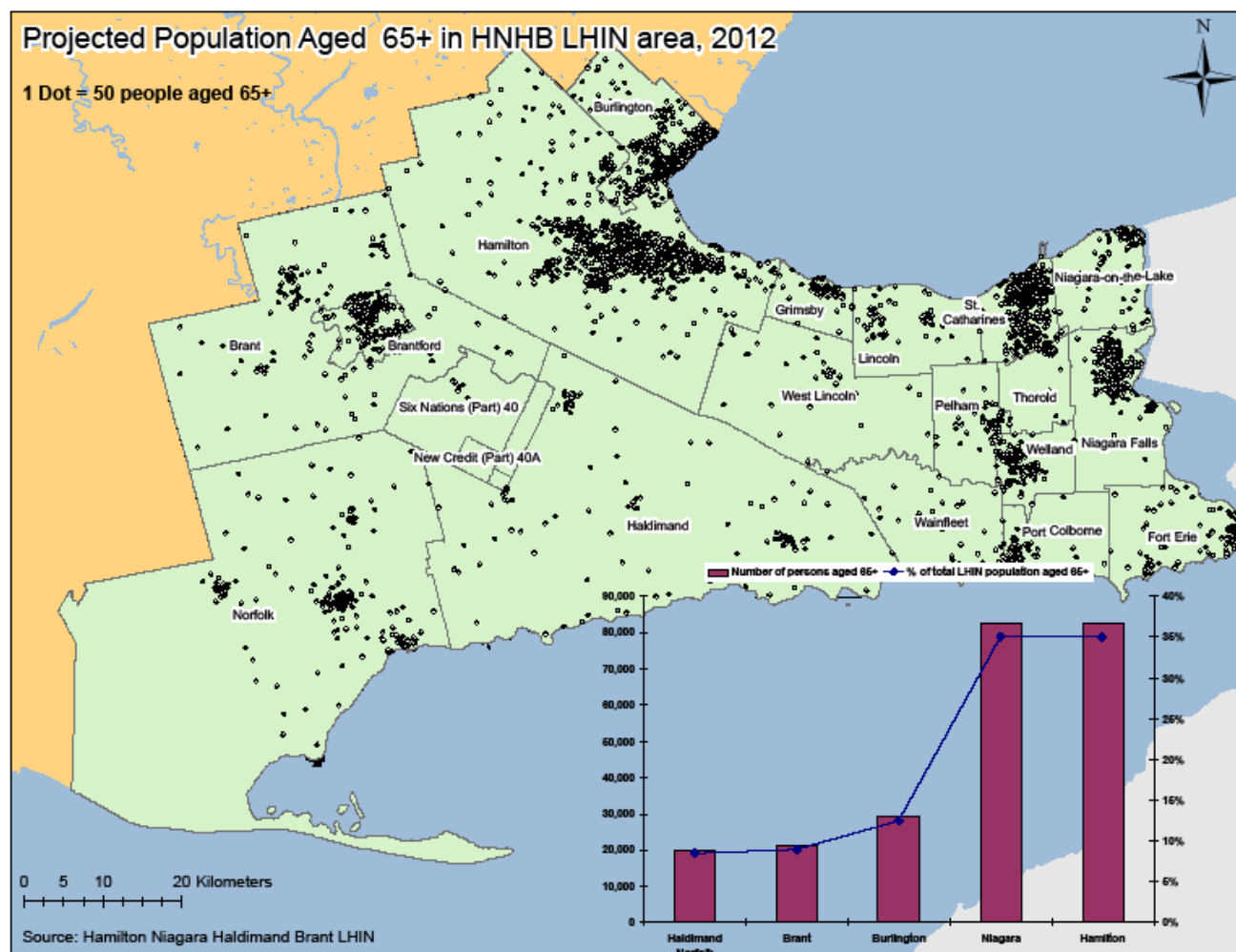
Projected Distribution of Total HNHB LHIN Population in 2012



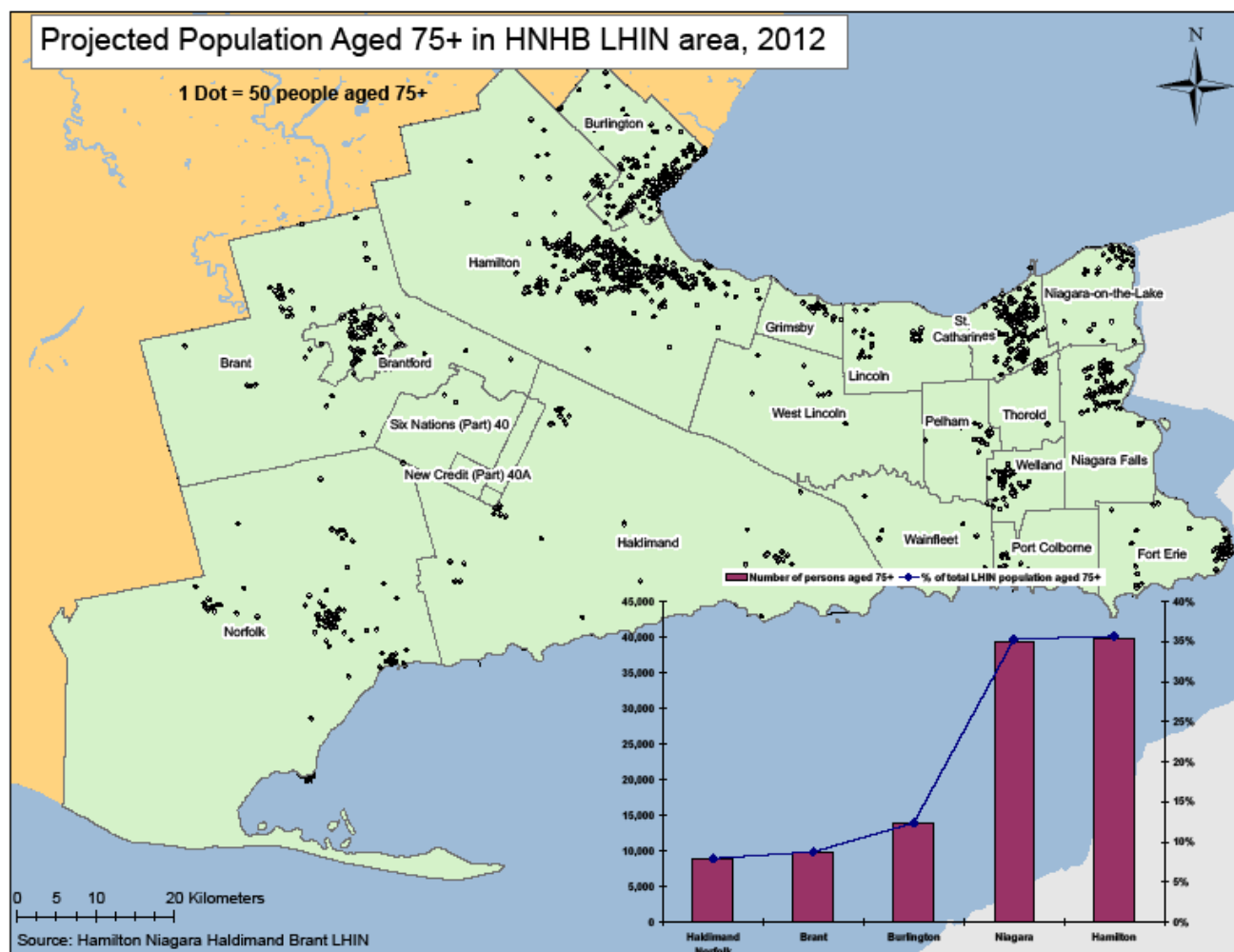
Projected Distribution of Niagara Region Female Population Aged 15 to 44 in 2012



