Dal Surgery 2007

Keeping the promise

a strategy for access, innovation and accountability

[Some pages intentionally left blank for bindery setup.
This version is compressed for electronic distribution purposes.]

Dal Surgery 2007

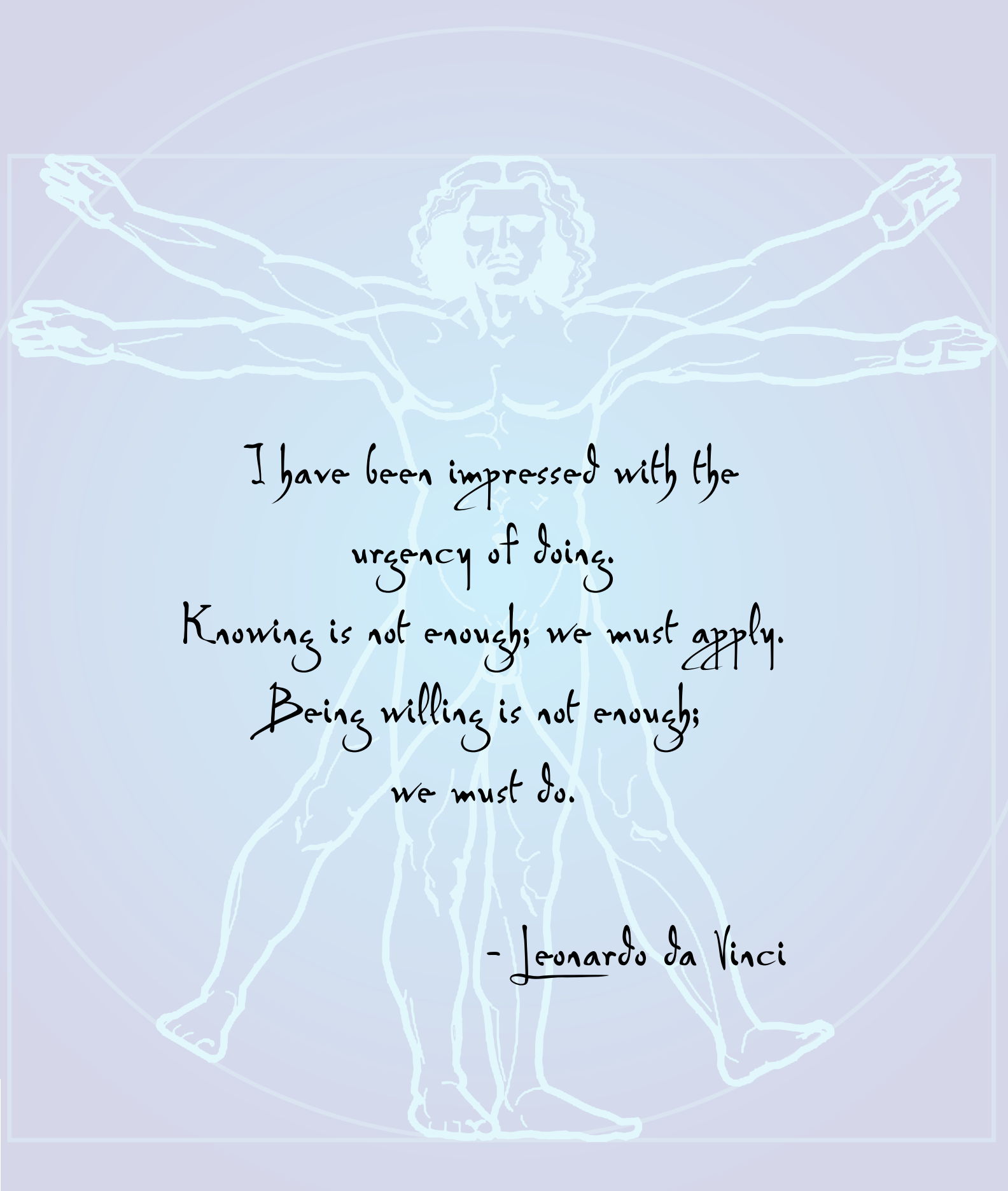
Keeping the promise

a strategy for access, innovation and accountability

Keeping the Promise: A Strategy for Access, Innovation and Accountability

www. surgery.medicine.dal.ca
printed in Nova Scotia, Canada

original photography by James Ingram
a production of www.stylusconsulting.com



I have been impressed with the
urgency of doing.
Knowing is not enough; we must apply.
Being willing is not enough;
we must do.

- Leonardo da Vinci

Acknowledgments

Many people have given their feedback and time to the development of this report. We value your contributions and appreciate everything you do to help make things better for patients.

Dr. David Amirault, Head, Division of Orthopaedic Surgery
Dr. Manohar Bance, Division of ENT
Dr. Drew Bethune, Head, Division of Thoracic Surgery
Brian Butt, Director of Health Services, Capital Health
Dr. Cathy Coady, Paediatric and Adult Orthopaedic Surgeon, Clerkship Coordinator
Dr. Harold Cook, Dean Faculty of Medicine, Dalhousie University
Dr. Frances Crawley, General Surgeon, Hants Community Hospital
Dr. Michael Dunbar, Division of Orthopaedic Surgery
Dr. James Fawcett, Professor Pharmacology, and Canada Research Chair in Brain Repair
Heather Francis, Director of Peri-Operative Services, Capital Health
Deb Garnier, Nurse Manager OR VG site
General Surgery Senior Residents
Theresa Halliday, Financial Administrator, Department of Surgery
Dr. Camille Hancock Friesen, Pediatric and Adult Cardiac Surgeon
Susan Harris, OR Manager HI Site
Dr. Greg Hirsch, Head, Division of Cardiac Surgery, and Research Director Dal Surgery
Dr. Paul Hong, Resident (ENT)
Dr. Renn Holness, Division of Neurosurgery and past Director of Education
Clifford Johnson, OR Porter, VG site
Dr. Mark Kazimirski, Site Chief of Staff, Hants Community Hospital
Dr. Alison Kelland, Anesthetist, Hants Community Hospital
Dr. David Kirkpatrick, Head, Division of ENT
Brenda Laphen, Surgery Clinic Clerk
Dr. Tim Lee, Professor Microbiology & Immunology, and Director Transplantation Laboratory
Dr. Kirk MacQuarrie, Department of Anesthesia
Crystal Marsman, Administrative Assistant, Department of Surgery
Dr. Ivar Mendez, Head, Division of Neurosurgery
Dr. Gerry MacKean, Head, Division of Vascular Surgery, Director of Finance
Lynn Molloy, Decision Support, Capital Heath
Karen Mumford, Director of Health Services DGH
Dr. John Murdoch, Chief of Surgery, Dartmouth General Hospital
Dr. Bjorn Nashan, Director MOTP
Dr. Jennifer Oucharek, Resident
Dr. Justin Paletz, Head, Division of Plastic & Reconstructive Surgery
Sherri Parker, Health Services Director, Hants Community Hospital
Dr. Geoff Porter, Clinical Head, Cancer Care Nova Scotia
Chris Power, CEO Capital Health
Sheila Reid, Education Coordinator Department of Surgery
Dr. John Steeves, Director Medical Education St. John, NB
Dr. Hugh Scarth, Head of General Surgery, St. John, NB
Leslie Smith, Human Resources, Department of Surgery
Patti Snarr, Administrative Assistant MOTP
Dr. John Tallon, Director of NS Trauma Program
Dr. Trevor Topp, Head, Division of General Surgery
Dr. Brock Vair, Head, Division of General Surgery, and Education Director Dal Surgery
Chris Van Zoost, OR Manager Hants Community Hospital
Charlotte Williams, Recovery Room Nurse
Dr. Ken Wilson, Chief of Surgery, IWK

contents

from the chair

Dal Surgery is founded on a promise of excellence – throughout the continuum of the patient experience, in the discovery of treatment innovations and by inspiring tomorrow's surgeons as they pursue the science and art of their specialty. Dal Surgery is a convergence of our clinical and academic missions.

Bringing together the people and infrastructure to address competing demands with finite resources is our daily and long-term challenge. This report will speak to a number of issues that have confounded the healthcare sector for some time. The key issues will hardly come as news to any of those who have been involved in trying to design policies, manage budgets or provide services.

But this is certainly not a report of doom and gloom. In fact it is one of great optimism. The hope is to inject a fresh vision, a clear plan and focused energy into the way we work together throughout a complex organization to provide timely, high quality surgical services to residents of Capital District and Atlantic Canada.

There has been a great deal of rhetoric about renewing the system. Consultations are conducted and vision statements evolve, yet we all continue to be challenged about how to put our values into action. This is in large part because we are not really functioning as a system at all. This report offers a straightforward approach to moving things in the direction everyone has been talking about. It may push some envelopes, as any proposed menu of change will do, but is borne of our collective and genuine commitment to create an environment of team-oriented, patient-centred care.

There are three underlying themes throughout this document. Think like a system. Work like a team. And believe that anything is possible when it comes to taking care of our patients.

Dr. Jaap Bonjer
Professor and Head,
Dal Surgery

who we are

Dal Surgery is an academic surgical department with 98 faculty members at Capital District Health Authority, IWK, Faculty of Medicine, Faculty of Engineering and School of Biomedical Engineering in Halifax, Dartmouth and Windsor, Nova Scotia. Four faculty members are in Amherst, Nova Scotia and two are in Sydney, Nova Scotia. The faculty in New Brunswick includes 30 members at the Saint John Regional Hospital, 29 faculty members at the Moncton Hospital and 20 faculty members at the Dr. Everett Chalmers Regional Hospital in Fredericton.

Capital District Health Authority (CDHA) and the IWK provide secondary and tertiary care to almost one million residents of Nova Scotia, while CDHA and IWK are the quarternary resource for more than three million people from Nova Scotia, Prince Edward Island, New Brunswick and Newfoundland & Labrador (the Atlantic Provinces).

Our academic presence spans Nova Scotia, New Brunswick and Prince Edward Island – expanding the academic community far beyond the physical limits of Dalhousie University's Halifax campus. Eighty-four residents are enrolled in seven surgical training programs and rotate through services at CDHA, IWK and the hospitals in Saint John, Moncton and Fredericton.

Dal Surgery stands for inspired education of students, residents and Fellows not only focusing on technical skills but training them as multi-faceted healthcare professionals who excel in communicating, counseling, managing and collaborating.

Dal Surgery is about translational research. Clinical experiences trigger our inquisitive minds and take us to the laboratory benches where confusion and discovery trade places. We are about critical clinical appraisal evolving in randomized clinical trials.

We are made up of a team of professionals, each deeply committed to the promise of excellence. From nurses to administrators; ward staff to data analysts; experienced practitioners to those they teach – each is an integral part of a complex system of care.

why we're here:

'Patients' is our virtue. Waiting lists are not.

This report isn't actually about surgeons. It's about surgery, or more accurately ... about the people who need surgery – like Art Horne.

Mr. Horne is a retired school teacher. He and his wife have four children, five grand children (who are all under the age of six) and lead a very active life. He has played most team sports, stays fit and can keep pace with a man half his age. He laughs when he says that he has never walked a day in his life – he always ran!

Then everything changed.

Nearly four years ago, Mr. Horne climbed to the top of the list that included over 3,000 names of people in line for orthopaedic surgery. His journey through the healthcare system was the same as many others'. It started with leg pain that he tried to ignore (he isn't a man to take medication and, in fact, hardly ever took a sick day during his teaching career). The pain led to a visit to his family doctor who made a referral to a specialist. Then a wait. The consultation was inconclusive. The pain continued, so he returned again (a year later) to his family doctor. Another referral. Another wait.

By the time he arrived in Dr. Amirault's office, Mr. Horne could no longer get in and out of a car without help, couldn't sleep through the night and had become virtually crippled by pain.

Mr. Art Horne
Hip Replacement Patient

Dr. Amirault greeted Mr. Horne in the waiting room and followed him into the examination suite. This was more than just good bedside manner. Indeed, Dr. Amirault didn't waste a minute to assess his patient's gait, and to make a fast (and accurate) determination that Mr. Horne's pain was from a bad hip – not the knee that Mr. Horne had long since blamed. An x-ray the same day confirmed the diagnosis and Mr. Horne did more of what he was good at by now … he waited again. Another year later and he was at the top of the list.

Mr. Horne will tell you that once he got onto the operating table, the system worked flawlessly. The procedure was successful, his recovery was quick and within only a few months he was back on his feet chasing the grandchildren. He considers himself fortunate to have been supported so much by his family, particularly when he was in hospital. While he says that the care he received was first rate, he will also tell you that it is obvious the staff is seriously overstretched.

There are literally thousands of stories like Mr. Horne's that make up the 'case load statistics' of Dal Surgery. What we all know is that patients are not numbers. Every one of them has a story. Each of them experience stress leading up to their operation. Far too many also experience the anxiety of having a procedure cancelled because of a shortage of something in the system – an anesthetist, nursing staff, or even a bed. Rarely is it the case that the cause of cancellation is the unavailability of a surgeon.

Mr. Horne's story points to one of the biggest issues for the healthcare system – and the highest priority for Dal Surgery – which is to improve access to care. There can be no doubt that ensuring patients receive treatment within clinically accepted timeframes is fundamental to quality patient care, and that we have significant room for improvement.

Addressing this issue demands that we have the courage to do some things differently – using resources more efficiently, insisting on accountability for performance and functioning as an integrated system focused on patient care. This report dares to address these issues head-on and takes the position that the solutions are at hand if we all work together.

Federal Benchmarks for the Promise of Care

Treatment Area	Benchmark
Radiation Therapy for Cancer	Within 4 weeks of being ready to treat
Surgical Repair of Hip Fracture	Witihin 48 hours
Cardiac Bypass Surgery	2-26 weeks depending on urgency
Knee Replacement	26 weeks
Hip Replacement	26 weeks
Cataract removal	Within 16 weeks for high risk

Source: Federal, Provincial and Territorial Benchmarks, 2005

waiting for surgical services

Guaranteeing wait times in healthcare is one of the five policy priorities that Prime Minister Harper defined when he took office in 2006. In spite of this, timely access to surgical clinics and surgical interventions continues to be the main healthcare concern throughout Canada. More than 5,000 patients are waiting for surgery at the QEII, (Figure 1). Of enormous concern is that sixty percent of these patients are waiting longer than the national standard. Precise tracking of patients waiting for surgical consultation in clinic has not yet been established, but in order to glean an estimated magnitude of this issue, individual divisions have documented their current numbers of referrals. This reveals that a staggering queue of more than 11,000 people are waiting for a surgical consultation. The duration of the wait between reception of the referral and consultation has not been tracked consistently, but we know that the wait time for a consultation for a chronic orthopaedic disorder at the QEII is at least18 months.

The QEII is challenged by clinical demand that exceeds the system's capacity to provide service. Patients who require surgery most urgently have been prioritized since August 2006, which has reduced the waits of patients with life and limb threatening disease close to the accepted standard. The prioritization of these patients has, however, lengthened the waits of patients with less urgent (but still important) conditions. Patients requiring a hip replacement for osteoarthritis, for example, must wait up to two years at the QEII. These are two years of chronic severe pain causing physical disability and emotional distress.

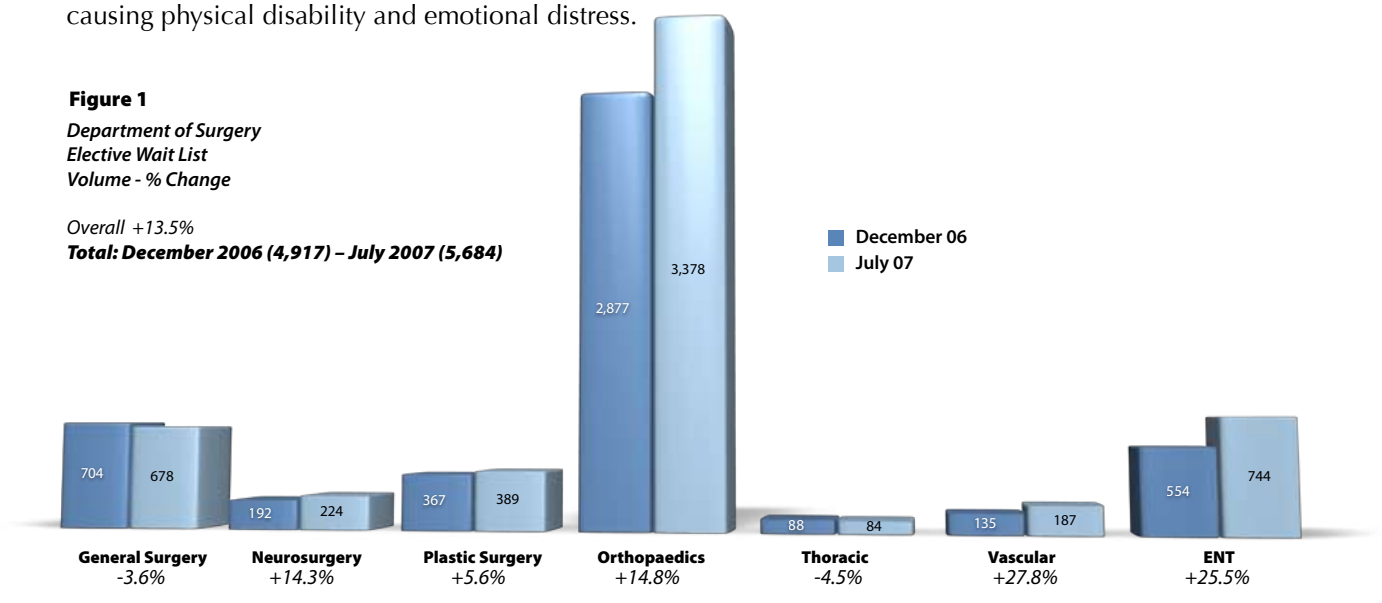
Division	# of patients waiting for surgical consultation
General Surgery	1,717 (850 bariatric consults)
Orthopedic Surgery	7,947
Otolaryngology (ENT)	849
Plastic Surgery	1,006
Thoracic Surgery	122
Vascular Surgery	415
Neurosurgery	635
Total	**12,691**

Table 1

Figure 1

Department of Surgery
Elective Wait List
Volume - % Change

Overall +13.5%
Total: December 2006 (4,917) – July 2007 (5,684)



When patients need surgery, they count on a complex system of care to work flawlessly. When everything goes well, much of what makes this system function is invisible to patients. Most people would be surprised by how many things need to converge for an operation to be performed and for a patient to have uneventful passage to recovery.