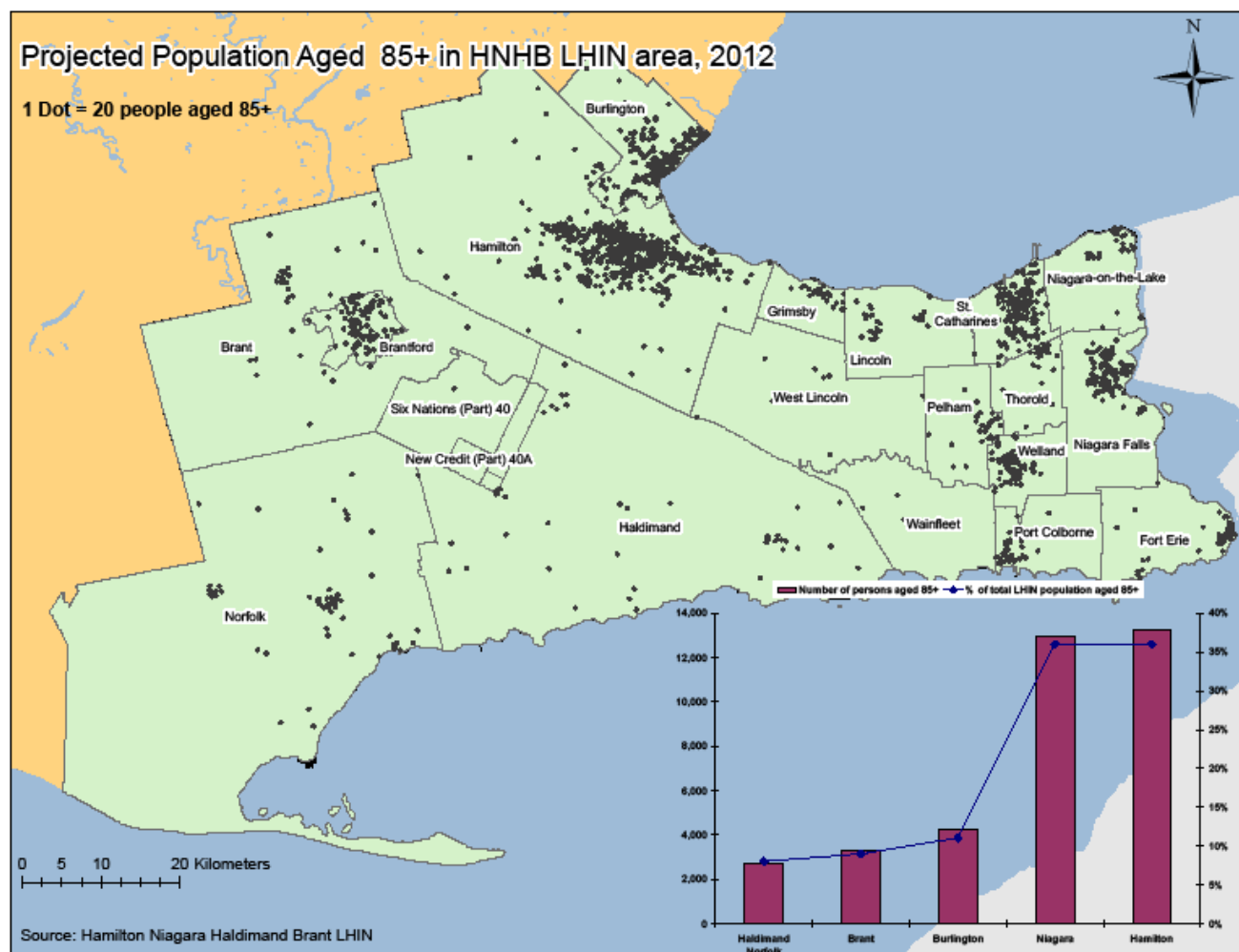
Projected Distribution of HNHB LHIN Population Aged 65 and Older in 2012



Projected Distribution of HNHB LHIN Population Aged 75 and Older in 2012



Projected Distribution of HNHB LHIN Population Aged 85 and Older in 2012



Summary – Impact of Population Factors on Niagara's Health Status and Need for Community Investments

Population Characteristics

- Older Age Structure
- Lower Population Growth
- Less education
- Lower incomes
- Higher reliance on income from government transfers
- Lower % of full time workers
- Higher number of seniors living alone
- Within the LHIN, highest proportions of female lone parent families reside in Fort Erie, Niagara Falls and Welland, where almost 25% of all families with children are headed by a female lone parent
- Niagara has a lower proportion of public and not-for-profit housing compared to its proportion of the population 65 and older, whereas Hamilton has a higher proportion.
- Fort Erie is the main point of entry for refugees entering Canada, (61% in 2005) although this data is not captured through the census enumeration.

	Niagara	Ontario
Median Age	42 yrs	39 yrs
%75+	9%	6%
% Pop'n Increase	4.1%	6.6%
% Univ. Degree	16%	25%
Med. Fam. Income	\$64,965	\$69,156
Median After Tax Family Income	\$57,595	\$62,288
% of Family Income from Govt. Transfers	11.5%	8.8%
% Full Time Workers	79%	82%
% Seniors Living Alone	30%	27%
Mother Tongue		
- English	91%	86%
- French	1%	4%
Adult (25+) Unemployment Rate	4.7%	4.9%
% Immigrants	18%	28%
% Aboriginal	2%	2%
% Visible Minorities	6%	23%

*Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI>30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

*Source: Canadian Community Health Survey 2005

- Opportunities for improved preventive care related to cancer screening [mammography, cervical, colorectal]

Impact on Health Status

- Lower life expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidence of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy		
-Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

*Source – Canadian Community Health Survey 2005 and Statistics Canada

Community Investments (Enablers)

Primary Care

- Family Physicians
- Family Health Teams, Nurse Practitioners, Allied Health Professionals
- Community Health Centres

Chronic Disease Management

- Risk Factor Assessment – e.g., COPD, diabetes
- Family Physicians, Community Health Centres

Public Awareness/Education

- E.g., Childhood obesity prevention

Community Suppt. for Frail Srs. and Disabled Persons

- Supportive Housing
- Enhanced Day Programs
- Increased In-Home Rehabilitation Services
- Outreach Teams to Complete 24/7 Home Assessments to Prevent Hospitalization
- Transitional Units in Retirement Homes
- Enhanced Home Supports, Homemaking, Meals-on-Wheels
- Enhanced Case Management, Increase Service Provision Hours
- Affordable inter-municipal transportation

Community Mental Health Services, Addictions

- Case Managers, Psychiatrists
- Day Programs/Social Support
- Specialized Services for Children and Youth

Specialized Geriatric Services

- Outreach Teams
- Psychogeriatric Services
- Specialized LTC Unit for Difficult/ Challenging Behaviours
- Nurse Practitioners in LTC
- Geriatric Emergency Medicine Nurses

End of Life Care

- Community Palliative Care Outreach Teams
- Hospice
- Nurse Practitioners

Specialized Rehabilitation Services

- Slow Paced Recovery and Reactivation in CCC

eHealth

- Patient and provider portals, EHR Viewer

Children and Youth

- Community Speech Pathology

Summary – Impact of Population Factors on Fort Erie's Health Status and Need for Community Investments

Population Characteristics

- Highest percentage of population increase from census 2001 to 2006 of all municipalities.
- Lowest median family and individual income of all municipalities.
- Significantly lower percentage of university degree holders than Niagara and Ontario.
- Lower family and individual income than Niagara and Ontario.
- Higher percentage of lone parent families than Niagara and Ontario.
- Higher unemployment rate than Niagara and Ontario.

	Fort Erie	Niagara	Ontario
Median Age	43.1	42 yrs	39 yrs
Median Age – 2012	43 yrs	43 yrs	N/A
%75+	9%	9%	6%
% Population Increase	6.3%	4.1%	6.6%
% University Degree	14%	16%	25%
Median Family Income	\$55,333	\$64,965	\$69,156
Median Individual Income	\$24,331	\$25,832	\$27,258
% of Family Income from Government Transfers	15.5%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	1,550 17.4%	20,200 16.4%	540,715 15.8%
Mother Tongue			
- English	88%	91%	86%
- French	2%	1%	4%
Unemployment Rate	6.7%	6.1%	6.4%
% Immigrants	18%	18%	28%
% Aboriginal	3%	2%	2%
% Visible Minorities	6%	6%	23%
% Owned Dwellings	78.5%	75.6%	71.0%

Source: 2006 Census

Opportunities for planning/investment:

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: modifiable risk factors not available for Fort Erie

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy		
-Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Fort Erie

Hospital Usage Comparisons

- Higher volume of ambulatory care sensitive admissions and non urgent use of the emergency department. Highest ambulatory care sensitive admissions volume.
- Second highest volume emergency department and Canadian Triage and Acuity Scale level 4/5 volume.

2006/07	Fort Erie	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	814	768	762	717
Acute care utilization per 10,000 population – surgical admissions	813	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	55	38	36	32
Emergency department visits per 10,000 population	7,142	5,186	4233	4,123
Emergency department visits per 10,000 population – non-urgent	4,056	2,692	2,339	2,092

Analysis:

- Suggestion is that there is not adequate access to primary care in the community.
- Potential to better manage ambulatory care sensitive conditions within the community.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Niagara Falls' Health Status and Need for Community Investments

Population Characteristics

- Highest percentage of lone parent families across all municipalities.
- Lower percentage of university degree holders than Niagara and Ontario.
- Lower median family and individual income than Niagara and Ontario.
- Higher percentage of income from government transfers than Niagara and Ontario.
- Higher percentage of lone parent families than Niagara and Ontario.
- Lower percentage of English being the mother tongue than Niagara and Ontario.

	Niagara Falls	Niagara	Ontario
Median Age	41.5 yrs	42 yrs	39 yrs
Median Age - 2012	42 yrs	43 yrs	N/A
%75+	9%	9%	6%
% Population Increase	4.3%	4.1%	6.6%
% University Degree	14%	16%	25%
Median Family Income	\$61,111	\$64,965	\$69,156
Median Individual Income	\$24,614	\$25,832	\$27,258
% of Family Income from Government Transfers	14.4%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	4,725 19.9%	20,200 16.4%	540,715 15.8%
Mother Tongue			
- English	78%	91%	86%
- French	3%	1%	4%
Unemployment Rate	6.2%	6.1%	6.4%
% Immigrants	20%	18%	28%
% Aboriginal	2%	2%	2%
% Visible Minorities	8%	6%	23%
% Owned Dwellings	72.8%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for Niagara Falls.

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy		
-Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Niagara Falls.

Hospital Usage Comparisons

- Elevated rate of ambulatory care sensitive conditions.

2006/07	Niagara Falls	Niagara	LHIN	Ontario
Acute care utilization per 10,000 population – medical admissions	788	768	762	717
Acute care utilization per 10,000 population – surgical admissions	774	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	40	38	36	32
Emergency department visits per 10,000 population	4,984	5,186	4233	4,123
Emergency department visits per 10,000 population – non-urgent	2,140	2,692	2,339	2,092

Analysis:

- Indications are for a potential need for primary care services in the community.
- Potential to better manage ambulatory care sensitive conditions within the community.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Niagara-on-the-Lake's Health Status and Need for Community Investments

Population Characteristics

- Oldest median and projected median age amongst all municipalities, Niagara and Ontario.
- Higher percentage of 75+ population than Niagara and Ontario.
- Higher median individual and family income than Niagara and Ontario.
- Lower number of lone parent families than Niagara and Ontario.
- Lower unemployment rate than all other municipalities, Niagara and Ontario.

	NOTL	Niagara	Ontario
Median Age	49 yrs	42 yrs	39 yrs
Median Age - 2012	48 yrs	43 yrs	N/A
%75+	12%	9%	6%
% Population Increase	5.4%	4.1%	6.6%
% University Degree	26%	16%	25%
Median Family Income	\$76,753	\$64,965	\$69,156
Median Individual Income	\$29,060	\$25,832	\$27,258
% of Family Income from Government Transfers	10.4%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	360 8.3%	20,200 16.4%	540,715 15.8%
Mother Tongue - English	75%	91%	86%
- French	2%	1%	4%
Unemployment Rate	3.7%	6.1%	6.4%
% Immigrants	28%	18%	28%
% Aboriginal	.06%	2%	2%
% Visible Minorities	6%	6%	23%
% Owned Dwellings	89.6%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for NOTL.

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy -Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for NOTL.

Hospital Usage Comparisons

- Lower hospital usage rates observed across medical, surgical and emergency.