In many ways, it is much like taking a flight. In order for a traveler to reach their destination, a vast infrastructure and chain of events need to fall into place. From the passenger's perspective, the experience of air travel should be remarkably straight-forward. All they should need to know is their destination, departure and arrival time – and what is expected of them not to miss their flight. What most passengers rarely think about is what makes an airplane fly, whether a pilot and crew is available to take them to their destination, or anything about the information system that coordinates their departure time with that of thousands of other travelers going in the same direction.

When the system is working well, the flight itself is an uneventful part of the journey – for both passengers and crew. When it is not, the consequences range from being mildly irritating to catastrophic. Sometimes events unfold that even the most efficient airlines cannot control, including weather systems that close airports. Other times, it's a matter of finding a way to make the system better and having the courage to take leadership in doing things differently. While planes can't fly without pilots, pilots don't run the airline – although they do have a bird's eye view of the system as whole. So too does the Department of Surgery.

As part of a much broader system of healthcare, surgeons rely on a great number of things to fall into place in order to do our work. A chain of interdependency links health professionals, equipment, infrastructure and information systems. When this system is working well, it should be like taking a smooth trip for the patient. Even passengers who are terrified of flying should be confident that the system will get them safely to where they need to go, and that every person involved in their journey is committed to helping them achieve that objective.

In many respects, the surgeon is at the end of the chain in terms of their role in the healthcare system. Many other links of this chain of care must connect flawlessly prior to the patient arriving in the operating room or the procedure is delayed or cancelled. Indeed, it is extremely rare that the surgeon is the one to make the decision to delay or cancel a case. More often than not, failure to conduct a procedure is due to the lack of an available bed, a shortage of anaesthesiologists, nursing or other staff, lack of operating room time or a combination thereof.

Indeed, the productivity of a surgeon is linked to a complex system of service providers, infrastructure and multi-jurisdictional policies. The weakest link in this chain of relationships will ultimately determine how effectively the system operates overall.

Operating room cuts at the QEII

A shortage of anaesthesiologists in 2005, 2006 and 2007 had a huge impact on access to the ORs at the QEII (Table 2).

Table 2

Service	Allotted Hours/Week	Reduction in Hrs/Week	% Cut
Cardiac	192	15	8%
Plastics	80	16.8	21%
Neurosurgery	78	8.97	11.5%
Vascular	50	10	21%
ENT	92	23.92	26%
Gyne Onc	30	8.1	27%
Thoracic	50	13	26%
OMF	44	11.22	25.5%
General	180	32.64	24%
Urology	136	17.68	13%

Department of Surgery
Halifax Infirmary / Victoria General

Procedures *(hours)*	02/03		03/04		04/05		05/06	
Cardiac Surgery	1,945	*7,562*	2,101	*8,488*	1,932	*7,640*	1,964	*7,642*
General Surgery	4,410	*8,020*	4,123	*7,204*	3,952	*7,639*	3,971	*8,325*
Neurosurgery	865	*3,094*	828	*2,900*	878	*3,172*	873	*2,993*
Orthopaedic Surgery	5,099	*7,853*	4,902	*7,520*	4,434	*7,667*	4,357	*7,551*
Otolaryngology	1,236	*3,185*	1,135	*2,642*	1,111	*2,783*	1,121	*2,808*
Plastic Surgery	1,423	*3,183*	1,437	*3,086*	1,259	*2,557*	1,216	*2,580*
Thoracic Surgery	957	*1,851*	947	*1,739*	901	*1,886*	898	*2,000*
Vascular Surgery	686	*1,297*	695	*1,271*	645	*1,351*	590	*1,290*
Total	**16,621**	*36,045*	**16,168**	*34,850*	**15,112**	*34,695*	**14,990**	*35,189*
Average Duration	***2.17 hours***		***2.16 hours***		***2.30 hours***		***2.35 hours***	

Table 3 Number of procedures and surgical hours QEII 2002 - 2006

05/06	Elective	Emergency	(%)	Total
Cardiac Surgery	1,252	712	36%	1,964
General Surgery	2,969	1,002	25%	3,971
Neurosurgery	542	331	38%	873
Orthopaedic Surgery	2,794	1,563	36%	4,357
Otolaryngology	1,043	78	7%	1,121
Plastic Surgery	563	653	54%	1,216
Thoracic Surgery	585	313	35%	898
Vascular Surgery	376	214	36%	590
Total	**10,124**	**4,866**	**32%**	**14,990**

Table 4 Elective and emergency surgeries at the QEII in 2005/2006

Considering the OR time reductions, one would expect that the number of surgeries and the total operating time would have decreased. However, the volume of surgical services did not significantly decline between 2002 and 2006 (Table 3). Indeed, the volume of surgical services was sustained during the period of OR cuts due to performing surgery after elective hours. As such, one third of all surgeries in 2005/06 were treated as emergency cases (Table 4). In other words, a shift of patients has taken place from elective hours to emergency hours due to the lack of elective operating time. Of note, 70% of these emergency cases were booked as cases to be done within 24 hours.

During the period of anaesthesiology shortage, the contingent of nursing staff in pre-admission, operating rooms and Post Anaesthesia Care Unit (PACU) could accommodate the volume of patients. New bottlenecks will be exposed when the surgical volume increases due to the arrival of new anaesthesiologists.

Clinical care profile of Dal Surgery in Capital Health

Our clinical load is exacerbated by the fact that QEII-based surgeons are required to provide a significant amount of secondary care for patients outside our immediate catchment area. Indeed, the QEII site provides surgical coverage of some services at a number of facilities within Capital Health as well as for neighbouring districts, which divert patients on weekends and after hours for care. In addition, we provide tertiary care to patients living in other Nova Scotia districts and quaternary care to patients from Prince Edward Island, New Brunswick and Newfoundland & Labrador. The proportion of patients from outside Capital District varies per division and is shown in Table 5.

Access to Surgical Services
Capital District Health Authority
Surgical care for patients outside Capital District

	Capital District %	Outside %
Cardiac Surgery	33	*67*
General Surgery	72	*28*
Neurosurgery	38	*62*
Orthopaedic Surgery	56	*44*
Otolaryngology	52	*48*
Plastic Surgery	61	*39*
Thoracic Surgery	45	*55*
Vascular Surgery	53	*47*

Table 5. Out of Capital District surgical services at QEII

Two-thirds of cardiac surgery and neurosurgery patients are from outside Capital District while half of patients having orthopaedic surgery, ENT surgery, thoracic surgery or vascular surgery live outside Capital District. One third of the general surgery and plastic surgery patients are from outside Capital District. Detailed data per division, broken down across the districts, are shown in Appendix B.

Secondary care (2°) is provided by a specialist usually after referral from a primary care physician. The Regional Hospitals provide secondary care.

Tertiary care (3°) requires specialized skills, technology and support services. Tertiary services to Nova Scotia are provided at the Queen Elizabeth II Health Sciences Centre.

Quaternary care (4°) requires highly specialized skills, technology and support services. The QEII is the only provider of quarternary care in the Atlantic Provinces.

Clinical profile QEII
Surgical services at the QEII entail all secondary, tertiary and quaternary surgical services for adult patients except for transplantation of the lung, transplantation of small bowel and split and living liver transplantation. These services are provided 24/7.

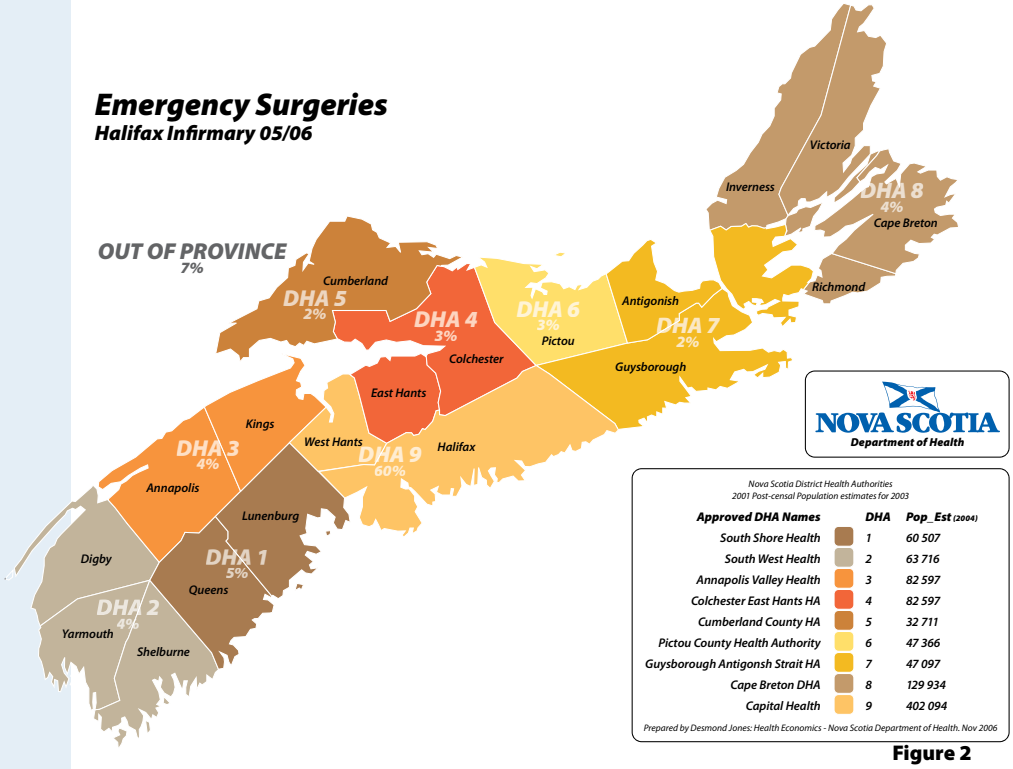


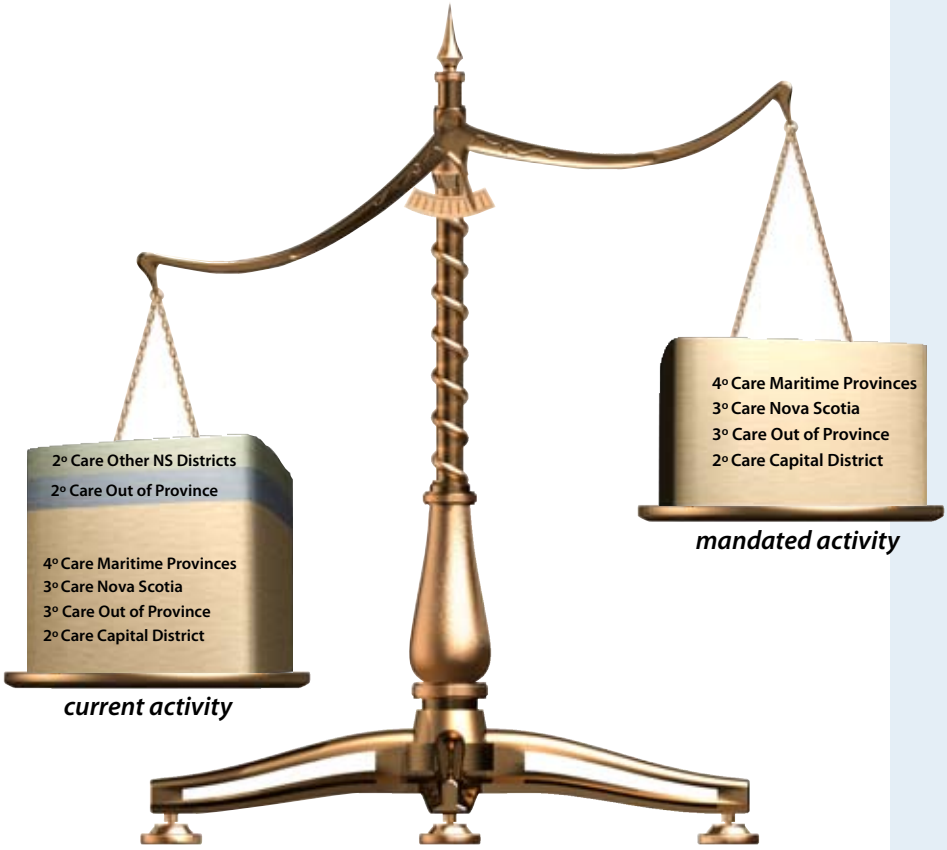
Figure 2

The emergency surgeries performed in 2005/2006 at the Halifax Infirmary were analyzed. Forty percent of all referred patients were from districts outside Capital District (Figure 2). This means that Halifax-area elective cases are often postponed or cancelled because of urgent and emergent cases arriving from other regions (and from facilities within our own region) – patients that could be well managed clinically by the referring facility if that centre possessed the manpower and other resources to provide the care. Instead, patients are being transferred unnecessarily, and waiting lists of local cases are increasing because of the down-stream effect of imperfect system planning.

The combined impact of our Atlantic subspecialty workload with the demands for secondary care from other districts is a significant contributing factor to the demand for surgical services far outstripping our capacity to provide care to local residents.

As a consequence, there is a discrepancy of wait times for surgical procedures such as hernia repair between Capital District and other Districts (for example, wait time in Cumberland for laparoscopic cholecystectomy is two weeks while the wait at the QEII is more than six months).

One could argue that the mandate of Capital Health should not include secondary care for patients who live outside Capital District. However, patients need to go somewhere when a particular service is not provided in their home district. Clear arrangements between the districts in Nova Scotia regarding referral patterns in these instances have not yet been established. Furthermore, the roles of the three surgical sites in Capital District (QEII, Dartmouth General Hospital and Hants Community Hospital) need to be further defined.

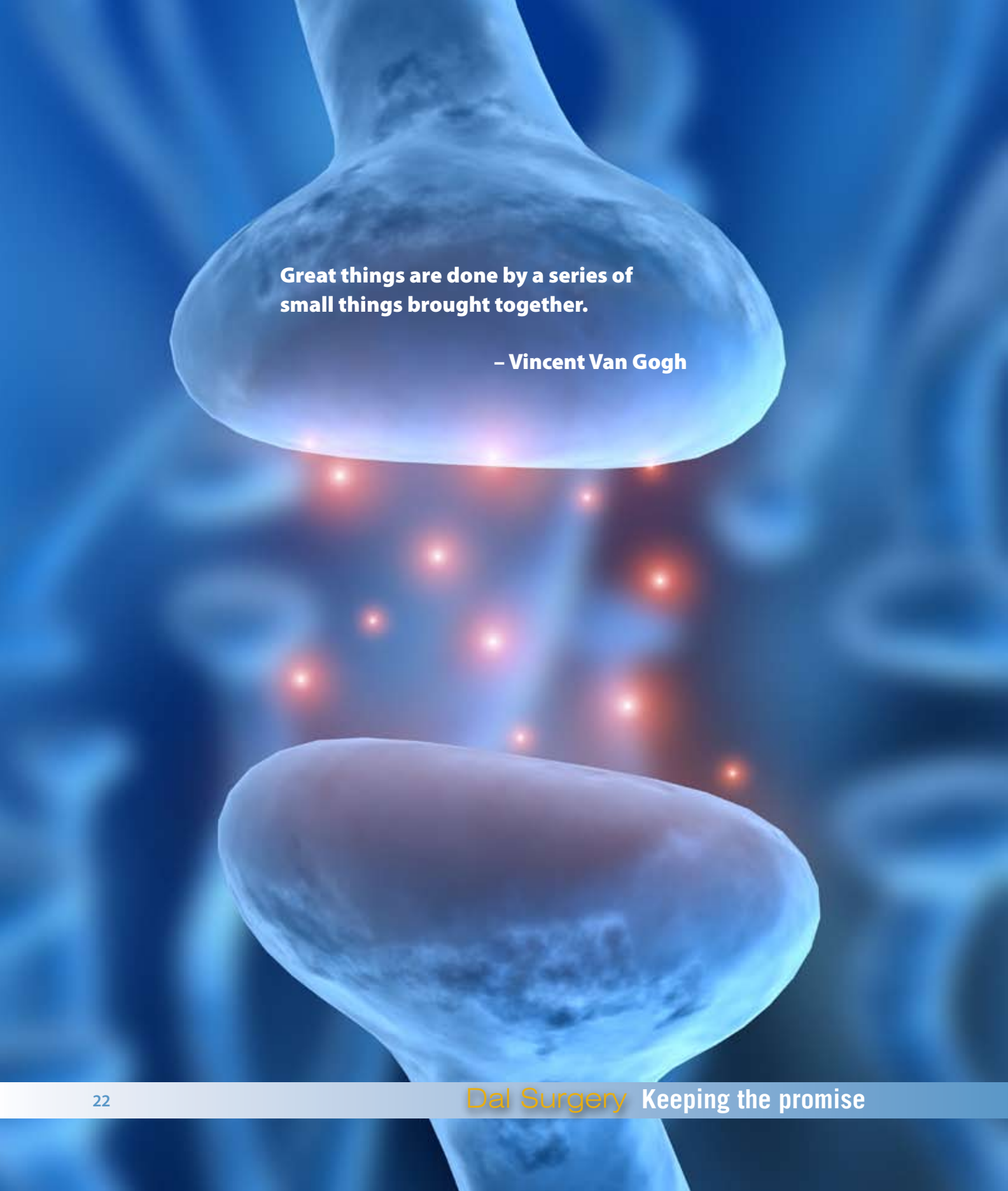


Clinical profile Dartmouth General Hospital

Dartmouth General Hospital provides general surgery, orthopaedic surgery, ENT surgery, plastic surgery, oral-maxillo-facial surgery, urology and gynecology and obstetrics. Only general surgery provides 24/7 coverage while the other specialties can not provide services around the clock due to shortage of surgeons, operating room time, beds and nursing capacity. Dartmouth General Hospital has not been designated as Regional Hospital in spite of having a population of 160,000.

Clinical profile Hants Community Hospital in Windsor

Hants Community Hospital offers mostly day surgeries in general surgery, oral-maxillo-facial surgery, orthopaedic surgery and urology. One general surgeon practices exclusively in Windsor. The QEII Division of General Surgery performs groin and umbilical hernia surgery one day per week in Windsor while an orthopaedic surgeon from Dartmouth General covers two OR days per month. Emergency surgeries are infrequently performed in Windsor.