2006/07	NOTL	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	648	768	762	717
Acute care utilization per 10,000 population – surgical admissions	690	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	13	38	36	32
Emergency department visits per 10,000 population	3,127	5,186	4,233	4,123
Emergency department visits per 10,000 population – non-urgent	1,285	2,692	2,339	2,092

Analysis:

- In general this community does not utilize hospital services at the same rate as the rest of Niagara, the LHIN or Ontario. This may be due to better access to primary care.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Pelham's Health Status and Need for Community Investments

Population Characteristics

- Higher median age than Niagara and Ontario.
- Highest median family and individual income across all municipalities, Niagara and Ontario.
- Lower percentage of income from government transfers than Niagara and Ontario.
- Lower number of lone parent families than Niagara and Ontario.
- Lower unemployment rate than Niagara and Ontario.
- Lower percentage of visible minorities.
- Higher percentage of owned dwellings.

	Pelham	Niagara	Ontario
Median Age	44 yrs	42 yrs	39 yrs
Median Age - 2012	43 yrs	43 yrs	N/A
%75+	7%	9%	6%
% Population Increase	5.8%	4.1%	6.6%
% University Degree	16%	16%	25%
Median Family Income	\$85,175	\$64,965	\$69,156
Median Individual Income	\$33,238	\$25,832	\$27,258
% of Family Income from Government Transfers	8.3%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	455 9.2%	20,200 16.4%	540,715 15.8%
Mother Tongue - English	85%	91%	86%
- French	2%	1%	4%
Unemployment Rate	5.6%	6.1%	6.4%
% Immigrants	16%	18%	28%
% Aboriginal	0.5%	2%	2%
% Visible Minorities	2%	6%	23%
% Owned Dwellings	89.9%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for Pelham.

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy -Men -Women	76.3yrs 81.3yrs	77.4yrs 82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Pelham.

Hospital Usage Comparisons

- Lower hospital usage rates observed across medical, surgical and emergency.

2006/07	Pelham	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	569	768	762	717
Acute care utilization per 10,000 population – surgical admissions	710	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	18	38	36	32
Emergency department visits per 10,000 population	2,579	5,186	4,233	4,123
Emergency department visits per 10,000 population – non-urgent	1,299	2,692	2,339	2,092

Analysis:

- In general this community does not utilize hospital services at the same rate as the rest of Niagara, the LHIN or Ontario. This may be due to better access to primary care.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Port Colborne's Health Status and Need for Community Investments

Population Characteristics

- Second oldest median age, only after NOTL.
- NOTL and Port Colborne have the highest percentage of population 75+.
- Lower population growth than Niagara and Ontario.
- Lower percentage of the population with a university degree than Niagara and Ontario.
- Lower median family and individual income than Niagara and Ontario and the highest percentage of income from Government transfers amongst all municipalities, Niagara and Ontario.
- Highest unemployment rate amongst all municipalities, Niagara and Ontario.

	Port Colborne	Niagara	Ontario
Median Age	45 yrs	42 yrs	39 yrs
Median Age - 2012	45 yrs	43 yrs	N/A
%75+	12%	9%	6%
% Population Increase	0.8%	4.1%	6.6%
% University Degree	6%	16%	25%
Median Family Income	\$59,646	\$64,965	\$69,156
Median Individual Income	\$24,444	\$25,832	\$27,258
% of Family Income from Government Transfers	16.6%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	955 17.3%	20,200 16.4%	540,715 15.8%
Mother Tongue			
- English	84%	91%	86%
- French	5%	1%	4%
Unemployment Rate	7.4%	6.1%	6.4%
% Immigrants	12%	18%	28%
% Aboriginal	2%	2%	2%
% Visible Minorities	2%	6%	23%
% Owned Dwellings	77.4%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for Port Colborne.

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy		
-Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Port Colborne.

Hospital Usage Comparisons

- Highest medical admissions out of all Niagara municipalities.
- Second highest ambulatory care sensitive condition rate.
- Highest volume emergency department visits and highest volume of non-urgent visits.

2006/07	Port Colborne	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	989	768	762	717
Acute care utilization per 10,000 population – surgical admissions	1,043	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	53	38	36	32
Emergency department visits per 10,000 population	10,463	5,186	4233	4,123
Emergency department visits per 10,000 population – non-urgent	7,012	2,692	2,339	2,092

Analysis:

- All suggest a lack of access to primary care within the community.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on St. Catharines' Health Status and Need for Community Investments

Population Characteristics

- Lower population growth compared to Niagara and Ontario.
- Second highest percentage of population with a university degree of all municipalities.
- Higher percentage of lone parent families than Niagara and Ontario.
- Lower percentage of English as the mother tongue than Niagara and Ontario.
- Lowest percentage of owned dwellings amongst all municipalities, Niagara and Ontario.

	St. Catharines	Niagara	Ontario
Median Age	42 yrs	42 yrs	39 yrs
Median Age - 2012	44 yrs	43 yrs	N/A
%75+	9%	9%	6%
% Population Increase	2.2%	4.1%	6.6%
% University Degree	18%	16%	25%
Median Family Income	\$63,126	\$64,965	\$69,156
Median Individual Income	\$25,114	\$25,832	\$27,258
% of Family Income from Government Transfers	13.7%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	6,795 18.3%	20,200 16.4%	540,715 15.8%
Mother Tongue - English - French	79% 2%	91% 1%	86% 4%
Unemployment Rate	6.6%	6.1%	6.4%
% Immigrants	21%	18%	28%
% Aboriginal	2%	2%	2%
% Visible Minorities	10%	6%	23%
% Owned Dwellings	69.1%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for St. Catharines

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy -Men -Women	76.3yrs 81.3yrs	77.4yrs 82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for St. Catharines

Hospital Usage Comparisons

- Fewer non-urgent emergency department visits compared to Niagara and LHIN.
- Fewer surgical admission per population compared to Niagara, however greater number compared to LHIN and Ontario
- Fewer medical admissions compared to Niagara and LHIN.

2006/07	St. Catharines	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	743	768	762	717
Acute care utilization per 10,000 population – surgical admissions	812	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	38	38	36	32
Emergency department visits per 10,000 population	4,914	5,186	4233	4,123
Emergency department visits per 10,000 population – non-urgent	2,296	2,692	2,339	2,092

Analysis:

- This community is the largest in the region and therefore drives many of the Niagara trends. Therefore if we compare the St. Catharines usage to Ontario there is a potential relative need for greater primary care access.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Thorold's Health Status and Need for Community Investments

Population Characteristics

- Lower population increase than Niagara and Ontario.
- Lower percentage of university degree holders than Niagara and Ontario.
- Lower unemployment rate than Niagara and Ontario.
- Lower percentage of visible minorities than Niagara and Ontario.
- Higher percentage of owned dwellings than Niagara and Ontario.

	Thorold	Niagara	Ontario
Median Age	40 yrs	42 yrs	39 yrs
Median Age - 2012	42 yrs	43 yrs	N/A
%75+	7%	9%	6%
% Population Increase	1%	4.1%	6.6%
% University Degree	13%	16%	25%
Median Family Income	\$67,181	\$64,965	\$69,156
Median Individual Income	\$26,792	\$25,832	\$27,258
% of Family Income from Government Transfers	12.1%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	860 16.4%	20,200 16.4%	540,715 15.8%
Mother Tongue - English	83%	91%	86%
- French	2%	1%	4%
Unemployment Rate	5.4%	6.1%	6.4%
% Immigrants	14%	18%	28%
% Aboriginal	2%	2%	2%
% Visible Minorities	2%	6%	23%
% Owned Dwellings	80.3%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI>30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for Thorold.

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy -Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Thorold.

Hospital Usage Comparisons

- Fewer medical admissions compared to Niagara, LHIN and Ontario
- Greater number of surgical admissions compared to Niagara, LHIN and Ontario
- Greater ambulatory care sensitive conditions per populations compared to Niagara, LHIN and Ontario
- Fewer emergency department visits compared to Niagara regardless of urgency

2006/07	Thorold	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	683	768	762	717
Acute care utilization per 10,000 population – surgical admissions	840	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	44	38	36	32
Emergency department visits per 10,000 population	4,691	5,186	4,233	4,123
Emergency department visits per 10,000 population – non-urgent	2,082	2,692	2,339	2,092

Analysis:

- Potential to better manage ambulatory care sensitive conditions within the community.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Wainfleet's Health Status and Need for Community Investments

Population Characteristics

- Lower percentage of university degree holders than Niagara and Ontario.
- Lower percentage of lone parent families than Niagara and Ontario.
- Lower unemployment rate than Niagara and Ontario.
- Lowest percentage of immigrants amongst all municipalities, Niagara and Ontario.
- Highest percentage of owned dwellings amongst all municipalities, Niagara and Ontario.

	Wainfleet	Niagara	Ontario
Median Age	43 yrs	42 yrs	39 yrs
Median Age - 2012	44 yrs	43 yrs	N/A
%75+	5%	9%	6%
% Population Increase	5.5%	4.1%	6.6%
% University Degree	11%	16%	25%
Median Family Income	\$68,862	\$64,965	\$69,156
Median Individual Income	\$26,321	\$25,832	\$27,258
% of Family Income from Government Transfers	11.6%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	140	20,200	540,715
	7.1%	16.4%	15.8%
Mother Tongue			
- English	89%	91%	86%
- French	3%	1%	4%
Unemployment Rate	4.6%	6.1%	6.4%
% Immigrants	9%	18%	28%
% Aboriginal	3%	2%	2%
% Visible Minorities	2%	6%	23%
% Owned Dwellings	93.5%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI* >30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for Wainfleet.

*BMI – Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy		
-Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Wainfleet.

Hospital Usage Comparisons

- Fewer medical and surgical admissions compared to Niagara, LHIN and Ontario
- Fewer ambulatory care sensitive conditions compared to Niagara, LHIN and Ontario
- Fewer emergency department visits compared to Niagara, LHIN and Ontario, however there are a greater number of non urgent emergency department visits compared to Niagara, LHIN and Ontario

2006/07	Wainfleet	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	423	768	762	717
Acute care utilization per 10,000 population – surgical admissions	488	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	21	38	36	32
Emergency department visits per 10,000 population	3,972	5,186	4233	4,123
Emergency department visits per 10,000 population – non-urgent	2,720	2,692	2,339	2,092

Analysis:

- All suggest a lack of access to primary care within the community.

**LHIN – Local Health Integration Network

Summary – Impact of Population Factors on Welland's Health Status and Need for Community Investments

Population Characteristics

- Lower percentage of university degree holders than Niagara and Ontario.
- Lower median family and individual income than Niagara and Ontario.
- Higher percentage of income from government transfers than Niagara and Ontario.
- Higher percentage of lone parent families than Niagara and Ontario.
- Higher percentage of the population with French as the mother tongue than Niagara and Ontario.

	Welland	Niagara	Ontario
Median Age	42 yrs	42 yrs	39 yrs
Median Age - 2012	44 yrs	43 yrs	N/A
%75+	9%	9%	6%
% Population Increase	4%	4.1%	6.6%
% University Degree	13%	16%	25%
Median Family Income	\$60,652	\$64,965	\$69,156
Median Individual Income	\$25,358	\$25,832	\$27,258
% of Family Income from Government Transfers	15.8%	13.1%	9.8%
% Full Time Workers	N/A	79%	82%
% Seniors Living Alone	N/A	30%	27%
Total lone parent families	2,630 17.8%	20,200 16.4%	540,715 15.8%
Mother Tongue			
- English	76%	91%	86%
- French	11%	1%	4%
Unemployment Rate	7.3%	6.1%	6.4%
% Immigrants	12%	18%	28%
% Aboriginal	2%	2%	2%
% Visible Minorities	4%	6%	23%
% Owned Dwellings	72.4%	75.6%	71.0%

Source: 2006 Census

Modifiable Risk Factors

- Compared to Ontario rates:
 - Higher rates of daily smokers
 - Higher rates of obesity
 - Higher rates of physical inactivity
- Similar to Ontario rates:
 - Healthy diet consumption
 - Binge drinking
 - Reports of "a lot of life stress"

	Niagara	Ontario
Daily Smoking	18.3%	15.7%
Healthy Diet (5+ fruits & vegetables a day)	38.2%	37.3%
Obesity BMI>30, Pop 18+ excluding pregnant women	19.2%	15.1%
Physical Inactivity	46.5%	45.8%
Binge Drinking	22%	21.5%
"A lot of life stress" (18+)	22.6%	23.1%

Source: Canadian Community Health Survey 2005

Opportunities for improved preventive care related to cancer screening (mammography, cervical, colorectal).

NOTE: Modifiable risk factors not available for Welland.

*BMI - Body Mass Index

Impact on Health Status

- Lower Life Expectancy
- Higher overall mortality rate
- Higher prevalence of high blood pressure
- Higher rates of diabetes
- Higher incidents of some cancers compared to Ontario as a whole
- High prevalence of arthritis
- High prevalence of asthma

	Niagara	Ontario
Life Expectancy		
-Men	76.3yrs	77.4yrs
-Women	81.3yrs	82.0yrs
Mortality per 100,000 population	910.9	683.6
Prevalence of High Blood Pressure	16.8%	15.2%
Diabetes	5.9%	4.8%
Arthritis/ rheumatism	23.8%	17.1%
Asthma	8.8%	8.0%

Source – Canadian Community Health Survey 2005 and Statistics Canada

NOTE: Impact on health status data not available for Welland.

Hospital Usage Comparisons

- Highest volume of surgical admissions.
- Second highest ambulatory care sensitive condition rate.

2006/07	Welland	Niagara	LHIN**	Ontario
Acute care utilization per 10,000 population – medical admissions	939	768	762	717
Acute care utilization per 10,000 population – surgical admissions	1,148	825	765	759
Ambulatory Care Sensitive condition per 10,000 population	53	38	36	32
Emergency department visits per 10,000 population	5,788	5,186	4,233	4,123
Emergency department visits per 10,000 population – non-urgent	3,100	2,692	2,339	2,092

Analysis:

- Potential to better manage ambulatory care sensitive conditions within the community.