Great things are done by a series of
small things brought together.
– Vincent Van Gogh

curing surgical waits

We need to take a system-wide approach to everything we do in order to meet the needs of surgical patients – a strategy for which Dal Surgery is a willing champion. This starts in the boardroom and applies to how we allocate funding, how professionals work together in clinics or at the bedside and how we organize access to care.

There is evidence that the Nova Scotia healthcare system as a whole understands the need to create the enabling conditions to allow a system-wide approach to take hold (as demonstrated by the shift to alternative funding plans and the gains that have been made in anesthesia as the result of the new funding environment). The difficulty is that we are fixing the system one part at a time – using tactics that mirror the very silos that inhibit a systems approach. As such, although tremendous strides have been made to stabilize anaesthesia service and significant progress has been achieved in Dal Surgery through our Alternative Funding Plan (AFP), a looming nursing shortage and deteriorating capital infrastructure threaten all the gains that have been made.

The challenges are not small. The available budget for capital equipment was in 2006/2007 $3M (.5% of the annual district budget of $650M) while OR emergency infrastructure requirements for 2007-08 exceed $7M. Moreover the infrastructure at the VG site does not accommodate accepted technology such as laparoscopic surgery well due to ubiquitous presence of asbestos. This not only compromises the quality of patient care but also compromises our ability to continue to recruit and retain healthcare professionals.

The province of Nova Scotia spends 39.3% of its annual budget on healthcare while the national average is 38.3%. Therefore, a significant increase of provincial funding is not expected. We need to build accountability throughout the system for everything we do and link funding to

Targets for Access

The access objectives of Dal Surgery are:

- in house consultations < 24 hours
- consultations in the emergency room < 3 hours
- clinic visits for urgent disorders < 1 week
- clinic visits for chronic disorders < 6 weeks
- wait times for surgery: according to Axcess Rx™ wait times

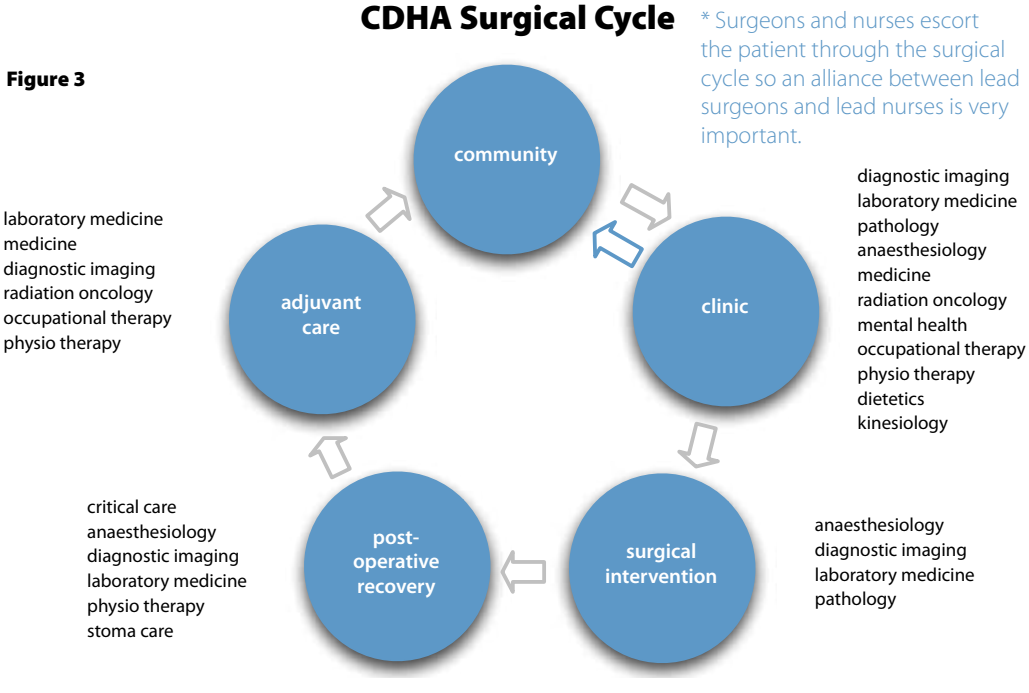
activity and performance. People who are responsible for programs must have the authority and information to make decisions and those decisions are best made at the closest point to front line patient care. There are some areas where we simply need to put more money, principally in new equipment and in the establishment of a regional hospital capacity at the Dartmouth General Hospital.

If budgets were organized programmatically such that savings in one area can be invested in others, much more could be achieved within the existing global budget allocation than is now possible. This speaks loudly to the need for management structures to be in place that bring together those who provide the service with those who administer programs – and to match responsibility with authority. While we may need to be resigned to the overall level of funding made available to the healthcare system, there are some things that we can do to make better use of the considerable resources we have. The key is in leveling the silos that dominate the horizon.

1.0 taking a team approach – to *everything*

The single greatest transformation that needs to take place is that healthcare professionals must start to work in teams – both administratively and clinically. The introduction of an AFP in 2004 at the QEII has opened the door to this approach, which has already taken hold.

Figure 3



1.1 introducing a co-management model

Patients enter the surgical cycle through a clinic or emergency room. Many do not require a surgical intervention and can be treated by primary care professionals in the community. Those who do require surgery will return to community care, possibly augmented by adjuvant services. Surgical patients are escorted through the cycle by surgeons and nurses who collaborate with various healthcare professionals in the different phases.

The concept of co-management is based on empowering a team of healthcare professionals that provides, oversees and engages in the care process. Assigning budget authority and accountability will allow these healthcare leads to determine, based on healthcare outcomes and management information, how to use the available resources most efficiently. The opportunity to reinvest cost savings in the care process is a critical incentive. These reinvestments need to be transparent to those who generated cost savings so as to sustain the motivation to use resources efficiently.

The proposed model is to establish a Departmental Management Team and Divisional Management Teams. Surgical services are organized in different specialties which are represented by divisions at the QEII in Halifax.

Figure 4

Surgery Program Organization

The Departmental Management Team is comprised of the Department Head, Deputy Head, Health Services Director for Inpatients and Outpatients, Health Services Director Perioperative Services and Health Services Director Intensive Care Unit, as well as a member of Financial Services and a member of Decision Support. The team determines the total volume of care and required resources and monitors appropriate distribution and reinvestment of resources between divisions and sites. It is responsible for communication and collaboration with other Health Districts; managing OR Efficiency and Surgical Traffic Control, and sharing patient care with other healthcare facilities in Capital District, such as Stadacona. The team meets monthly and reports quarterly to the Executive Management Team of Capital Health. The budget and related volume of care are annually determined between these two parties.

The Divisional Management Teams would be assigned an annual budget based on and tied in with an expected volume of care. The teams would be made up of the Surgical Division Head, Surgical Deputy Division Head, Health Services Manager for Inpatients and Outpatients, Manager for the Operating Room and, if applicable, Nurse Manager Intensive Care unit, as well as a member of Capital Health Financial Services / Decision Support. These teams would oversee Clinics, Patient Floors, Step Down Units, Operating Rooms and if applicable Intensive Care Units with the objective to track and improve healthcare outcomes and achieve efficient utilization of resources. Teams would meet monthly and report quarterly to the Departmental Management Team.

A co-management model needs to be introduced in Dartmouth and Windsor as well. Instead of managing the Divisions across the QEII, Dartmouth and Windsor, it is preferable to establish Management Teams for Dartmouth and Windsor. Completing management information on Dartmouth and Windsor will allow for the development of clear definitions of the interdependent roles of all Capital Health facilities, equalization of wait times and standardization of quality control processes, procedures and equipment.

The following are examples of variables that need to be tracked. It needs to be determined which of these data can be extracted from the current management information systems.

Clinics

- Occupancy
- First and return visits
- Access time
- Morbidity
- Diagnostics: imaging, laboratory
- Personnel (vacancies, sick time etc.)
- Supplies
- Capital equipment

Patient Floor / Step Down

- Occupancy
- Average Length of Stay
- Diagnostics (Laboratory, imaging)
- Medication (antibiotics, TPN etc.)
- Adverse events
- Personnel
- Supplies
- Capital equipment
- Morbidity (infection rates, thrombo-embolic events, decubitus etc.)

Operating Room

- Supplies
- Personnel
- Wait time for surgery
- Utilization (on time starts, turn over time, total case time, unused time, Axcess.Rx™)
- Reoperations
- Capital equipment
- Adverse events (cancellations, wait time for urgent procedures)

1.2 linking funding to activity and performance

For this new administrative structure to be effective, we need to connect the teams who provide the service with the budgets to provide the care. The current lack of functional units with budget accountability renders control and steering of resources almost impossible.

The costs of capital equipment and supplies will continue to increase given that novel technology is progressively employed in surgery. Use of less invasive techniques will reduce morbidity, reduce hospital length of stay and promote earlier return-to-normal activity. In other words, the direct costs per procedure will increase while the indirect costs will decrease. Until budgets are connected, the resources of the operating room will be progressively depleted.

Linking budgets is one thing – knowing how much it costs to do things is another. How much does it cost to remove a gall bladder, replace a hip, treat a hernia or perform an angioplasty? That is a question that most Nova Scotians would presume the healthcare system can answer. Remarkably, this is not the case.

Due to current accounting practices and the way budgets are structured in the healthcare sector, there is no efficient and accurate way to calculate the per-procedure cost. One can estimate the cost – we know the unit price of devices and the cost of labour, but we have difficulty assigning the cost of overhead and bulk consumables (such as power, water, anesthesia, drugs) that are lumped in a global budget.

The Ministry of Health in Ontario has been undertaking a Case Costing Initiative since 2005, in order to improve the availability of case costing data and better support evidence-based decision making. As of August 2006, 53 Ontario facilities were participating in the Case Costing Initiative, up from 12 in 2005. Healthcare in Nova Scotia needs to revamp itself in order to have the capacity to make decisions based on a complete picture.

1.3 taking a team approach to care

We have many excellent examples of multidisciplinary team-based care and need to build on their success in expanding the approach to other areas of surgical service.

A team approach is the hallmark of the Paediatric Surgery Program. The Pre Operative Program has resulted in most paediatric surgery patients no longer having to be admitted the night before surgery. Patients and families are given better information about their surgical intervention ahead of time, so they can be appropriately prepared. That means that they avoid the stress of an earlier admission, only to sit around waiting and worrying the night before surgery.

It is noteworthy that the Paediatric Surgery group has had a long-standing AFP, and as such, has already experienced the benefits of being able to redistribute the workload among those surgeons. Although more OR time, beds and clinic space are needed, the workload is well-shared and there is a strong community of colleagues.

Another example of team-based care involves Dr. Virginia Calverly, who is a breast surgeon at DGH. By virtue of working at a facility with such close involvement of family doctors in all aspects of patient management, breast surgery is well integrated between primary and secondary service levels. Patients are discharged with their family doctor having been part of the surgical team and knowing the follow-up requirements. Dr. Calverly also leads an educational clinic which patients and families find to be an excellent, holistic approach to care delivery.

Vascular Surgery points to several examples of a team approach to care, including the Leg Ulcer and Risk Reduction Clinics. The Leg Ulcer Clinic uses a multidisciplinary approach so that patients experience best practices from the collective of team of nursing, dermatology, pedorthics, and vascular surgery. As the result, this clinic is regarded as a front-runner in wound care across Canada.

The Risk Reduction Clinic also uses a multidisciplinary approach to care, in this case for patients who are part of the stroke/hardening of arteries/vascular disease process group. The team provides aggressive medical management with ACE inhibitors, supported by exercise and smoking cessation which can significantly decrease risk of stroke, vascular event and heart attack. The effectiveness of this clinic model also points to the value of approaching patient management from a truly holistic perspective, understanding that 'getting the operation' in only one part of their recovery and health maintenance goal. Making changes to lifestyle is demonstrated to have a tremendous impact on health status – and given the rates of obesity, inactivity and tobacco use in this region, efforts in the areas of health promotion, chronic disease prevention and supportive care in the management of chronic illness cannot be overstated.

By nature, an organ transplant program such as the Multi Organ Transplant Program (MOTP) at the QEII depends on a well-functioning system of care. Intensivists, donor coordinators, transplant coordinators, tissue typing laboratory staff, hepatologists, nephrologists, cardiologists, surgeons, nurses, anesthesiologists and administrative staff are vital links to a patient needing a new organ. There can be no doubt that we have made tremendous strides over the past couple of years as a transplant team at CDHA. There are, however, continued opportunities for improvement.

MOTP surpassed projections this past year. In 2006 MOTP performed 34 liver transplantations, 101 kidney transplantations and 11 heart transplantations. Arrangements for pancreas/kidney transplantations in Halifax have been made which will save patients and their families the travel to Montreal. We experienced a 25% increase in the number of transplants performed in 2006, which is a positive outcome for patients waiting for transplantation in Atlantic Canada.

Capital Health also uses a multidisciplinary team approach in which surgery rotates with a number of other specialty groups as trauma team leader in the emergency department. Since initiation of the trauma registry, the Trauma Team has undergone significant changes. Prior to July 1997, the Trauma Team was largely 'institution-based' and run by residents on-call from various surgical services within the facility, who were directed by the on-duty emergency physicians. In July 1997, a formalized trauma team activation process began with 24-hour, 7-day per week availability of a designated and dedicated Trauma Team Leader. The Trauma Team Leaders are also available for consultation from referring physicians to facilitate transfer decisions and to assess patients, as needed. 'Major' Trauma (CDS) patients with trauma team involvement are demonstrated to experience shorter stays in the Emergency Department.

2.0 taking a system-wide approach

Using the analogy of an airline, many things need to come together flawlessly in order for a patient to navigate the healthcare system effectively. This means that we must think about the system as a whole and recognize the interdependencies of each component as they impact the ability of our teams to perform optimally. It really does come down to a matter our being only as strong as our weakest link.

2.1 information systems

Digital access to patient information is pivotal to improving the efficiency and quality of healthcare services. Access with a single code to a portal system that has been designed to meet the needs of the user is necessary. A district-wide and ultimately provincial information system will reduce redundant testing and imaging, facilitate clinical decision-making and decrease wait time. Faxing and mailing information needs to be replaced by digital communication. Accurate and timely data are necessary to track and if necessary adjust new processes.

2.2 primary healthcare

The interaction with primary healthcare providers needs to extend beyond referral notes and discharge letters. An active dialogue about criteria for referral, possible preventive measures in the home situation of patients and opportunities to provide care to patients at home needs to take place. Referral templates for family physicians grading the urgency of the referral need to be developed. The ultimate objective is to keep individuals in their community and to return patients to their home community after surgical care.

2.3 one-stop multidisciplinary clinics

As planners, administrators and even clinicians, the tendency is to organize healthcare services with greater regard for the convenience of the system than for the needs of our patients. Our approach of booking a consult one day, the test being ordered by the specialist for another day, the follow up visit with the specialist being booked for yet another day…. and so on … fails to consider the stress, lost time from work and disruption that the patient and family experiences because of fragmentation of service. It doesn't need to be that way. Bringing healthcare professionals together in thematic clinics reduces the need for multiple return visits and stimulates dialogue between healthcare professionals. Organizing a smooth journey of the patient through these multidisciplinary clinics is critical.

2.4 specialized clinics

Pooling patients with a similar disorder in a specialized clinic facilitates referrals, standardized patient education, efficient OR booking, the teaching of residents and medical students and tracking outcomes.

We have a remarkable track record already in this regard, with the establishment of multidisciplinary / thematic surgical clinics such as:

- Skull base clinic (ENT/Neurosurgery)
- Pituitary clinic (Neurosurgery/Endocrinology)
- Neurosurgical Pain Clinic
- Stereotactic Radiosurgery Clinic (Neurosurgery/ Radiation Oncology)
- Head and Neck Cancer Clinic (ENT/Radiation Oncology)
- Leg ulcer clinic (Vascular Surgery/Dermatology)
- Atherosclerosis Risk Reduction clinic (Vascular Surgery/Internal Medicine)
- Surgical Endocrinology clinic (General Surgery/ ENT/Endocrinology)
- Hernia Clinic (General Surgery)

2.5 appropriateness criteria for surgery

Proper selection of patients for surgery remains a cornerstone in daily practice. Quality of life studies have shed a different light on some surgical dogmas. For example, the necessity to repair asymptomatic inguinal hernias is under debate. Trials randomizing patients with asymptomatic inguinal hernias for either surgical repair or watchful waiting are underway. Further clinical outcomes studies are needed to evaluate the impact of surgical intervention.

2.6 preparing patients for surgery

Preparing patients socially, mentally and physically for surgery will improve postoperative recovery, shorten hospital stay and minimize readmissions. Exercise programs, quitting smoking, nutritional counseling, discharge planning and arranging home care services need to be addressed by managers who navigate patients through the process. Engagement of the patient in the healthcare process is vital. Accountability at the individual level is critical.

This opportunity not only presents itself post-operatively. We can use the time that patients are on wait-lists for procedures to support them in becoming active in personal health strategies. Rather than having patients languish on wait lists for months – likely bearing the stress of anticipating an operation and possibly suffering

physical deterioration as their disease progresses, this time should be seized as an opportunity to begin active treatment. Once on a wait list, patients should be considered to be 'admitted' to a program, assessed and supported in an active health management regime to prepare them for a good surgical outcome and better long-term prognosis.

2.7 appropriateness of surgical facility

Capital Health provides surgical services to the Workers' Compensation Board. In other provinces, these services are delivered at private facilities. This option could be explored with WCB Nova Scotia. In 2006, WCB represented 7.1% (279 cases) of day surgery cases and 2.4% (185 admissions) of inpatient discharges at the QE II (Table 6). In addition, cosmetic surgeries are covered by the patient and therefore could be offered at private facilities. Continued performance of cosmetic surgery is critical for the residency programs in plastic surgery and ENT.

Table 6

	Intervention Provider Service	Total Cases	WCB Cases	% WCB
Day Surgery		**3,940**	**279**	**7.1**
	00034 Orthopaedic Surgery	1,565	204	13.0
	00030 General Surgery	884	5	0.6
	00035 Plastic Surgery	815	65	8.0
	00060 Otolaryngology	371	2	0.5
	00036 Thoracic Surgery	160	0	0.0
	00037 Vascular Surgery	98	1	1.0
	00032 Neurosurgery	47	2	4.3
QEII Inpatients		**7,606**	**185**	**2.4**
	00030 General Surgery	2,462	4	0.2
	00034 Orthopaedic Surgery	2,344	121	5.2
	00032 Neurosurgery	736	35	4.8
	00060 Otolaryngology	689	1	0.1
	00036 Thoracic Surgery	585	4	0.7
	00037 Vascular Surgery	477	3	0.6
	00035 Plastic Surgery	313	17	5.4

2.8 publishing wait times

Publishing access times of hospitals in newspapers or on a website may increase the awareness of patients and healthcare professionals about the choices available to them in terms of when and where they can receive surgical services. A pilot project in collaboration with the Cumberland DHA with the has begun, with Capital Health patients who suffer from groin or umbilical hernias being offered the option of undergoing surgery in Amherst.