**LHIN - Local Health Integration Network

Appendix D – Health Advisory Committee Terms of Reference and Membership

Terms of Reference NHS Health Advisory Committee

1. PURPOSE

The purpose of the Health Advisory Committee (HAC) is to identify existing and emerging population health needs in Niagara and the resources required to meet those needs, and to provide feedback on health policy and health service plans, as they affect the residents of Niagara.

2. GOALS of the Health Advisory Committee

Working with Partners in Niagara:

- i) To help strengthen the social determinants of health and improve health status in Niagara
- ii) To facilitate timely access to health care for the residents of Niagara
- iii) To help support Niagara-based collaborative planning, service coordination/integration and performance monitoring within Niagara's health service sectors
- iv) To provide a common 'voice' for Niagara's health sector, in liaison with other sectors, the Region of Niagara, the Hamilton Niagara Haldimand Brant Local Health Integration Network (HNHB LHIN) and the Ministry of Health and Long Term Care (MOHLTC)

3. OBJECTIVES

The objectives of the Health Advisory Committee are:

- 3.1 To promote collaborative planning and service coordination/integration across Niagara's broader health system
- 3.2 To provide feedback to the Hamilton Niagara Haldimand Brant Local Health Integration Network (HNHB LHIN) and facilitate the timely sharing of information; to articulate a common Niagara perspective related to priority service needs, resource requirements and strategic system goals as they relate to the HNHB LHIN Integrated Health Services Plan (IHSP); and to help support the planning, coordination and integration of services across the LHIN and within Niagara
- 3.3 Develop a balanced score card approach to system-wide performance monitoring. Identify and monitor key indicators of population health status and system performance in Niagara
- 3.4 To identify existing and emerging health needs in Niagara
- 3.5 To serve as a formal consultation mechanism to exchange ideas and concerns related to the broader health delivery system in Niagara, as identified by committee members and their constituents in Niagara
- 3.6 To identify and assist in the development of service partnership models
- 3.7 To advance awareness, education and advocacy on the leading chronic diseases and the determinants of health primarily affecting the population health of residents of Niagara

4. MEMBERSHIP

- 4.1 The Committee shall consist of representatives of health provider organizations, consumer groups and primary demographic constituencies within the Region of Niagara

- 4.2 Membership may include, but not be limited to representatives from (maximum of 15)
- Community Services, Region of Niagara
 - Public Health
 - Niagara Health System (NHS)
 - Hotel Dieu Shaver Health and Rehabilitation Centre (HDSHRC)
 - Community Physician (Association of Family Practitioners) or Family Health Teams
 - Community Health Centres
 - Hamilton Niagara Haldimand Brant Community Care Access Centre (HNHB CCAC)
 - Social Services
 - Palliative/Hospice
 - Housing
 - Employment
 - Law enforcement
 - Disabled Persons' Community Resources
 - Multicultural / Newcomer Health
 - Chamber of Commerce
 - Education
 - Francophone population
 - Aboriginal population
 - Long-term care
 - YMCA
- 4.3 Ex-officio members can be appointed
- 4.4 The Committee may establish task forces to investigate and address specific issues and to report thereon to the Committee

5. CO-CHAIRS

The Committee shall be co-chaired, selected from the members of the Committee. The co-chairs shall be elected by secret ballot annually in September.

6. FREQUENCY OF MEETINGS AND MANNER OF CALL

- 6.1 Meetings of the Health Advisory Committee will be held quarterly during the months of March, June, September and November. Additional meetings may be convened at the call of the Chair to deal with specific issues.

NHS Health Advisory Committee Membership (May 2008)

Name	Sector[s]
1. BRIAN HUTCHINGS	Community Services; Social Services; Employment
2. DR. DOUG SIDER or DR. ROBIN WILLIAMS	Public Health
3. JANE RUFRANO	HDSHRC
4. INGRID FELL	CCAC; End of Life Network
5. MARCEL CASTONGUAY	CHC; francophone community
6. MARGARET JARRELL	Hospice Niagara
7. KAREN MURRAY	Chair – Niagara Regional Housing
8. PETER PAPP	Opportunities Niagara
9. WENDY SOUTHALL	Niagara Regional Police

Name	Sector[s]
10. DR. ANNA LATHROP	Education – Post Secondary
11. CATHERINE MINDORFF	Fort Erie Multicultural Centre and Niagara Immigrant Employment Council
12. TIM SIEMENS	Long-Term Care
13. DAVID WYLLIE	YMCA
14. ADRIENNE JUGLEY	Community mental health
15. DEBBIE SEVENPIFER	NIAGARA HEALTH SYSTEM
<u>NHS STAFF REPRESENTATIVES:</u> Linda Boich, Vice President Patient Services Virginia Pullar, Decision Support Coordinator	

Appendix E – Operating Cost Projections

The following exhibit shows the actual 2007/08 costs, activity volumes, and average unit costs for the major categories of hospital service reported on the Ontario Hospital Cost Distribution Methodology reports. These unit costs have been used to support the high level operating cost estimation presented in section 12.1 of this report.

Exhibit 1: 2007/08 NHS Costs by Activity

Cost Centre	Total	Notes
Acute, Day Surgery, Chronic Cost	\$ 233,817,617	Cost centres combined for JPPC Rates Model.
Inpatient Weighted Cases	37,975	CIHI RIW
Day Surgery Weighted Cases	5,848	CIHI RIW
Chronic Care Days	59,456	CIHI
Rugs Weighted CC Days	60,145	Avg. CMI = 1.01
Chronic Equiv. Weighted Cases	5,484	Uses JPPC weighted case equivalency.
Total Equivalent Weighted Cases	49,307	Denominator for cost per EWC calculations.
Actual Cost per EWC	\$ 4,742.08	
Emergency Department Cost	\$ 44,716,598	As reported through OCDM
Emergency Department Visits	197,184	CIHI abstracted visit volume
Average Cost per ED Visit	\$ 226.78	
Hospital Outpatient Cost	\$ 35,592,163	
Hospital Outpatient Visits	91,326	
Average Hosp. OP Cost per Visit	\$ 389.73	
Dialysis/Oncology OP Costs	\$ 33,655,331	Day/night care visits
Dialysis/Oncology Visits	93,115	
Avg. Dialysis/Oncology Cost per Visit	\$ 361.44	
Other Comm. OP Costs	\$ 3,620,585	
Other Comm. OP Visits	22,311	
Avg. Other Comm. Cost per Visit	\$ 162.28	
Mental Health OP Costs	\$ 2,569,192	
Mental Health OP Visits	8,337	
Avg. Mental Health Cost per OP Visit	\$ 308.17	
Acute Mental Health Costs	\$ 9,169,319	Acute care mental health inpatient costs.
Acute Mental Health IP Days	15,296	
Average Cost per MH IP Day	\$ 599.46	
Total Cost	\$ 363,140,805	Total NHS Fund 1 operating expenses.

The exhibit below shows the projected 2012/13 activity volumes by NHS site and the estimated operating cost, based on application of the target cost per activity measure. Because the cost estimates by site have been calculated on the basis of variable costs, a small hospital site fixed cost estimate has been added to ensure that there is the necessary overhead infrastructure to support the proposed role for each site.

Exhibit 2: Calculation of 2012/13 Operating Costs by NHS Hospital Site

Fiscal Period	Cost Centre	St. Catharines	Greater Niagara	Welland County	Niagara on the Lake	Port Colborne General	Douglas Memorial	Total	Notes
2007/08 Act.	Total Cost by Site	\$ 134,037,274	\$ 80,899,813	\$ 78,842,578	\$ 4,183,019	\$ 16,438,823	\$ 16,063,644	\$ 363,140,805	Actual cost including corporate allocation.
2012/13 Proj.	Inpatient Weighted Cases	22,583	9,190	8,405				40,178	Includes projected growth in inpatient activity.
2012/13 Proj.	Day Surgery Weighted Cases	2,198	1,305	1,723				5,226	Includes projected growth in day surgery activity.
2012/13 Proj.	Chronic Beds	-	37	34	21	46	40	178	No change in beds
2012/13 Proj.	Chronic Care Days	-	13,235	12,162	7,512	16,454	14,308	63,671	98% occupancy
2012/13 Proj.	Chronic Care Case Mix Index (CMI)	1.10	1.17	1.10	1.01	1.10	1.10	1.10	Target increase in CMI for reactivation/rehab.
2012/13 Proj.	Chronic Equiv. Weighted Cases	-	1,409	1,217	690	1,647	1,432	6,396	
2012/13 Proj.	Total Equivalent Weighted Cases	24,781	11,904	11,345	690	1,647	1,432	51,800	
2012/13 Proj.	Target Cost per EWC	\$ 4,493.43	\$ 4,493.43	\$ 4,493.43	\$ 4,493.43	\$ 4,493.43	\$ 4,493.43	\$ 4,493.43	Lower target
2012/13 Proj.	Acute, Day Surgery, Chronic Cost	\$ 111,351,721	\$ 53,490,344	\$ 50,979,758	\$ 3,102,267	\$ 7,400,975	\$ 6,435,631	\$ 232,760,696	
2012/13 Proj.	Inpatient Rehabilitation Beds		10					10	Only if 10 beds @ GNGH are funded.
2012/13 Proj.	Inpatient Rehabilitation Days		3,468					3,468	Assumes 95% occupancy.
2012/13 Proj.	Target Cost per Rehab Day		\$ 700.00					\$ 700.00	Higher per diem cost used for neuro rehab.
2012/13 Proj.	Inpatient Rehabilitation Cost		\$ 2,427,250					\$ 2,427,250	
2012/13 Proj.	Emergency Department Visits	72,237	48,707	33,508				154,452	Reduced volume from CHC, CDPM, primary care.
2012/13 Proj.	Target Cost per ED Visit	\$ 240.00	\$ 240.00	\$ 240.00				\$ 240.00	Increase \$/visit to support CDUs.
2012/13 Proj.	Emergency Department Cost	\$ 17,336,880	\$ 11,689,680	\$ 8,041,920				\$ 37,068,480	
2012/13 Proj.	Hospital Outpatient Visits	55,490	28,000	23,000	-	-	-	106,490	Increased activity with new hospital.
2012/13 Proj.	Target Cost per Hosp. OP Visit	\$ 389.73	\$ 389.73	\$ 389.73	\$ 389.73	\$ 389.73	\$ 389.73	\$ 389.73	
2012/13 Proj.	Hospital Outpatient Visit Cost	\$ 21,625,924	\$ 10,912,342	\$ 8,963,710	\$ -	\$ -	\$ -	\$ 41,501,976	
2012/13 Proj.	Dialysis/Oncology Outpatient Visits	152,826	21,952	29,236				204,014	Incr. activity w/ new hospital and satellite dialysis.
2012/13 Proj.	Target Cost per Dial/Oncol OP Visit	\$ 325.29	\$ 325.29	\$ 325.29				\$ 325.29	HCM tgt, plus further reduction for new facilities.
2012/13 Proj.	Dialysis/Oncology OP Visit Cost	\$ 49,713,458	\$ 7,140,865	\$ 9,510,310	\$ -	\$ -	\$ -	\$ 66,364,633	
2012/13 Proj.	Other Community Outpatient Visits	8,105	4,000	4,000	3,600	4,600	4,600	28,905	Incl. Ontario Breast Screening Program, crisis.
2012/13 Proj.	Target Cost per Comm. OP Visit	\$ 162.28	\$ 162.28	\$ 162.28	\$ 162.28	\$ 162.28	\$ 162.28	\$ 162.28	
2012/13 Proj.	Other Community Outpatient Cost	\$ 1,315,263	\$ 649,112	\$ 649,112	\$ 584,201	\$ 746,479	\$ 746,479	\$ 4,690,646	
2012/13 Proj.	Mental Health Outpatient Visits	7,000	3,500	3,500				14,000	Includes proposed emergency psychiatric team.
2012/13 Proj.	Target Cost per MH OP Visit	\$ 400.00	\$ 400.00	\$ 400.00				\$ 400.00	Higher per visit cost used for EPT.
2012/13 Proj.	Mental Health Outpatient Costs	\$ 2,800,000	\$ 1,400,000	\$ 1,400,000				\$ 5,600,000	
2012/13 Proj.	Acute Mental Health Beds	30						30	
2012/13 Proj.	Acute Mental Health IP Days	8,760						8,760	
2012/13 Proj.	Target Cost per MH IP Day	\$ 700.00						\$ 700.00	Target increased to reflect higher acuity patients.
2012/13 Proj.	Acute Mental Health IP Cost	\$ 6,132,000						\$ 6,132,000.0	
2012/13 Proj.	Tertiary Mental Health Beds	54						54	
2012/13 Proj.	Tertiary Mental Health IP Days	18,725						18,725	95% occupancy.
2012/13 Proj.	Target cost per Tert. MH IP Day	\$ 725.00						\$ 725	Target from freestanding mental health data.
2012/13 Proj.	Tertiary Mental Health IP Cost	\$ 13,575,263						\$ 13,575,263	
2012/13 Proj.	Small Site Overhead Allowance				\$ 400,000	\$ 2,000,000	\$ 2,000,000	\$ 4,400,000	Allowance to support small site infrastructure.
2012/13 Proj.	Total Cost (pre-ALC Savings)	\$ 223,850,509	\$ 87,709,594	\$ 79,544,810	\$ 4,086,467	\$ 10,147,454	\$ 9,182,110	\$ 414,520,944	
2007/08 Act.	ALC Days (incl. small site allocation)	17,692	14,713	18,822				51,227	Actual 07/08 ALC days.
2007/08 Act.	Alternate Level of Care Cost	\$ 5,307,600	\$ 4,413,900	\$ 5,646,600				\$ 15,368,100	Estimated 07/08 cost of \$300 per ALC day.
2012/13 Proj.	Alternate Level of Care Days	8,870	4,935	5,051				18,856	Projected 11/12 ALC days.
2012/13 Proj.	Alternate Level of Care Cost	\$ 2,661,000	\$ 1,480,500	\$ 1,515,300	\$ -	\$ -	\$ -	\$ 5,656,800	Uses \$300 per ALC day.
2012/13 Proj.	ALC Day Cost Savings	\$ (2,646,600)	\$ (2,933,400)	\$ (4,131,300)	\$ -	\$ -	\$ -	\$ (9,711,300)	
2012/13 Proj.	Total Cost (after ALC Savings)	\$221,203,909	\$ 84,776,194	\$75,413,510	\$ 4,086,467	\$10,147,454	\$ 9,182,110	\$ 404,809,644	Cost in 2007/08 dollars.
	Projected \$ Change in Operating Costs by Site	\$ 87,166,635	\$ 3,876,381	\$ (3,429,068)	\$ (96,552)	\$ (6,291,369)	\$ (6,881,535)	\$ 41,668,839	Includes (\$32,675,653.44) from OSS closure
	Projected % Change in Operating Costs by Site	65.0%	4.8%	-4.3%	-2.3%	-38.3%	-42.8%	11.5%	