2.9 common wait lists

Common waitlists improve efficient use of resources. This is the basis of queuing theory: a single line feeding into multiple tellers works better than multiple line-ups feeding into multiple tellers. Common waitlists secure equitable wait times.

The concept of a single common waitlist could be taken beyond the borders of Capital Health to include the entire province. Accurate information about wait times throughout Nova Scotia is not yet available. It is known, however, that wait times at regional hospitals tend to be shorter than at Capital Health. Redirecting patients within Nova Scotia would require a Provincial Surgical Patient Registry. Compensation of physicians to submit data to such a registry needs to be addressed. Surgical care coordinators managing wait lists are needed to actively manage these provincial waitlists.

2.10 centralized booking

Operating time at Capital Health is assigned to individual surgeons with the exception of cardiac surgery and ENT. It is left up to the surgeons to use allotted time efficiently. This system stems from the fee for service era. Centralized booking will allow the more efficient use of operating time and the coordination of demands for ICU, step-down and floor beds. Electronic booking will improve efficiency, increase reliability and allow access by multiple users.

2.11 grouping procedures and staggering rooms

Booking a list of similar procedures reduces turn over time because positioning and set up do not change during the list. Cases can be staggered when two adjacent operating rooms are available. While one team is finishing, another team can prepare the patient in the other room to reduce turn-over time.

2.12 ICU, IMCU

The capacity of Intermediate Care Units (IMCUs) and step-down units at Capital Health needs to be expanded. A plan for expansion of IMCUs which was submitted in 2006 is awaiting funding. At present, patients requiring IMCU are occupying ICU beds limiting ICU capacity when no beds are available in the IMCUs. Moreover, patients who need to be isolated due to multi-resistant micro-organisms cannot be accommodated in the current step-down units because of infrastructure limitations.

2.13 patient wards

On average twenty surgical beds are occupied by Alternative Level of Care (ALC) patients who are waiting transfer to a nursing home. The Province of Nova Scotia is opening more long term care beds in Capital District which is expected to reduce the ALC pressures and by extension, broader pressure on the healthcare system. The average length of stay (ALOS) of most surgical patients at the QEII is according to the expected length of stay (ELOS). The objective is to reduce hospital stay below the national average by using standardized care paths, also known as fast track surgery protocols. This will increase the capacity of the wards. Fast track protocols will be developed following joint replacement surgery, cardiac surgery and colorectal surgery.

2.14 OR efficiency

Efficient use of available resources is one of the first steps toward improving capacity. Smooth throughput in the operating rooms is a matter of teamwork. OR Efficiency Committees were struck at the Victoria General and Halifax Infirmary, consisting of surgeons, anaesthesiologists, nursing staff, patient attendants and decision support. They have developed guidelines to review efficiencies

in the OR's of the QEII and to identify guidelines that would improve efficiency in the OR. This process started in October 2006 and was completed in February 2007. The guidelines are:

- History and physical and consent accompany the booking form. The consent is reviewed on the day of surgery in a timely fashion.
- Surgeon and anesthesiologist are present in OR at 07:00 on Monday, Tuesday, Thursday and Friday, at 08:45 on Wednesday.
- Assessment by OR nurse is limited to the following checklist: wristband, procedure, NPO status, consent, allergies, positioning issues, marked operative site and availability of blood products if required.
- Intravenous access (heparin lock) is established prior to entry into operating room.
- Surgeon, anaesthetist and nursing staff have "One Minute Meeting" at start of the day to identify case specific needs, time breaks and discuss urgent/waitlist cases.
- Patient is on the OR table at 07.30 or earlier on Monday, Tuesday, Thursday and Friday, at 09.00 on Wednesday.
- Parallel processing of Nursing Set up and Induction of Anaesthesia/Positioning.
- Attending Surgeon stays in room until skin closure starts.
- Second and consecutive patients come in 3 hours prior to estimated start time with the exception of Neurosurgery and Cardiac Surgery.
- Sequence of patients: book day surgery first if possible, start first case regardless of availability of non-ICU/non step down beds and avoid booking patients requiring ICU/step down as first cases if possible.

After implementation of the new guidelines, it has been observed that the percentage of cases starting on time has increased from 50 to 80%.

2.15 standardization of surgical equipment

The preferences of surgeons for surgical instruments, patient positioning and special devices vary widely. These variations are the result of different training environments and physician autonomy. Lack of standardization requires a greater inventory of instruments and devices, slows down set up and turn over and puts a greater demand on sterilization departments. Inefficiency and increased capital and operating costs are the consequences. Documenting different set ups, sharing these differences among surgeons and increasing costs awareness are essential steps to implement change.

2.16 capital equipment

Approximately $80 million is required to replace and upgrade capital equipment at Capital Health. The need for advanced equipment will continue to grow considering the strides of innovative technology. These new technologies allow surgical procedures such as navigated surgical ablation and percutaneous endovascular procedures, which are associated with reduced surgical trauma enabling faster recovery. Operational cost savings due to standardization and cost awareness need to be reinvested in capital budgets.

3.0 making the most of the facilities we have

We need to take an integrated and district-wide approach to the use of surgical facilities available to us at Capital Health and match patient need with the locations where our potential capacities exist.

3.1 OR capacity QEII

The recruitment of new anaesthesiologists will allow for an increase of surgical program capacity, as will the introduction of 8-hour rooms instead of 10-hour rooms. Eight-hour rooms will also improve efficient scheduling of nursing staff, however, pending shortages of nursing staff in the ORs of the QEII remain a concern. On a separate note, performing surgery at one site in Halifax instead of two sites would generate huge savings of costs of personnel and equipment.

3.2 OR capacity Stadacona

OR staff and two ORs are available at Stadacona. Until now, the medical facility at Stadacona has been reserved for the military. The medical military staff is seeking more exposure to surgical scenarios for the purpose of training, recruitment and retention, opening the door to mutually advantageous collaboration between Capital Health and the Department of National Defense. The objective is to provide day surgeries at Stadacona to Capital Health patients and to improve the surgical services to the military.

3.3 OR capacity Hants Community Hospital

The team at the Hants Community Hospital is a vital link in a district-wide system. The work being done in Hants with their hernia clinic (outpatient surgery for patients from across Capital Health who have simple hernias to be repaired and who would not require admission after the surgery) points to a model of system-wide efficiency, which ultimately provides timely access by patients to high quality care.

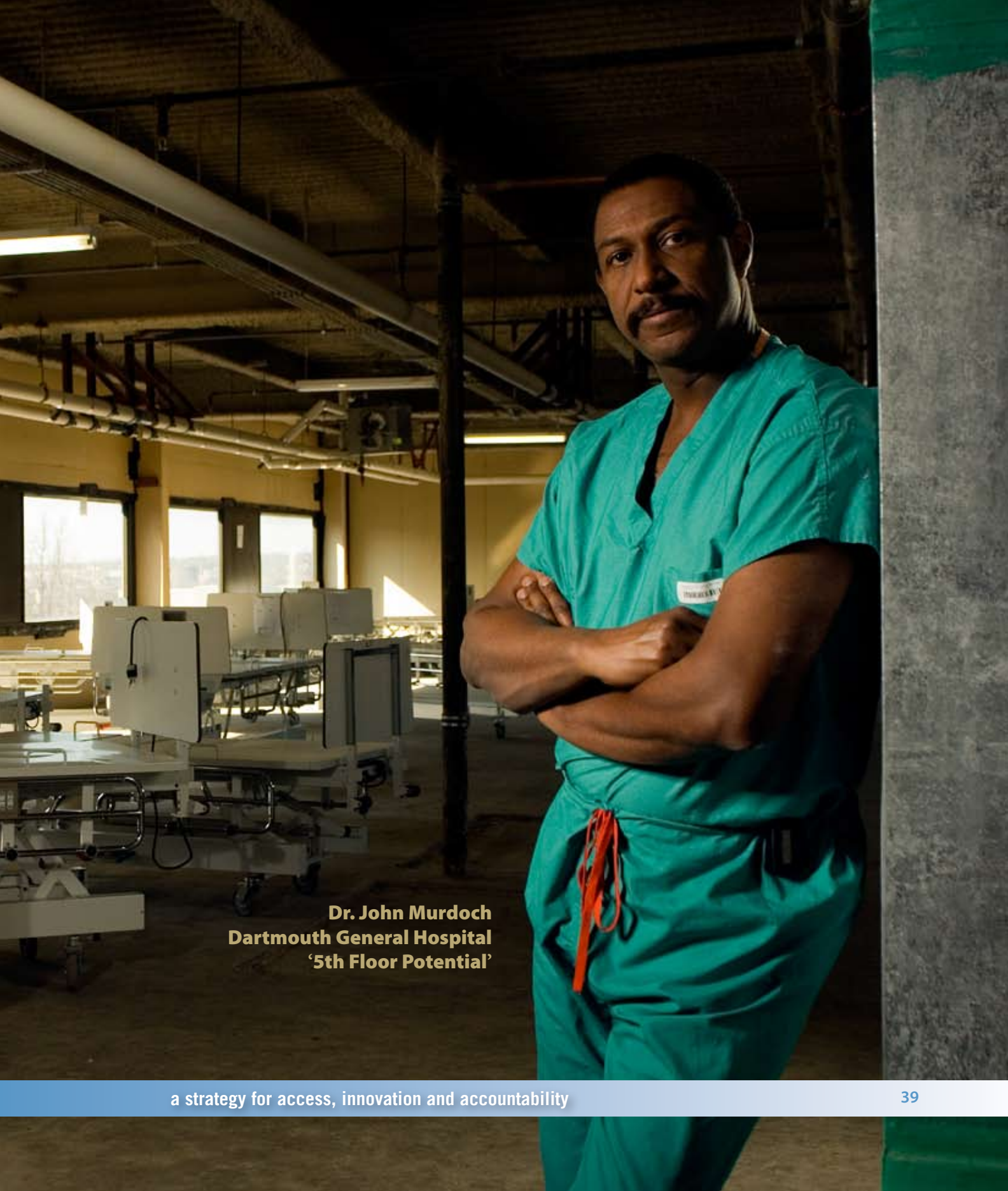
At present, one room runs for three 10-hour days per week, supported by one general surgeon, one anaesthesiologist and nursing staff. This facility demonstrates how effectively a community hospital can provide high quality day surgery services for patients beyond its immediate catchment area in ways that are far more efficient than using the infrastructure intended for highly sub-specialized and inpatient care. The utilization of OR time in Windsor and possible expansion needs to be reviewed, with consideration given to activating the second OR that is available at the facility.

3.4 OR capacity DGH

Not only is Capital Health the sole quaternary and tertiary healthcare centre east of Montreal, it is the only district in the province without a regional hospital to serve local residents. Supporting the DGH is central to the strategy to address the access gridlock. It should be noted that the population that is served by the Dartmouth site (160,000) is larger than that of Cape Breton.

Even so, the Dartmouth-based surgery program is unable to offer 24/7 surgical coverage because of a shortage of surgeons, operating room time, beds and nursing capacity. Gynaecology, Oral Maxillofacial, Otolaryngology, Urology and Plastic surgery are all required to support the Emergency Department and Dartmouth area residents. Frequently, when there is no specialist available on call at the DGH, patients are sent to the QEII, contributing to the overburdened emergency department on that site and often to delays in timely care.

Because the resources made available to the Dartmouth site in fulfilling its surgical role are far from adequate, surgical inefficiencies and backlogs are created throughout the rest of Capital Health – with QEII-based surgeons providing after-hours and weekend care for the entire district.



Dr. John Murdoch
Dartmouth General Hospital
'5th Floor Potential'

The goal will be to have at least 80% of Dartmouth area residents receive their inpatient surgery at DGH and above 85% receiving their day surgery in Dartmouth. Furthermore, only half of the Dartmouth catchment area orthopaedic surgical inpatients are admitted to the DGH. Overall, the capacity for orthopaedic surgery in Capital Health fails to align with patient need – a service gap that extends far beyond the boundaries of Capital District. More than 40 % of orthopaedic patients in Queens County, Colchester County and Cumberland County come to the CDHA for treatment (Figure below).

Fifteen-to-twenty patients with fractures waiting daily for surgery at the QEII is more the rule than the exception. Currently 26 orthopaedic surgeons are active in Nova Scotia while we require as many as 33, based on the service population. Deployment of two additional orthopaedic surgeons at DGH is mandatory in order to provide 24/7 orthopaedic surgical service in Dartmouth and hence relieve the load at the QEII.

Nova Scotia Orthopaedic Inpatient 2006/06
% residents per DHA treated at CDHA

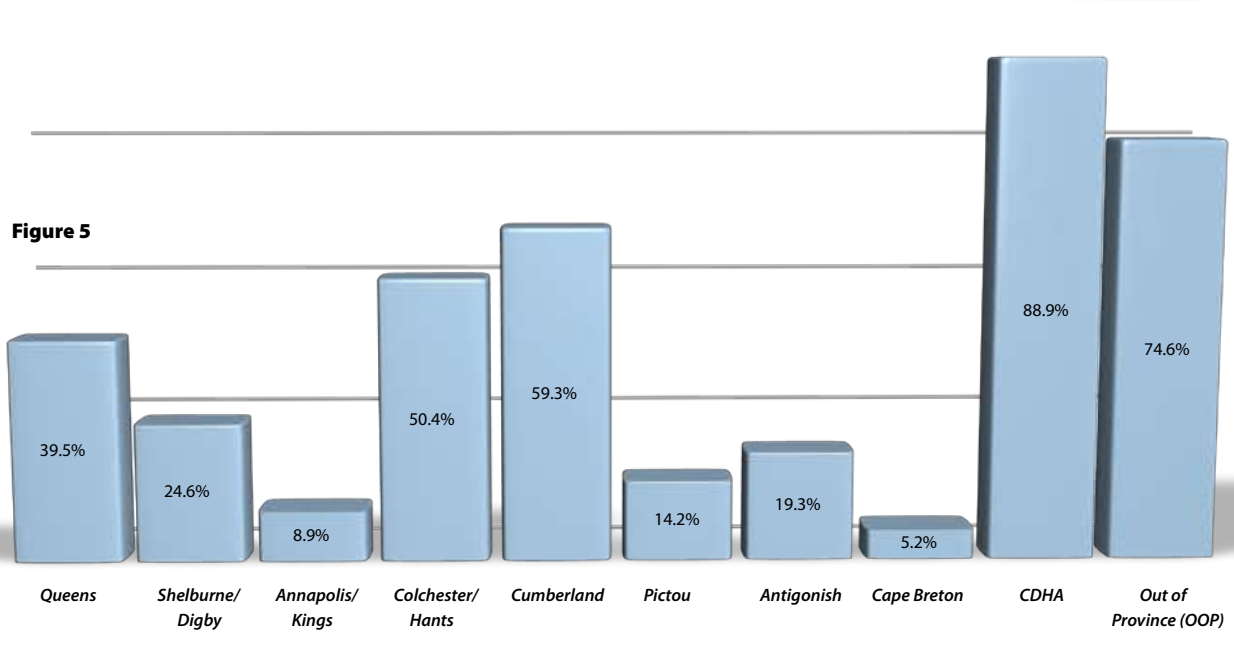


Figure 5

A system-wide strategy recognizes that the Dartmouth site is well positioned to assume a substantially greater role within Capital Health's surgical program. At a minimum, there is currently a vacant operating room with the potential to outfit for use. In a more comprehensive approach, the undeveloped 5th floor of the facility is waiting to house at least 60 additional beds, which would increase the capacity of the district as a whole.

Clearly, there is tremendous opportunity to better integrate the Surgical Program in Dartmouth such that it is able to provide greater capacity for secondary care to our district – thus allowing the QEII facilities to increase its tertiary and quaternary capacity for the province and Atlantic Canada. Under the leadership of Dr. John Murdoch, moving forward on an agenda to strengthen the DGH surgical program is a priority for the Department as a whole.

4.0 addressing the nursing shortage

Regardless of the success we might have in recruiting surgeons to the department, these efforts will be for naught if we fail to secure an appropriate complement of nursing talent. Ironically, surgery was most recently challenged in its productivity due to a shortage of anaesthesiologists. Now that it appears this human resource crisis has abated, the nursing shortage is proving to have equally ominous and devastating impact. To be sure, this speaks directly to the extent to which surgeons depend on a fully functioning team to provide care to our patients.

The shortfall of surgical/perioperative nursing resources is particularly troublesome. Capital Health has already tried a number of innovative recruitment strategies, but with minimal success. Perioperative nursing is not a core rotation in the Dalhousie Nursing Program, and therefore most nursing students do not have exposure to perioperative nursing during their clinical rotation curriculum. Nurses at the QEII are therefore trained to work in specific surgical ORs (i.e. neurosurgery, cardiac surgery etc). As a result, new nursing graduates cannot easily slide into vacant perioperative roles to fill the shortages, and Capital Health has is a cadre of sub-specialized surgical nurses, but not a general surgical nursing pool that could easily float from one surgical service to another.

5.0 putting the 'patient at the centre'

Models including satellite surgical outpatient clinics, where specialists can see scheduled patients in community-based practice sites, are demonstrated to work well for patients as well as to strengthen the relationship between specialists, family doctors and other members of the primary care team. We are building on this approach at the Cobequid Multi-Service Centre and must create additional opportunities throughout the District to promote this approach to care.