Note: Costs show NHS costs only. Investments in community services and non-hospital enablers, particularly at PCGH and DMH are not included.

Appendix F – Hospital Improvement Plan Acronyms

Hospital Improvement Plan Acronyms	
ABC	A Better Choice
ACSC	Ambulatory Care Sensitive Conditions
ACT	Anaesthetic Care Team
ACTT	Assertive Community Treatment Team
ALC	Alternate Level of Care
ALOS	Average Length of Stay
AMI	Acute Myocardial Infarct
ANB	Admit No Bed
AUDD	Automated Unit Dose Delivery System
CAMH	Centre for Addictions and Mental Health
CAT Scan	Computerized Axial Tomography
CCAC	Community Care Access Centre
CCC	Complex Continuing Care
CCHS	Canadian Community Health Survey
CCIS	Critical Care Information System
CCN	Cardiac Care Network
CCRT	Critical Care Response Team
C-DIFF	Clostridium Difficile
CDPM	Chronic Disease Prevention Management
CDU	Clinical Decision Unit
CEO	Chief Executive Officer
CHC	Community Health Centre
CHC	Congestive Heart Clinic
CHF	Congestive Heart Failure
CIHI	Canadian Institute for Health Information
CKD	Chronic Kidney Disease
CMA	Census Metropolitan Areas
CMG	Case Mix Groupings
CMI	Case Mix Index
COPD	Chronic Obstructive Pulmonary Disease
C-PAP	Continuous Positive Airway Pressure
CT	Computerized Tomography
CTAS	Canadian Triage and Acuity Scale
CVA	Cerebrovascular Accident
CVVHD	Continuous Venous Venous Haemodialysis
DA	Dissemination Areas
DAD	Discharge Abstract Database
DMH	Douglas Memorial Hospital
DVT	Deep Vein Thrombosis
Dx	Diagnosis
ECG	Echo Cardio Gram
ECT	Electro Convulsive Therapy
ED	Emergency Department

Hospital Improvement Plan Acronyms	
EMS	Emergency Medical Services
ENT	Ear Nose Throat
EPT	Emergency Psychiatric Team
EWC	Equivalent Weighted Case
FIM	Functional Independence Measure
FT	Full Time
GAU	Geriatric Assessment Unit
GNGH	Greater Niagara General Hospital
HAPS	Hospital Accountability Plan Submission
HARP	Health Arts Radiation Protection Act
HCM	Health Care Management
HDS	Hotel Dieu Shaver
HHR	Health Human Resources
HHSC	Hamilton Health Sciences
HIP	Hospital Improvement Plan
HNHB	Hamilton Niagara Haldimand Brant
HSMR	Hospital Standardized Mortality Ratio
HSRC	Health Services Restructuring Commission
ICES	Institute for Clinical Evaluative Sciences
ICU	Intensive Care Unit
IHSP	Integrated health Service Plan
ILTC	Interim Long Term Care
IP	Inpatient
JPPC	Joint Policy and Planning Committee
LBRP	Labour Birth Recovery Postpartum
LHIN	Local Health Integration Network
LOS	Length of Stay
LTC	Long Term Care
MAC	Medical Advisory Committee
MAR	Medication Administrative Records
MH	Mental Health
MH	Mental Health
MOHLTC	Ministry of Health and Long Term Care
MRI	Magnetic Resonance Imaging
MRSA	Methicillin Resistant Staphylococcus Aureus
NACRS	National Ambulatory Classification System
NEMS	Niagara Region Emergency Services
NHS	Niagara Health System
NIHSS	National Institute of Health Stroke Scale
NOTL	Niagara-on-the-Lake
NP	Nurse Practitioner
NRC	National Research Corporation
OBS/GYN	Obstetrics/Gynaecology
OBSP	Ontario Breast Screening Program
OCDM	Ontario Hospital Cost Distribution Methodology
OHA	Ontario Hospital Association
OHRC	Ontario Human Resource Committee
OMA	Ontario Medical Association

Hospital Improvement Plan Acronyms	
OP	Outpatient
OR	Operating Room
ORM	Operating Room Manager
OSS	Ontario Street Site
OT	Occupational Therapist
PACs	Picture Archiving and Communication System
PCGH	Port Colborne General Hospital
PCI	Percutaneous Cardiac Intervention
PCOP	Post Construction Operating Plan
PCU	Progressive Care Unit
PDST	Planning Decision Support Tool
PICU	Psychiatric Intensive Care Unit
POCT	Points of Care Testing
PT	Physiotherapist
QMP LS	Quality Management Program - Laboratory Services
RIW	Resource Intensity Weight
RN	Registered Nurse
RNAO	Registered Nurses Association of Ontario
RPN	Registered Practical Nurse
RT	Respiratory Therapist
SCCM	Society Critical Care Medicine
SCGH	St. Catharines General Hospital
SCMC	Society of Critical Care Medicine
SCN	Special Care Nursery
SDS	Same Day Surgery
SHN	Safer Healthcare Now
SLA	Service Level Agreement
SLP	Speech Language Pathology
SPAI	Surgical Process Analysis Improvement
SSR	Slow Stream Rehabilitation
STEMI	Segment Elevation Myocardial Infarction
SWOC	Strengths Weakness Opportunity Challenge
tPA	Tissue Plasminogen Activator
TPN	Total Parenteral Nutrition
UK	United Kingdom
USA	United States of America
VRE	Vancomycin-Resistant Enterococcus
WFCC	Walker Family Cancer Centre
WCGH	Welland County General Hospital (Welland Hospital Site)
WCH	Welland County Hospital (Welland Hospital Site)
WHS	Welland Hospital Site
WMS	Withdrawal Management Services
WWW	Welland Woolcott Wing
YTD	Year to Date