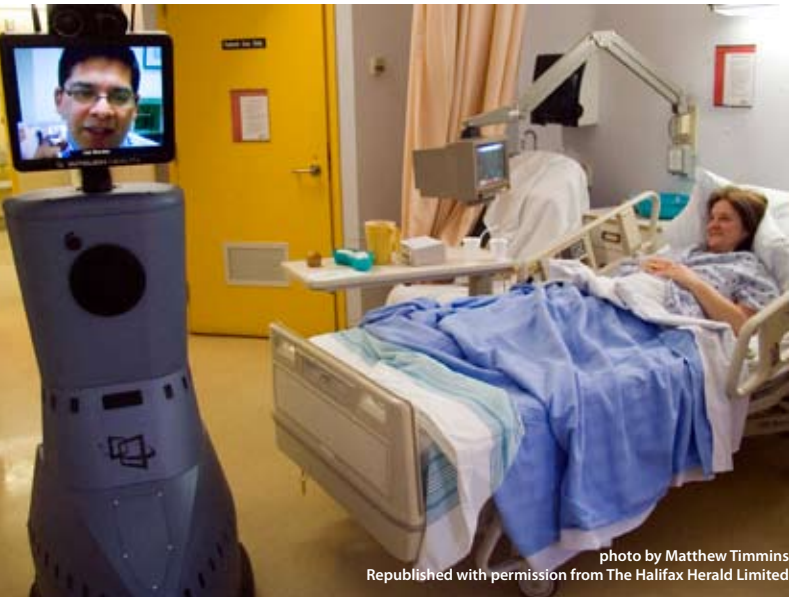


photo by Matthew Timmins
Republished with permission from The Halifax Herald Limited

More novel techniques including robotics to provide 'remote surgery' are being developed by local surgeons. Researchers and physicians at the Brain Repair Centre have developed portable technology that allows them to perform procedures that previously were only available in major neurological facilities. The equipment is used during a procedure known as Deep Brain Stimulation and is used to treat progressive neurological disorders, like Parkinson's disease. The system allows the neurosurgeons to take their expertise to community hospitals that have a neurosurgical unit, but which lack the infrastructure and skill required to perform these types of treatment. Recently, a team from the Brain Repair Centre preformed the first procedure using the new system at the Saint John Regional Hospital in New Brunswick.

Another innovation involves telesurgery – the use of a robot that will allow specialists to perform remote neurosurgical procedures on patients across Canada. Robotic surgery has been used to perform procedures on the heart and abdomen, but the doctors at the Brain Repair Centre are pioneering the technology used to provide remote treatment for the brain.

The most immediate application of the technique will be to provide treatment to patients who have suffered a neurological injury during an accident such as a fall or crash. While these techniques may sound like science fiction, they hold promise to transform the future of service delivery – and we are at the forefront in making them mainstream.

6.0 implementing Axcess.Rx™ system district-wide

Optimizing the use of physical infrastructure across the district is one part of the solution. The other is to take a systematic approach to tracking wait lists across all surgical specialties so that patients can be directed to the most appropriate provider at the most appropriate site and that resources can be directed to where they are most needed.

Dal Surgery adopted the Axcess.Rx™ software system in November 2005 to track the wait list. This system allows qualification of patients according to urgency level. Each urgency level has been linked with an acceptable wait time based on national standards.

Axcess.Rx™ is a web-based enterprise software application that assists physicians in managing patients awaiting consultation, diagnostic tests, surgery and other elective procedures. It will provide hospital managers and physicians with accurate and concurrent data on the status of these patients and a clear view of unmet needs. The application, which mirrors actual healthcare processes, has the potential to:

- provide contextually-sensitive tools to assist providers in managing patients while they wait for services
- accommodate the need to identify varying levels of urgency and set relative priorities
- accommodate referral between providers thus capturing the whole continuum of waiting
- facilitate the tracking of investigations required during the process of care
- collect data on the availability of the patient – and with that information, and the status of required investigations, indicate the patient's readiness for the service
- present individual or composite lists in a user-friendly format to assist with patient selection and review
- interface with other hospital systems to facilitate data transfer and avoid data re-entry: patient booking in other hospital systems is thus facilitated
- contain processes for auditing list maintenance and care maps
- capture all relevant dates during the period of waiting and the processes of care
- provide a reporting functionality that supports the identification of bottlenecks in the care process and thus inform resource allocation, planning and policy processes

Most patients with cancer will be qualified as urgency level II while patients with varicose veins will be categorized as urgency level V(*). With the exception of off-site surgical clinics, all patients waiting for surgery have been entered into Axcess.Rx™.

The current number of patients waiting for surgery within Dal Surgery exceeds 5,000. More than 60% of these patients are waiting longer than the Canadian standard (it should be noted that cardiac surgery has a separate wait list / prioritization). Since July 2006, surgery time has been prioritized within Dal Surgery based on acuity. This has resulted in a reduction of wait time for surgery for either lung or esophageal cancer from 12 to 6 weeks. However, the additional time for these surgeries was created by taking time away from other divisions which is reflected by a stable total number of patients waiting for surgery during October, November and December 2006. This was in spite of additional elective surgeries performed during the weekends in November and December 2006.

The ENT group has long respected an internal principal to meet wait time standards for cancer patients. That means that occasionally cases are shuffled in order to accommodate the cancer patients' needs. In recent months, given a 25% reduction in OR availability due to the anaesthesia shortage, the ENT service was required to apply the OR cut asymmetrically in order to continue to uphold the principal of cancer patient priority. They have applied 30% of the cut to Head & Neck (which is where the cancer patients are) and 70% of the cut to the rest of the ENT group.

More broadly, the wait list for cancer patients has been up to three-times what it should be (for example, patients were waiting three months with lung carcinomas, where standard of care is four weeks). To address this, the OR schedule was adjusted to give priority access to these cases and the two surgeons on staff worked virtually around the clock to keep pace with patient need. This resulted in the wait list being cut in half – still longer than the accepted standard, but a marked improvement nonetheless. Moreover, it is very common for surgeons to work after hours by adding a case to the schedule at the end of the day rather than to have to cancel the operation, making a 12-15 hour day on top of a 1-in-2 call not uncommon.

This approach to patient prioritization would not have been possible in a fee-for-service environment and speaks to the impact of thinking and behaving like a system, even on a relatively small scale.

7.0 Paediatric Surgery wait-list project

Along with the Surgical Chiefs of Canada, the Department has agreed to participate in a surgery wait-list project which is being funded by the Federal government. This will provide us with good statistics concerning the wait-times across the country and allow us to compare our performance as related to that of other regions. It also will be useful in developing a method by which wait-lists can be measured and followed which might be transferable to the non-paediatric patients.

8.0 managing demand

Avoiding the necessity to undergo surgery may prove to be the most powerful strategy to reduce surgical wait lists. Not only are people living longer, but they are living longer with more years of disability associated with chronic disease. Evidence shows that over 40% of chronic diseases and more than 50% of premature deaths due to chronic disease are avoidable.

Cardiovascular disease, for example, is a major health problem of our time. Obesity is recognized as one of the greatest contributing factors. According to the 2004 Canadian Community Health Survey, rates of obesity for adults have doubled over the past two decades and tripled for adolescents. Today, one out of every four Canadian children needs to lose weight, with 18 per cent overweight and eight per cent obese.

In Capital District, 51.8% of the population is considered to be overweight or obese. The problem is amplified by the fact that youth are developing poor eating habits early in life. Diets have evolved to include more calories, sugar, salt and fat. Ninety per cent of fast food is processed, which often supplies empty calories, contributing to over-eating. Clearly, this is not the healthiest diet for anyone. There is a strong case for the need to equip people with the knowledge, skills and supports to achieve and maintain healthy weight – thereby reducing their risk of developing disease.

Other examples of preventable lifestyle-related risk factors are smoking, physical inactivity and stress. A number of important scientific papers clearly demonstrate that lifestyle changes are key components to managing chronic disease. For example, studies carried out over the last half century have shown that cigarette smoking, elevated blood pressure, and high cholesterol increase the risk of cardiovascular disease. It has been estimated that risk factors are attributable to 50 to 70% of the incidence of heart disease.

Diabetes is another significant chronic illness affecting health services utilization for which community-based prevention and management strategies must continue to be developed. If there is any question to the value of investing in such strategies, consider the evidence that a 1-percentage point reduction in HbA1C has been proven to result in a: 14% decrease in total mortality, 21% decrease in diabetes-related death, 14% decrease in myocardial infarction, 12% decrease in strokes, 43% decrease in amputations, 24% decrease in renal failure, 14.5% decrease in cataract extraction and a 37% decrease in all microvascular complications. If left untreated, 80% of people living with diabetes will succumb to heart disease or stroke.

All this points to the fact that Capital Health needs to increase emphasis on health promotion, self care, case management, health education and the prevention and management of chronic disease in order to start managing demand. When one considers that the cost of chronic diseases in Nova Scotia accounts for at least 60% of all healthcare expenditures, that local family doctors report upward of 70% of patient encounters involve some chronic disease episode and the opportunities to avoid and shorten hospital admissions for the treatment of acute complications of chronic illness, managing chronic disease in the community makes good business sense.

Screening programs are central to early detection of diseases such as colonic polyps, which may eliminate a patient's need for surgery. A surveillance program for polyps of the colon has not been implemented in Nova Scotia and as a consequence, more than 25 % of all colonic surgeries in Nova Scotia are done as emergencies for either obstruction or bleeding.

Genetic mapping may offer the opportunity to perform prophylactic removal of precancerous tissue. Genetic testing for medullary thyroid cancer, ovarian cancer, colon cancer and breast cancer is progressively employed. Prophylactic surgeries are associated with less morbidity and mortality than surgeries for clinically evident disorders.

Part of the solution to wait list management is therefore to address the issue of demand, which is well upstream from the OR. It involves strategies to encourage and support healthy lifestyles. While by the time a patient requires surgery to correct a problem created by unhealthy weight, smoking or physical inactivity, they are well into the secondary care system. Surgeons nonetheless have an important role to play as part of the health team promoting strategies to reduce future risk. Indeed, patients are often most receptive to 'teachable moments' when they have experienced a health crisis and are keen to pursue personal reform. Surgeons must be part of that supportive messaging, reinforcing information about the importance of risk reduction and avoidance.

9.0 innovating surgical techniques

Less and less surgery is being performed with a scalpel and involves new techniques requiring new skills. These are being developed by new learners as well as by seasoned professionals who are adapting to the rapidly changing theatre of patient care.

Within our department, we have amassed considerable talent in the area of minimally invasive surgery (MIS). This technique has been proven to reduce post-operative pain and accelerate a patient's recovery, resulting in shorter overall lengths of hospital stay (which is good for the system) and more rapid return to activities of daily living (which is good for patients, family and society as a whole).

In order for MIS to become mainstream, however, a broader approach must be taken to the traditional cost-benefit analysis. Indeed, while lengths of stay are reduced on the inpatient side of the system, equipment and supply costs as well as procedure times are increased. If budgeting were based on outcomes and system-wide efficiency, MIS would fare much better in business planning processes than it does today. If the economic benefits to patients and society were factored into the equation, there would be absolutely no argument as to the need for MIS to become the standard of care. Taking a more system-wide approach in program planning is a theme in our overall strategy and is imperative when an innovation will actually transform the entire system of care.

10.0 collaborating through the Nova Scotia Surgical Council

Collaboration in clinical care extends across Nova Scotia and there is a strengthening relationship among the Chiefs of Surgery from each Nova Scotia health district, who have established a forum to discuss ways in which surgical services can become more efficient province-wide. Dr. Tim Wallace, Chief of Surgery of Cumberland Regional Hospital in Amherst is the Chair of the Nova Scotia Surgical Council. The Council is establishing a Nova Scotia Surgical Patient Registry to ensure that clinical services are provided in the right place at the right time.

11.0 AFP: enabling teamwork and accountability

A continued and effective AFP environment is an essential precondition to such an approach. There is plenty of evidence that moving to an AFP environment enables patient-centred care through system-wide thinking, collaborative case-load management, multi-disciplinary teamwork and the discovery of new techniques that improve the patient experience. An AFP is also central to supporting an academic mandate by allowing time to be protected for teaching and research. Those divisions within Dal Surgery with long-standing AFP agreements demonstrate the shifts in clinical and academic performance that were made possible. Indeed, even though we are only three years into our first Department-wide AFP, the general consensus is that a transformation is underway and that it is a very positive one.

Three of our nine Divisions (Otolaryngology, Neurosurgery and Paediatrics) have had an Alternative Funding mechanism in place for several years. While the transformation across the rest of the Department in moving to the new funding environment has been rapid, there can be no doubt that the long-term benefits of an enduring AFP are evidenced in those Divisions with a longer history with that funding model. Indeed, there is substantial feedback to indicate that this has been an extremely positive development in terms of sub-specialty expertise development, surgical wait list management, support for academic activity and recruitment.

In moving forward we strongly believe that funding must be linked to deliverables rather than to FTEs and stakeholders need to acknowledge the value of protected time for academic activity. There also needs to be developed a surgical human resource plan (including physician specialists as well as other health professions who are part of the surgical care team) that matches providers with population health needs, now and in the future. We also need to invite Dartmouth and Hants into a District-wide AFP.

With respect to our Paediatric Surgery division, their current AFP agreement has been in place for two years and expired on April 1, 2007. Further negotiations for a new plan are beginning and this is being done in conjunction with Dal Surgery. It is felt that successful negotiation of parity with adult surgical specialties is a very important issue again this time.

AFP accountability must also link funding to performance, with each Dal Surgery Division being supported to develop targets for response times for consultations in the Emergency Room, in house consultations, wait times for urgent and non-urgent ambulatory consultations and wait times for day surgeries and inpatient surgeries. Obviously wait times for surgery will vary according to acuity. Dal Surgery will guarantee federal benchmarks on the presumption that personnel, resources and an appropriate management structure will be established.

Our deliverables need to address Dal Surgery's tertiary and quaternary mandate as well as our responsibility to provide secondary care to local residents. Capital Health continues to provide secondary surgical services to patients from districts, other than Capital District. The causes are multiple but every effort should be made to repatriate secondary surgical care to the home districts. Equally vital will be to develop DGH's capacity and role as the regional facility for Capital Health.

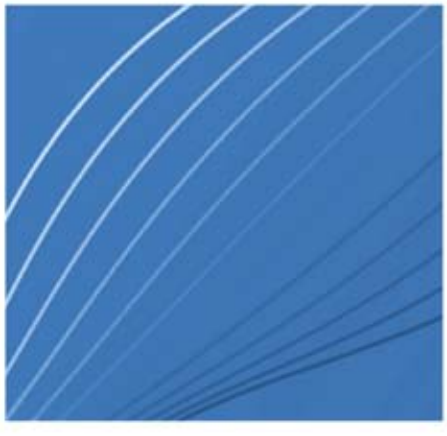
Having the right number of surgeon-specialists is obviously key to the success of our program, but we are hobbled without other team members including anaesthesiologists and nurses, and the right equipment and facilities. A human resource crisis has been looming and will not go away, and capital equipment needs will only continue to mount. Failure to take immediate and sustained action will make it impossible to meet patient needs.

On the solid footing of our alternative funding environment, we are ready to establish a co-management structure based on functional units directed by lead surgeons and lead nurses that would encapsulate a systems approach to organizing and delivering care. It would create a framework that can address clinical needs, allow responsible choices, improve quality of care, stimulate cost savings to generate funds for innovation and match clinical production and budget.







When we strive to become better than we are, everything around us becomes better too.

— Paulo Coelho

supporting a culture of learning, inspiration and discovery

Surgical techniques have been evolving for thousands of years. What has remained constant throughout history and across civilizations is the drive to improve what we do, discover cures and reduce mortality – and this is central to our promise of excellence in patient care. There can be no doubt that the last twenty years have seen unprecedented change in how surgery is performed. What was once science fiction has become contemporary standards of care – and we continue to sustain a rapid pace of discovery. In an academic health sciences culture, it is impossible to isolate clinical activity from the pursuit of knowledge.

Being a teaching hospital means more than providing technical instruction to surgeons in training. It means inspiring an endless pursuit of excellence in both the science and art of medicine. Dal Surgery has embraced the CanMeds proficiencies, as developed by the Royal College of Physicians and Surgeons of Canada to provide a well-rounded learning experience. This includes communication and collaboration skills, health advocacy, professionalism, scholarly components and office and career management.

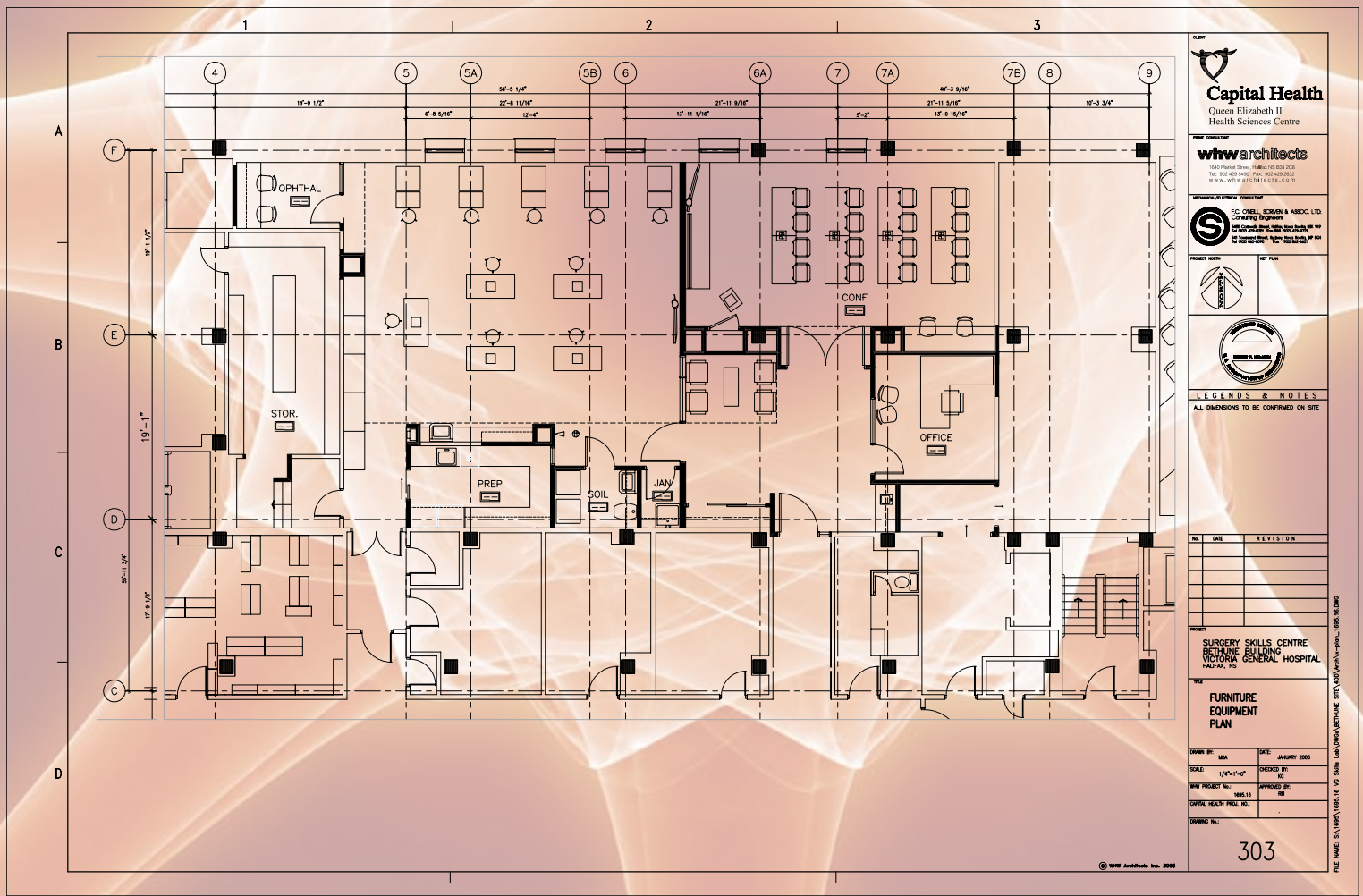
This region is fortunate to be home to internationally acclaimed academic talent, largely due to the alternative funding environment which supports teaching and research activity. To continue to succeed, we need to choose areas of focus and do them well, building on our reputation as national and global leaders in our areas of excellence.

Our academic and research program extends well beyond Halifax and includes sites across Nova Scotia and in New Brunswick. In preparing this report, our New Brunswick colleagues have expressed a long-standing sense of disconnection and desire to forge closer relationships as part of a Maritime team. This is a priority of departmental leadership and will be achieved a number of ways, including making better use of technology to remove the factor of distance from the art of collaboration.

Skills Centre for Health Sciences

Patient care requires that competency in many skills – manual, cognitive, communicative and administrative – be mastered by all healthcare professionals of the 21st century. In centuries past, apprentices were taught healthcare skills by the old masters. The apprentice followed the master day and night and learned by observing, copying and practicing.

While in recent times, healthcare has undergone changes that are unparalleled in terms of both magnitude and speed, the approach of learning through observation and experience remains constant. Today, expertise must be developed to employ the latest technology. But instead of following the master and learning in daily practice the healthcare professional of this century can master skills in a virtual environment, diagnosing and treating simulated patients who cannot be hurt and are available on demand.



Medical simulation used as a tool in medical education now comes in many forms. Education is delivered on CD-ROM, web-based interactive, teleconference, virtual reality trainers and a full range of part-task to sophisticated computer assisted human patient simulators. There is a growing body of evidence that complex cognitive and procedural tasks can be simulated in a realistic environment and that such education can affect positive change in the practice of healthcare providers. Uncommonly occurring but critical events (difficult airway scenarios, multiple trauma, drug reactions, multiple patient scenarios, etc.) can be learned and practiced over and over until mastery is accomplished. Learning opportunities are not dependent on the availability of certain types of patients, nor is patient safety or consent an issue.

The teachers and learners set the time and the agenda. Immediate feedback, often augmented by videotape of each session, creates a highly effective learning environment for trainees. Trainees from more than one discipline working together may also practice in the safety of a simulated environment. This allows a relaxed working-out of roles, feedback from different view points and an opportunity to 'team build.'

Although there has been a proliferation of medical simulator centres established throughout the United States and in Europe, there is presently no comparable medical simulator centre in Canada or capacity for program development and delivery east of Montreal.

Technical proficiency is only one aspect of the skill set required by surgeons, and every other healthcare provider for that matter. The facilities and training tools which are required for healthcare education are very similar for all healthcare disciplines. Understanding how to interact and communicate effectively within a multidisciplinary team, and with patients and families, is equally vital and must be facilitated in the contemporary learning environment. Ideally, healthcare providers will develop these skills at the earliest point in their training, in settings that simulate real-life team-based care, and this is precisely what the Skills Lab is intended to achieve.

To this end, a multidisciplinary training facility that brings together Medicine, Dentistry and Allied Health Professions concentrates all skills training for healthcare professionals in a single institute. The various players in the healthcare process work as a team with the patient at the centre of their medical environment. This not only achieves the efficiency of shared infrastructure, but builds a culture of inter-professional teamwork from the earliest point of learning.

EAR Program

Dal Surgery's Ear and Auditory Research (EAR) is unique in the Maritimes and was started in 2001 by Dr. Manohar Bance. It has become the regional referral base for tertiary and quaternary care otology and a major Canadian research centre in this field. Clinically we deal with disorders of hearing and balance, destructive diseases of the middle ear, skull base tumors arising from ear related nerves, and vertigo and balance disorders.

Hearing and balance disorders (HBD) are among the most common disorders affecting Canadians. The prevalence of HBD increases rapidly with aging, with hearing loss being the third most common disorder in older adults. In children, more than 5% of newborns have some hearing deficit with 1% having moderate to severe deficits. Children with hearing loss have delays in language development, reading and social development, as well as behavioural problems, with both personal and societal costs.

The EAR laboratory is one of a handful of research facilities in the world capable of measuring microvibrations of the ear and are on the leading edge of assessing middle ear hearing reconstruction techniques.

Our $4.1 million Atlantic Innovation Fund (AIF) grant in 2006 has enabled us to work with industry partners in developing new hearing technologies and to establish new clinical hearing technology as well as a bone conduction laboratory. Our research interests are by nature collaborative, with cross-appointments to Human Communication Disorders, Anatomy and Neurobiology, Biomedical Engineering, Medical Education, and the Division of Neurosurgery. We also have a number of interdisciplinary and specialized clinics, including:

- Skull Base Clinic (with the Division of Neurosurgery)
- Pediatric Hearing Loss clinic (with Pediatric ENT at IWK)
- Vertigo Clinic (with physiotherapy)
- Cochlear Implant Clinic (with Nova Scotia Hearing and Speech)
- Eustachian Tube Clinic (with Rhinology)

In addition, we have a key partnership with Nova Scotia Hearing and Speech and members of the division are pioneering a program as the first Canadian centre to implant active middle ear devices that vibrate the middle ear bones directly, which can be more effective than hearing aids.

Brain Repair Centre

Under the leadership of Dr. Ivar Mendez, Dal Surgery's world famous Brain Repair Centre (BRC) is the most comprehensive health R&D partnership ever developed in Atlantic Canada. The primary objective of the BRC is to integrate basic and clinical research scientists who are united in their common goal to develop strategies to treat neurological and psychiatric disorders. The specific disorders of initial focus are Parkinson's disease, spinal cord injury, and amyotrophic lateral sclerosis (ALS).

The BRC has attracted new infrastructure with the establishment of the Neuroimaging Research Laboratory at the Halifax Infirmary and the state-of-the-art Cell Restoration Laboratory at the Dalhousie Medical School. The BRC has also been the catalyst for construction of the new five-story Life Sciences Research Institute (LSRI) where the BRC will be housed as the lead tenant. Consolidated research endeavors at the LSRI are crucially important for the continued development of neurosurgical research in our region.

A neuroscientist and a neurosurgeon, Dr. Robert Brownstone's research at the Brain Repair Centre's Motor Control Laboratory is helping to find viable treatments for patients with neurological disease. This research has attracted more than $5.5M in new funding to investigate nervous system networks and how they control the way we move. By looking at the very basic elements of the complicated systems that lead to movement, Dr. Brownstone is shedding light on how the central nervous system controls our muscles – important first steps in finding treatments for spinal cord injuries and diseases such as ALS. The goal is to identify the mechanisms involved in the production of motor activity, such as locomotion, by the mammalian spinal cord. Knowledge of these mechanisms is critical to strategies aimed towards spinal cord repair in injury or disease.

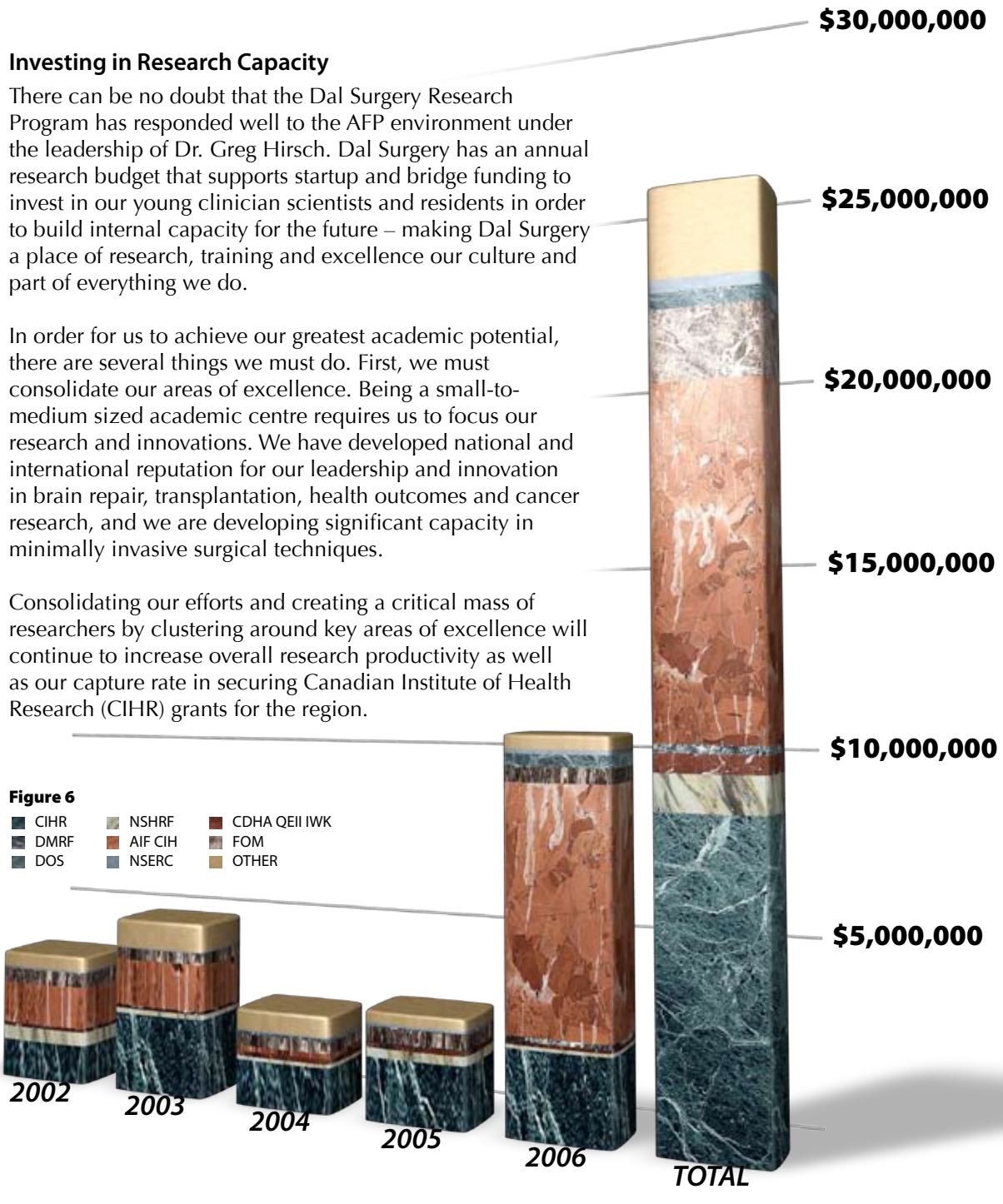
Investing in Research Capacity

There can be no doubt that the Dal Surgery Research Program has responded well to the AFP environment under the leadership of Dr. Greg Hirsch. Dal Surgery has an annual research budget that supports startup and bridge funding to invest in our young clinician scientists and residents in order to build internal capacity for the future – making Dal Surgery a place of research, training and excellence our culture and part of everything we do.

In order for us to achieve our greatest academic potential, there are several things we must do. First, we must consolidate our areas of excellence. Being a small-to-medium sized academic centre requires us to focus our research and innovations. We have developed national and international reputation for our leadership and innovation in brain repair, transplantation, health outcomes and cancer research, and we are developing significant capacity in minimally invasive surgical techniques.

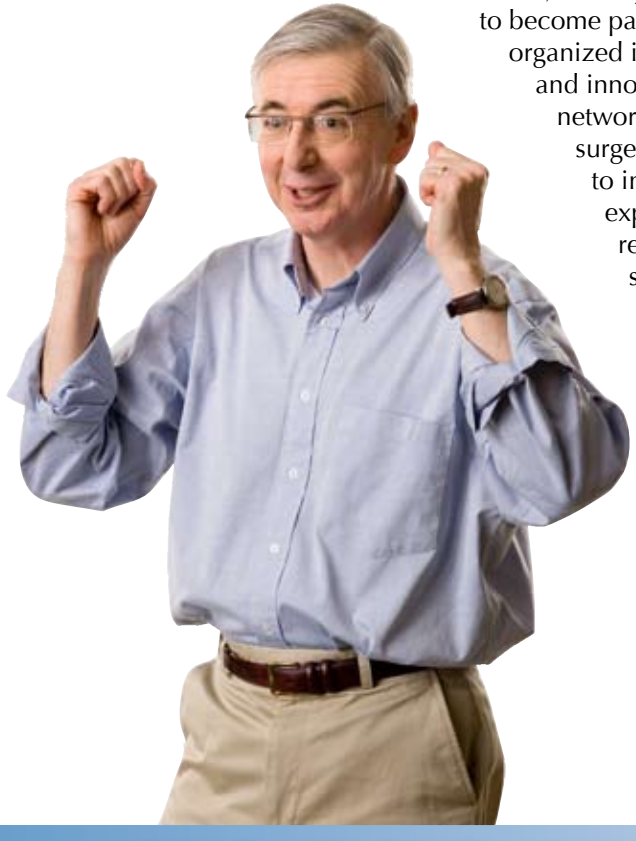
Consolidating our efforts and creating a critical mass of researchers by clustering around key areas of excellence will continue to increase overall research productivity as well as our capture rate in securing Canadian Institute of Health Research (CIHR) grants for the region.

Figure 6



Second, we need to protect more time for teaching and research and this will be addressed in our next AFP. More time for academic work also needs to be reflected in giving residents greater exposure to research opportunities and provide better balance to their present heavy emphasis on clinical activity. Increasing the number of clinical trials we are able to attract to this region is also central to our strategy.

A third aspect of our academic presence is to develop the surgeon-scientist program above and beyond the solid foundation that already exists. Basic scientists must interface closely with clinicians/clinician scientists and need to mentor young clinician scientists to build effective research programs that are sustainable for the long term. Closer linkages between the basic scientists and clinicians/clinician scientists will result in increased capacity for translational research to become an area of excellence in Dal Surgery.



Fourth, we need to support provincial surgical networks, thereby welcoming regional facilities to become part of a system that is oriented to organized investigation, critical appraisal and innovation. Extending the academic network to involve community-based surgeons will create opportunities to increase uptake in clinical trials, expand the range and depth of research talent, broaden the scope of research knowledge and embed a culture of continuous learning across the system. Over recent years, Dal Surgery has observed significant progress in the overall rate and volume of research grants captured and held.

Like every other healthcare organization in the country, there is an imperative for us to be prudent in how we use our resources. We must work together to solve complex problems – and overcome a culture of passing blame and believing that innovation is dangerous.

But this demands that we have the courage to slay some sacred cows, to do some things differently, and to live the mantra of 'patient-centred' care. This is what we mean by thinking like a system, working like a team and believing that anything is possible when the patient is at the centre of everything we do.

"Now advocacy for service volumes can never be construed as self-serving."

Dr. David Kirkpatrick
Head, Division of Otolaryngology

"The AFP has been tremendous for development of the Department of Surgery. The department has never been so collegial, focused and willing to work together."

Dr. Gerry MacKean
Head, Division of
Vascular Surgery

appendix a: list of faculty

Queen Elizabeth II
Health Sciences Centre

General Surgery

Topp, Trevor	Division Head
Bonjer, Jaap	
Ellsmere, James	
Giacomantonio, Carman	
Helyer, Lucy	
Higgins, Gayle	
Jamieson, Christopher	
Johnson, Paul	
Klassen, Dennis	
McIntyre, Bernie	
Minor, Sam	
Molinari, Michele	
Porter, Geoff	
Vair, Brock	
Walsh, Mark	

Thoracic Surgery

Bethune, Drew	Division Head
Henteleff, Harry	
Johnston, Michael	

Cardiac Surgery

Hirsch, Greg	Division Head
Ali, Idris	
Ali, Imtiaz	
Baskett, Roger	
Hancock-Friesen, Camille	
Legare, J.F.	
O'Blenes, Stacey	
Stewart, Kier	
Sullivan, John	
Wood, Jeremy	

Vascular Surgery

MacKean, Gerry	Division Head
Casey, Patrick	
Lee, Min	

Plastic Surgery

Paletz, Justin	Division Head
Bendor-Samuel, Richard	
Hurst, Craig	
Morris, Steven	
Sigurdson, Leif	
Williams, Jason	

Orthopedic Surgery

Amirault, David	Division Head
Alexander, David	
Coady, Catherine	
Coles, Chad	
Dunbar, Michael	
Glazebrook, Mark	
Gross, Michael	
Johnston, David	
Leighton, Ross	
Oxner, William	
Reardon, Gerry	
Stanish, William	

Neurosurgery

Mendez, Ivar	Division Head
Brownstone, Robert	
Christie, Sean	
Clarke, David	
Fleetwood, Ian	
Holness, Renn	
Howes, William	
McNeely, Patrice Daniel	
Walling, Simon	

Otolaryngology

Kirkpatrick, David	Division Head
Attia, Elhamy	
Bance, Manohar	
Hart, Robert	
Massoud, Emad	
Morris, David	
Nasser, Joseph	
Taylor, Mark	
Trites, Jonathan	

Basic Scientists

Fawcett, James
Lee, Tim
Issekutz, Tom

Cross Appointments

Blake, John
Bullock, Martin
Gratzer, Paul
Guernsey, Duane
Law, Adam
Lee, Michael
Tallon, John

IWK

General Pediatric Surgery

Giacomantonio, Michael — Division Head, Paediatric Surgery
Brisseau, Guy
Yanchar, Natalie

Orthopedic Surgery

Cook, Christopher
El-Hawary, Rany
Hyndman, John
Leahey, John Lorne
Coady, Catherine

Otolaryngology

Corsten, Gerard
Johnson, Lianne

Plastic Surgery

Wilson, Kenneth — Chief of Surgery, IWK
Hurst, Craig

Cardiac Surgery

Hancock Friesen, Camille
O'Blenes, Stacey

Dartmouth General Hospital

General Surgery

Murdoch, John — Chief of Surgery Dartmouth
Calverley, Virginia
Mitchell, Alex
Nuth, Laura
Shih, Warren
Wasilewski, Leszek

Orthopedic Surgery

Legay, Douglas
Venugopal, Vikram

Plastic Surgery

Davis, George

ENT

Dempsey, Ian
LeBlanc, Robin

Hants Community Hospital

Crawley, Frances

Saint John Regional Hospital

General Surgery
Scarth, Hugh
Mowatt, James
Johnston, Brian
Attard, Jo-Ann
Mostafavi, Kian
Mowatt, John
Stiles, Gerald

NB Heart Centre
Brown, Craig
Forgie, Rand
Parrott, James

Orthopedic Surgery
Connolly, Stephen
Richardson, Glen
Abraham, Edward
Fletcher, Jennifer
Kerr, Darren
Manson, Neil
Steeves, John
Trenholm, Andrew

Neurosurgery
Al-Shayji, Ayman
Al-Sulaiti, Ghanem
Kolyvas, George
Wheelock, W. Brian

Plastic Surgery
O'Brien, James
Lalonde, Donald
Cook, Geoff
Sparkes, Gerald

ENT
Tees, David
Garland, Andrea
Maxwell, Linda
Rae, Robert

Fredericton

General Surgery
Bryden, Patricia
Franklin, John
Goodyear, Christopher
Nie, Robert
Palmer, Robert
Peters, Thomas
Schaus, Claus

Orthopedic Surgery
Barnhill, Thomas
Berkshire, Andrew
Bowden, Scott
Burton, Philip
Dickinson, Dalton
Gozna, Eric
MacDonald, Alexander
Touchie, Harold

Plastic Surgery
Dool, Jayson
Haswell, Timothy
Oja, Mihkel
Trueman, Douglas H.

ENT
Henderson, William

Moncton

General Surgery
Goobie, Paul
Murphy, Ross
Roberge, Roger
Shakerinia, Tooraj
Tait, Heather

Vascular/General Surgery
Brown, D. Stephen
Murphy, John

Thoracic/General Surgery
Burnett, Ralph
Dubois, Paul

Orthopedic Surgery
Allanach, William
Clark, Andrew
Daigle, Jean-Pierre
Forsythe, Michael Edgar
Forsythe, Michael George
Massoeurs, Steven

ENT
Giberson, Warren
Lemaire, David
MacCallum, Patricia
Pal, Amarnath
Robichaud, Ronald

Neurosurgery
Adams, Robert
Charest, Dhany
Gorman, Peter
Quartey, Gilbert

Plastic Surgery
Fultz, Janet
Howley, Brent
Husain, Ali
Inglis, Douglas
Skanes, Susan

Amherst

Wallace, Tim
MacDonald, A.S.
Nader, Nabil
Van Boxel, Paul

Sydney

Atiyah, Abdulrazzak
Brien, Donald

appendix b: clinical data

Cardiac Surgery QEII

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	1220	1146	1252
Emergency	102	89	94
Waitlist	779	697	618
Total	**2101**	**1932**	**1964**

Non Elective Surgeries By District 2005/06									
District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	OOP
5%	6%	6%	6%	3%	2%	2%	9%	48%	13%

General Surgery QEII

General Surgery – Inpatient Discharges				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	105	1795	17.09	3.4
DISTRICT-2	78	556	7.12	2.5
DISTRICT-3	80	618	7.72	2.6
DISTRICT-4	187	1342	7.17	6.1
DISTRICT-5	42	460	10.95	1.4
DISTRICT-6	48	271	5.64	1.6
DISTRICT-7	42	456	10.85	1.4
DISTRICT-8	41	295	7.19	1.3
DISTRICT-9	2270	16225	7.14	74.1
Out Province	172	1402	8.15	1.3
Total	**3065**	**23420**	**7.64**	

General Surgery - Day Patient		
	2005/06	
District	Patients	% District
DISTRICT-1	43	2.2
DISTRICT-2	19	1
DISTRICT-3	30	1.6
DISTRICT-4	107	5.6
DISTRICT-5	10	0.5
DISTRICT-6	15	0.8
DISTRICT-7	9	0.5
DISTRICT-8	9	0.5
DISTRICT-9	1653	85.8
OTHER	32	1.7
Total	**1927**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	2925	2744	2969
Emergency	37	45	26
Waitlist	1161	1161	976
Total	**4123**	**3950**	**3971**

Non Elective Surgeries By District 2005/06									
District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	OOP
3%	3%	3%	5%	1%	1%	1%	1%	78%	4%

Neurosurgery QEII

Neurosurgery – Inpatient Discharges				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	82	748	9.12	6.9
DISTRICT-2	69	452	6.55	5.8
DISTRICT-3	95	609	6.41	8
DISTRICT-4	91	753	8.27	7.7
DISTRICT-5	19	100	5.26	1.6
DISTRICT-6	59	522	8.84	5
DISTRICT-7	42	214	5.09	3.5
DISTRICT-8	122	1009	8.27	10.3
DISTRICT-9	496	4250	8.56	41.9
Out Province	110	745	6.77	9.3
Total	**1185**	**9402**	**7.93**	

Neurosurgery - Day Patient		
	2005/06	
District	Patients	% District
DISTRICT-1	8	6.8
DISTRICT-2	7	5.9
DISTRICT-3	9	7.6
DISTRICT-4	4	3.4
DISTRICT-5	2	1.7
DISTRICT-6	5	4.2
DISTRICT-7	1	0.8
DISTRICT-8	11	9.3
DISTRICT-9	59	50
OTHER	12	10.2
Total	**118**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	561	535	542
Emergency	30	39	42
Waitlist	237	303	289
Total	**828**	**877**	**873**

Non Elective Surgeries By District 2005/06									
District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	OOP
8%	5%	7%	8%	1%	3%	4%	9%	47%	8%

Orthopaedic Surgery QEII

Orthopaedic Surgery - Inpatient Discharges				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	236	1725	7.3	8.3
DISTRICT-2	105	816	7.77	3.7
DISTRICT-3	96	686	7.14	3.4
DISTRICT-4	274	1656	6.04	9.6
DISTRICT-5	80	577	7.21	2.8
DISTRICT-6	86	646	7.51	3
DISTRICT-7	85	641	7.54	3
DISTRICT-8	96	558	5.81	3.4
DISTRICT-9	1616	13446	8.32	56.5
Out Province	184	1191	6.47	6.4
Total	**2858**	**21942**	**7.67**	

Orthopaedic Surgery - Day Patient		
District	2005/06	
	Patients	% District
DISTRICT-1	125	6.8
DISTRICT-2	61	3.3
DISTRICT-3	53	2.9
DISTRICT-4	170	9.2
DISTRICT-5	28	1.5
DISTRICT-6	25	1.4
DISTRICT-7	43	2.3
DISTRICT-8	32	1.7
DISTRICT-9	1214	65.7
OTHER	97	5.2
Total	**1848**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	3173	2820	2794
Emergency	9	10	10
Waitlist	1723	1605	1553
Total	**4905**	**4435**	**4357**

Non Elective Surgeries By District 2005/06									
District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	OOP
8%	3%	3%	12%	2%	3%	3%	2%	58%	6%

Otolaryngology QEII

Otolaryngology - Inpatients				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	65	147	2.26	7.3
DISTRICT-2	41	105	2.56	4.6
DISTRICT-3	53	165	3.11	5.9
DISTRICT-4	63	172	2.73	7.1
DISTRICT-5	19	67	3.52	2.1
DISTRICT-6	22	87	3.95	2.5
DISTRICT-7	32	152	4.75	3.6
DISTRICT-8	47	286	6.08	5.3
DISTRICT-9	467	1439	3.08	52.3
Out Province	84	350	4.16	9.4
Total	**893**	**2970**	**3.32**	

Otolaryngology - Day Patient		
	2005/06	
District	Patients	% District
DISTRICT-1	24	5.2
DISTRICT-2	9	2.0
DISTRICT-3	28	6.1
DISTRICT-4	46	10.0
DISTRICT-5	4	0.9
DISTRICT-6	9	2.0
DISTRICT-7	6	1.3
DISTRICT-8	22	4.8
DISTRICT-9	270	58.7
OTHER	32	7.0
Total	**450**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	1049	1028	1043
Emergency	23	15	8
Waitlist	111	124	114
Total	**1183**	**1167**	**1165**

Plastic Surgery QEII

Plastic Surgery Inpatient Discharges				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	22	100	4.54	4.4
DISTRICT-2	23	336	14.6	4.6
DISTRICT-3	27	88	3.25	5.4
DISTRICT-4	58	387	6.67	11.6
DISTRICT-5	10	45	4.5	2
DISTRICT-6	15	86	5.73	3
DISTRICT-7	6	80	13.33	1.2
DISTRICT-8	24	255	10.62	4.8
DISTRICT-9	291	1905	6.54	58
Out Province	26	223	8.57	5.2
Total	**502**	**3505**	**6.98**	

Plastic Surgery Day Patient		
District	2005/06	
	Patients	% District
DISTRICT-1	46	2
DISTRICT-2	60	2.7
DISTRICT-3	90	4
DISTRICT-4	206	9.2
DISTRICT-5	41	1.8
DISTRICT-6	36	1.6
DISTRICT-7	17	1.8
DISTRICT-8	25	1.1
DISTRICT-9	1677	74.6
OTHER	50	2.2
Total	**2248**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	726	621	563
Emergency	5	13	20
Waitlist	706	627	633
Total	**1437**	**1261**	**1214**

Non Elective Surgeries 2005/06									
District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	OOP
2%	4%	4%	13%	3%	3%	1%	4%	61%	5%

Thoracic Surgery QEII

Thoracic Surgery - Inpatients				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	66	418	6.33	8.3
DISTRICT-2	67	436	6.5	8.5
DISTRICT-3	64	607	9.48	8.1
DISTRICT-4	57	537	9.42	7.2
DISTRICT-5	21	174	8.28	2.7
DISTRICT-6	29	184	6.34	3.7
DISTRICT-7	22	260	11.81	2.8
DISTRICT-8	15	72	4.8	1.9
DISTRICT-9	383	3202	8.36	48.4
Out Province	68	665	9.77	8.6
Total	**792**	**6555**	**6.98**	

Thoracic Surgery - Day Patient		
	2005/06	
District	Patients	% District
DISTRICT-1	17	5.6
DISTRICT-2	31	10.1
DISTRICT-3	20	6.5
DISTRICT-4	25	8.2
DISTRICT-5	7	2.3
DISTRICT-6	6	2
DISTRICT-7	7	2.3
DISTRICT-8	1	0.3
DISTRICT-9	177	57.8
OTHER	15	4.9
Total	**306**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	662	585	295
Emergency	600		315
Waitlist			290
Total	**1262**	**898**	**900**

Vascular Surgery QEII

Vascular Surgery - Inpatients				
	2005/06			
District	Total Patients	Total Days	ALOS	% District
DISTRICT-1	47	555	11.8	7.9
DISTRICT-2	23	322	14	3.9
DISTRICT-3	22	232	10.54	3.7
DISTRICT-4	61	917	15.03	10.3
DISTRICT-5	20	243	12.15	3.4
DISTRICT-6	49	716	14.61	8.2
DISTRICT-7	28	272	9.71	4.7
DISTRICT-8	11	98	8.9	1.9
DISTRICT-9	315	4973	15.78	53
Out Province	18	197	10.94	3
Total	**594**	**8525**	**14.35**	

Vascular Surgery - Day Patient		
	2005/06	
District	Patients	% District
DISTRICT-1	17	5
DISTRICT-2	7	2.1
DISTRICT-3	3	0.9
DISTRICT-4	23	6.7
DISTRICT-5	1	0.3
DISTRICT-6	8	2.3
DISTRICT-7	5	1.5
DISTRICT-8	1	0.3
DISTRICT-9	275	80.6
OTHER	1	0.3
Total	**341**	

Surgical Procedures			
	2003/04	2004/05	2005/06
Elective	478	420	376
Emergency	30	46	38
Waitlist	187	179	176
Total	**695**	**645**	**590**

Non Elective Surgeries By District 2005/06									
District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	OOP
3%	5%	2%	10%	6%	6%	5%	1%	57%	5%

appendix c: publications

Dal Surgery Peer Review Publications
July 1, 2006- July 1, 2007

1. Wong Dr, Torchiana DF, Vander Salm TJ, Agnihotri AK, Bohmer RM, Ali IS. Impact of cardiac intraoperative precursor events on adverse outcomes. Surgery. 2007 Jun;141(6):715-22. Epub 2007 Apr 26.

2. Kalavrouziotis D, Buth KJ, Ali IS. The impact of new-onset atrial fibrillation on in-hospital mortality following cardiac surgery. Chest. 2007 Mar;131(3):833-9.

3. Li G, Ali IS, Currie RW. Insulin induces myocardial protection and Hsp70 localization to plasma membranes in rat hearts. American J of Physiology 2006;291(4):H1709-21.

4. Bance, M. Hearing and Aging. CMAJ. 2007 Mar 27;176(7):925-7.

5. Bance M, Campos A, Wong L, Morris DP, van Wijhe R. How does prosthesis head size affect vibration transmission in ossiculoplasty? Otolaryngol Head Neck Surg. 2007 Jul;137(1):70-3.

6. Bance M, Morris DP, Van Wijhe R. Effects of ossicular prosthesis mass and section of the stapes tendon on middle ear transmission. J Otolaryngol. 2007 Apr; 36 (2):113-9.

7. Majdalawieh O, Van Wijhe RG, Bance M. Output vibration measurements of bone-anchored hearing AIDS. Otol Neurotol. 2006 Jun;27(4):519-30.

8. McNeil M, Buth K, Brydie A, MacLaren A, Baskett R. The impact of diffuseness of coronary artery disease on the outcomes of patients undergoing primary and reoperative coronary artery bypass grafting. Eur J Cardiothorac Surg. 2007 May;31(5):827-33. Epub 2007 Mar 7.

9. Baskett RJ, Cafferty FH, Powell SJ, Kinsman R, Keogh BE, Nashef SA. Total arterial revascularization is safe: multicenter ten-year analysis of 71,470 coronary procedures. The Annals of Thoracic Surgery 2006;81(4):1243-8.

10. Jugpal S Arneja , Thomas E J Hayakawa , G B Singh , Kenneth A Murray , Robert B Turner , Lonny L Ross , Richard L Bendor-Samuel. Axillary hyperhidrosis: a 5-year review of treatment efficacy and recurrence rates using a new arthroscopic shaver technique. Plast Reconstr Surg. 2007 Feb: 119(2) 562-7

11. Merrimen JLO, McNeely PD, Bendor-Samuel RL, Schmidt MH, Fraser RB. Congenital placental-cerebral adhesion: an unusual case of amniotic band sequence. Journal of Neurosurgery: Pediatrics 2006 104(5 supp):352-355.

12. van Veen RN, de Baat P, Heijboer MP, Bonjer HJ et al. Successful endoscopic treatment of chronic groin pain in athletes. Surg Endosc 2007 ; 21 : 189-93.

13. Kuhry E, van Veen RN, Langeveld HR, Steyerberg EW, Jeekel J, Bonjer HJ. Open or endoscopic total extraperitoneal inguinal hernia repair ? A Systematic Review. Surg Endosc 2007 ; 21 : 161-6.

14. Bruynzeel H, de Bruin AF, Bonjer HJ, Lange JF, Hop WC, Ayodeji ID, Kazemeir G. Desktop simulator : key to universal training ? Surg Endosc 2007 ; Feb9 : Epub

15. Bonjer HJ, Hop WCJ, Nelson H, Sargent DJ, Lacy AM, Castells A, Guillou PJ, Thorpe H, Brown J, Delgado S, Kuhrij E, Halgind E, Pahlman L. Laparoscopically assisted versus open colectomy for colon cancer – a meta-analysis. Arch Surg 2007, vol. 142

16. Kok NF, Lind MY, Hansson BM, Pilzecker D, Mertens zur Borg IR, Knipscheer BC, Hasebroek EJ, Dooper IM, Weimar W, Hop WC, Adang EM, van der Wilt GL, Bonjer HJ, van der Vliet JA, Ijzermans JN. Donor nephrectomy: less fatigue and better quality of life following laparoscopic kidney removal compared with an open procedure by mini-incision: blind randomised study Ned Tijdschr Geneeskd. 2007 Jun 16;151(24):1352-60. Dutch.

17. Van't Sant HP, Bouvy ND, Kazemier G, Bonjer HJ, Hop WC, Feelders RA, de Herder WW, de Kriger PR. The prognostic value of two different histopathological scoring systems for adrenocortical carcinomas. Histopathology. 2007 Aug;51(2):239-45. Epub 2007 Jun 25.

18. Van't Riet M, van Steenwijk PJ, Bonjer HJ, Steyerberg EW, Jeekel J. Mesh repair for postoperative wound dehiscence in the presence of infection: is absorbable mesh safer than non-absorbable mesh? Hernia. 2007 Jun 6

19. Lange JF, Komen N, Akkerman G, Nout E, Hortmanshoff H, Schlesinger F, Bonjer HJ, Kleinrensink GL. Riolan's arch: confusing, misnomer, and obsolete. A literature survey of the connection(s) between the superior and inferior mesenteric arteries. Am J Surg. 2007 Jun;193(6):742-8. Review

20. Kazemier G, in 't Hof KH, Saad S, Bonjer HJ, Sauerland S. Securing the appendiceal stump in laparoscopic appendectomy : evidence for routine stapling? Surg Endosc 2006 ; 20 : 1473-6.

21. Hanssen WE, Kuhry E, Casseres YA, de Herder WW, Steyerberg EW, Bonjer HJ. Safety and efficacy of endoscopic retroperitoneal adrenalectomy. Br J Surg 2006; 93: 715-9.

22. Kok NF, Lind MY, Hansson B, Bonjer HJ et al. Comparison of laparoscopic and mini incision open donor nephrectomy : single blind, randomised controlled clinical trial. BMJ 2006 ; 333 : 221

23. Miles, G., Harley, R., Todd, A.J., Brownstone, R.M. Spinal cholinergic interneurons regulate the excitability of motoneurons during locomotion. Proceedings of the National Academy of Sciences USA 2007 Feb 13;104(7):2248-53. Epub 2007 Feb 7.

24. Brownstone RM. Take Your PIC: Motoneuronal Persistent Inward Currents May Be Somatic as Well as Dendritic. Focus on "Facilitation of Somatic Calcium Channels Can Evoke Prolonged Tail Currents in Rat Hypoglossal Motoneurons". J Neurophysiol. 2007 Aug;98(2):579-80. Epub 2007 May 23

25. Wilson JM, Dombeck DA, Diaz-Rios M, Harris Warrick RM, Brownstone RM. Two-photon calcium imaging of network activity in XFP-expressing neurons in the mouse. J Neurophysiol. 2007 Apr;97(4):3118-25. Epub 2007 Feb 15.

26. Brownstone, R.M. Beginning at the end: Repetitive firing properties in the final common pathway. Progress in Neurobiology 2006 78(3-5):156-72. Epub 2006 May 24 Reivew.

27. Soundararajan P., Miles G.B., Rubin L.L., Brownstone R.M., Rafuse V.M. Motoneurons derived from embryonic stem cells express transcription factors and develop phenotypes characteristic of medial motor column neurons. Journal of Neuroscience 2006 26(12):3256-68.

28. Jamieson L, Taylor SM, Smith A, Bullock MJ, Davis M. Metastatic acinic cell carcinoma of the parotid gland with ectopic ACTH syndrome. Otolaryngol Head Neck Surg. 2007 Jan;136(1):149-50.

29. Rigby MH, Taylor SM, Bullock MJ, Wright BA. Epithelioid hemangioendothelioma of the submandibular triangle. J Otolaryngol. 2006 Jun;35(3):194-5.

30. Hebb MO, Clarke DB and Tallon JM. Development of a population-based guideline for the acute management of adult and pediatric patients with isolated head injuries. The Canadian Journal of Surgery 2007 June;50(3): 187-94.

31. Murphy JA, Nickerson PE, Clarke DB. Injury to retinal ganglion cell axons increases polysialylated neural cell adhesion molecule (PSA-NCAM) in the adult rodent superior colliculus. Brain Res. 2007 Aug 13;1163:21-32. Epub 2007 Jun 14.

32. Dakin-Hache K, Clarke DB, Easton AS. Benign glioneuronal tumor with unique histological features presenting with intractable epilepsy. J Neurooncol. 2007 Jul 6; [Epub ahead of print]

33. Murphy JA, Clarke DB. Target-derived neurotrophins may influence the survival of adult retinal ganglion cells when local neurotrophic support is disrupted: implications for glaucoma. Medical Hypotheses 67:1208-1212, 2006.

34. Franklin, TB, Murphy, JA, Myers, TL, Clarke DB and Currie RW. Enriched environment during adolescence changes brain-derived neurotrophic factor and TrkB levels in the rat visual system but does not offer neuroprotection to retinal ganglion cells following axotomy. Brain Research, 1095: 1-11, 2006.

35. Bangash MH, Clarke DB and HolnessRO. Brain & Chiasmal Herniations into Sella after Medical Treatment of Prolactinoma. Can. J. Neurol. Sci, 33: 240-242, 2006.

36. Hebb MO, Myers TL and Clarke DB. Enhanced Expression of Heat Shock Protein 27 is Correlate with Axonal Regeneration in Mature Retinal Ganglions Cells. Brain Research 1073-1074:146-150, 2006.

37. Tredway TL, Musleh W, Christie SD, Khavkin Y, Fessler RG, Curry DJ. A novel minimally invasive technique for spinal cord untethering. Neurosurgery. 2007 Feb;60(2 Suppl 1):ONS70-4; discussion ONS74.

38. Christie SD, Song JK. Minimally invasive cervical stenosis decompression. Neurosurg Clin N Am. 2006 Oct;17(4):423-8. Review.

39. Anzarut A, Singh P, Cook G, Olson J. Continuing medical education in emergency plastic surgery for referring physicians: a prospective assessment of educational needs. : Plast Reconstr Surg. 2007 May;119(6):1933-9; discussion 1940

40. Taitsman LA, Nork SE, Coles CP, Barei DP, Agel J. Open clavicle fractures and associated injuries. J Orthop Trauma 2006;20-6:396-9.

41. Coles CP, Barei DP, Nork SE, Taitsman LA, Hanel DP, Bradford Henley M. The olecranon osteotomy: a six-year experience in the treatment of intraarticular fractures of the distal humerus. J Orthop Trauma 2006;20-3:164-71.

42. Barei DP, Nork SE, Mills WJ, Coles CP, Henley MB, Benirschke SK. Functional outcomes of severe bicondylar tibial plateau fractures treated with dual incisions and medial and lateral plates. J Bone Joint Surg Am 2006;88-8:1713-21.

43. McKean KA, Landry SC, Hubley-Kozey CL, Dunbar M, Stanish WD, Deluzio KJ. Gender differences exist in osteoarthritic gait. Clin Biomech (Bristol, Avon) 2007;22-4:400-9.

44. Cheung S, Gauthier M, Lefebvre LP, Dunbar M, Filiaggi M. Fibroblastic interactions with high-porosity Ti-6Al-4V metal foam. J Biomed Mater Res B Appl Biomater. 2007 Aug;82(2):440-9.

45. Duffy P, Trask K, Hennigar A, Barron L, Leighton RK, Dunbar MJ. Assessment of fragment micromotion in distal femur fracture fixation with RSA. Clin Orthop Relat Res 2006;448:105-13.

46. El-Hawary R, Roth SE, King GJW, Chess DG, Johnson JA: Load Balance in Total Knee Arthroplasty: An in Vitro Analysis. The International Journal of Medical Robotics and Computer Assisted Surgery 2006: 2: 251-255.

47. El-Hawary R, Sucato DJ, Sparagana S, McClung A, Van Allen E, Rampy P. Spinal cord monitoring in patients with spinal deformity and neural axis abnormalities: a comparison with adolescent idiopathic scoliosis patients. Spine 2006;31-19:E698-706.

48. Edwards MA, Jones DB, Ellsmere J, Grinbaum R, Schneider BE. Anastomotic leak following antecolic versus retrocolic laparoscopic Roux-en-Y gastric bypass for morbid obesity. Obes Surg. 2007 Mar; 17(3):292-7.

49. Edwards MA, Grinbaum R, Schneider BE, Walsh A, Ellsmere J, Jones DB. Benchmarking hospital outcomes for laparoscopic adjustable gastric banding. Surg Endosc. 2007 May 5; [Epub ahead of print]

50. Schirmer BD, Schauer PR, Flum DR, Ellsmere J, Jones DB. Bariatric surgery training: getting your ticket punched. J Gastrointest Surg. 2007 Jul;11(7):807-12.

51. Ellsmere J, Kane R, Grinbaum R, Edwards M, Schneider B, Jones D. Intraoperative ultrasonography during planned liver resections: why are we still performing it? Surg Endosc. 2007 Aug;21(8):1280-3. Epub 2007 Feb 9.

52. Ellsmere J, Jones D, Pleskow D, Chuttani R. Endoluminal instrumentation is changing gastrointestinal surgery. Surg Innov. 2006 Jun;13(2):145-51. Review.

53. Edwards MA, Grinbaum R, Ellsmere J, Jones DB, Schneider BE. Intussusception after Roux-en-Y gastric bypass for morbid obesity: case report and literature review of rare complication. Surg Obes Relat Dis. 2006 Jul-Aug;2(4):483-9.

54. Chan JR, C Jolicoeur, C., Yamauchi, J., Elliott, J., Fawcett, JP., Ng, BK., and M Cayouette. (2006) The Polarity Protein Par-3 Directly Interacts with p75NTR to Regulate Myelination Science 314: 832-836.

55. V. Aranda, T. Haire, M.E. Nolan, J.P. Clarco, A.Z. Rosenberg, J. Fawcett, T. Pawson, and S.K. Muthuswamy (2006) Par6-aPKC uncouples ErbB2 induced disruption of polarized epithelial organization from proliferation control. Nature Cell Biology 8:1235-1245.

56. Wells CD*, Fawcett JP*, Traweger A, Yamanaka Y, Goudreault M, Elder K, Kulkarni S, Gish G, Virag C, Lim C, Colwill K, Starostine A, Metalnikov P, Pawson T. A Rich1/Amot complex regulates the Cdc42 GTPase and apical-polarity proteins in epithelial cells. Cell. 2006 May 5;125(3):535-48.

57. Tatlidil C, Parkhill WS, Giacomantonio CA, Greer WL, Morris SF, Walsh NM. Detection of tyrosinase mRNA in the sentinel lymph nodes of melanoma patients is not a predictor of short-term disease recurrence. Mod Pathol. 2007 Apr;20(4):427-34. Epub 2007 Mar 2.

58. Zamakhshary M, Abuznadah W, Zacny J, Giacomantonio M. Research publication in pediatric surgery: a cross-sectional study of papers presented at the Canadian Association of Pediatric Surgeons and the American Pediatric Surgery Association. J Pediatr Surg. 2006 Jul;41(7):1298-301.

59. Glazebrook MA, Paletz JL. Treatment of post traumatic injuries to the nerves in the foot and ankle. Foot Ankle Clin 2006;11-1:183-90

60. Gratzer PF, Santerre JP, Lee JM. The effect of chemical modification of amino acid side-chains on collagen degradation by enzymes. J Biomed Mater Res B Appl Biomater. 2007 Apr;81(1):1-11.

61. Gratzer PF, Harrision RD, Woods T. Matrix alteration and not residual sodium dodecyl sulfate cytotoxicity affects the cellular repopulation of a decellularized matrix. Tissue Eng. 2006 Oct;12(10):2975-83

62. Gross M. Citations and wait-lists: much ado about nothing? Can J Surg. 2007 Apr;50(2):94-5.

63. Orr A, Dube MP, Marcadier J, Jiang H, Federico A, George S, Seamone C, Andrews D, Dubord P, Holland S, Provost S, Mongrain V, Evans S, Higgins B, Bowman S, Guernsey D, Samuels M. Mutations in the UBIAD1 gene, encoding a potential prenyltransferase, are causal for Schnyder crystalline corneal dystrophy. PLoS ONE. 2007 Aug 1;2:e685.

64. Rajaraman R, Guernsey D, Rajaraman MM, Rajaraman SR. Stem cells, senescence, neosis and self-renewal in cancer. Cancer Cell Int. 2006 Nov 8;6:25.

65. Germanov E, Berman JN, Guernsey DL. Current and future approaches for the therapeutic targeting of metastasis (review). Int J Mol Med. 2006 Dec;18(6):1025-36. Review.

66. Hong P, Taylor M, Trites JT, Maclean J, Hart RD. Use of the external jugular vein as the sole recipient vein in head and neck free flap reconstruction. The Journal of Otolaryngology. 35:6, 2006. 361-365.

67. Yang H, Bullock MD, Hart RD, Nasser JG, Taylor M, Trites JT, Barnes D. Comparison of two sentinel lymph node biopsy processing protocols in clinically N0 head and neck SCC. Histopathology. 2006 Nov;49(5):541-2.

68. Helyer LK, Chin S, Chui BK, Fitzgerald B, Verma S, Rakovitch E, Dranitsaris G, Clemons M. The use of complementary and alternative medicines among patients with locally advanced breast cancer--a descriptive study. BMC Cancer 2006 Feb 21;6:39.

69. Helyer LK, Law CH, Butler M, Last LD, Smith AJ, Wright FC. Surgery as a bridge to palliative chemotherapy in patients with malignant bowel obstruction from colorectal cancer. Ann Surg Oncol. 2007 Apr;14(4):1264-71. Epub 2007 Jan 18.

70. Henteleff H, McCready D, Giuliano A. Evidence-based surgery. Canadian Association of General Surgeons and American College of Surgeons Evidence Based Reviews in Surgery. 19. The effect of a decision aid on knowledge and treatment decision making for breast cancer. Can J Surg. 2006 Dec;49(6):431-3.

71. Kennedy J, Green RS, Henteleff H. Penetrating chest trauma secondary to a composite hockey stick injury. CJEM. 2006 Nov;8(6):437-40.

72. Rockwell WB, Hurst CA, Morton DA, Kwok A, Foreman KB. The deep inferior epigastric artery: anatomy and applicability as a source of microvascular arterial grafts. Plast Reconstr Surg. 2007 Jul;120(1):209-14.

73. Jassal DS, Hassan A, Buth KJ, Neilan TG, Koilpillai C, Hirsch GM. Surgical Management of infective endocarditis. The Journal of Heart Valve Disease 2006;15(1):115-21.

74. Schjetne, K., J. Stamnaes, Ø. Molberg, F.L. Jahnsen, T.B. Issekutz, B. Bogen, and L. M. Sollid. Surface expression of transglutaminase 2 by dendritic cells and its potential role for uptake and presentation of gluten peptides to T cells. Scand. J. Immunol.2006 65, 213.

75. Uy KL, Darling G, Xu W, Yi QL, De Perrot M, Pierre AF, Waddell TK, Johnston MR, Bezjak A, Shepherd FA, Keshavjee S. Improved results of induction chemoradiation before surgical intervention for selected patients with stage IIIA-N2 non-small cell lung cancer. J Thorac Cardiovasc Surg. 2007 Jul;134(1):188-93.

76. Liu J, Meisner D, Kwong E, Wu XY, Johnston MR. A novel trans-lymphatic drug delivery system: implantable gelatin sponge impregnated with PLGA-paclitaxel microspheres. Biomaterials. 2007 Jul;28(21):3236-44. Epub 2007 Mar 24.

77. Kassam F, Shepherd FA, Johnston MR, Visbal A, Feld R, Darling G, Keshavjee S, Pierre A, Waddell T, Leighl NB. Referral patterns for adjuvant chemotherapy in patients with completely resected non-small cell lung cancer. J Thorac Oncol. 2007 Jan;2(1):39-43

78. De Perrot M, Uy K, Anraku M, Tsao MS, Darling G, Waddell TK, Pierre AF, Bezjak A, Keshavjee S, Johnson MR. Impact of lymph node metastasis on outcome after extrapleural pneumonectomy for malignant pleural mesothelioma. J Thorac Cardiovasc Surg. 2007 Jan;133(1):111-6.

79. Liu J, Costello PC, Pham NA, Pintillie M, Jabali M, Sanghera J, Tsap S, Johnston MR. Integrin-linked kinase inhibitor KP-392 demonstrates clinical benefits in an orthotopic human non-small cell lung cancer model. J Thorac Oncol. 2006 Oct;1(8):771-9.

80. Johnson PM, Porter GA, Ricciardi R, Baxter NN. Increasing negative lymph node count is independently associated with improved long-term survival in stage IIIB and IIIC colon cancer. J Clin Oncol. 2006 Aug 1;24(22):3570-5.

81. Lalonde DH. When can a hand surgeon return to work after undergoing carpal tunnel repair? Plast Reconstr Surg. 2007 Sep;120(3):816-8.

82. Chun YS, Lalonde DH, May JW Jr. Internal pedicle shaping to improve aesthetic results in reduction mammaplasty. Plast Reconstr Surg. 2007 Apr 1;119(4):1183-9

83. Bezhuly M, Sparkes GL, Higgins A, Neumeister MW, Lalonde DH. Immediate thumb extension following extensor indicis proprius-to-extensor pollicis longus tendon transfer using the wide-awake approach. Plast Reconstr Surg. 2007 Apr 15;119(5):1507-12.

84. Thomas CJ, Lalonde DH. Measurement of radiation exposure over a one-year period from Fluoroscan mini c-arm imaging unit. Plast Reconstr Surg. 2007 Mar;119(3):1147-8.

85. Thomas CJ, Lalonde DH, Denkler KA, Feicht AJ. A critical look at the evidence for and against elective epinephrine use in the finger. Plast Reconstr Surg. 2007 Jan;119(1):260-6. Review.

86. Kovacs G, Law JA, McCrossin C, Vu M, Leblanc D, Gao J. A Comparison of a Fiberoptic Stylet and a Bougie as Adjuncts to Direct Laryngoscopy in a Manikin-Simulated Difficult Airway. Ann Emerg Med. 2007 Aug 1

87. Cheung KW, Kovacs G, Law JA, Brousseau P, Hill W. Illumination of bulb-on-blade laryngoscopes in the out-of-hospital setting. Acad Emerg Med. 2007 May;14(5):496-9.

88. Kovacs G, Law AJ, Petrie D. Awake fiberoptic intubation using an optical stylet in an anticipated difficult airway. Ann Emerg Med. 2007 Jan;49(1):81-3. Epub 2006 May 18.

89. Hung O, Law AJ. Advances in airway management. Can J Anaesth. 2006 Jun;53(6):628-31.

90. Zhou, J., Liwski, R. and LEE, T.D.G. 2007. N,O-carboxymethyl chitosan acts as a barrier to post-surgical adhesions after cardiac surgery. Journal of Thoracic and Cardiovascular Surgery (in revision)

91. Webster, D., Tashereau P., LEE, T.D.G. and Jurgens, T. 2007. Immunostimulant properties of Heracleum maximum. Journal of Ethnopharmocology 106:360-363

92. Legare JF, Oxner A, Heimrath O, Issekutz T. Current and future approaches for the therapeutic targeting of metastasis (review). Int J Mol Med. 2006 Dec;18(6):1025-36. Review.

93. Heimrath OP, Buth KJ, Legare JF. Long-term outcomes in patients requiring stay of more than 48 hours in the intensive care unit following coronary bypass surgery. J Crit Care. 2007 Jun;22(2):153-8. Epub 2007 Jan 31.

94. Kalavrouziotis D, Buth KJ, Legare JF. Patient selection for minimally invasive aortic valve implantation. Eur J Cardiothorac Surg. 2007 Jul;32(1):188; author reply 188-90. Epub 2007 Apr 24.

95. Karolak W, Hirsch G, Buth K, Legare JF. Medium-term outcomes of coronary artery bypass graft surgery on pump versus off pump: results from a randomized controlled trial. Am Heart J. 2007 Apr;153(4):689-95.

96. Legare J. Trafficking of T lymphocytes after allo-transplantation: a new experimental model. Surgery Journal 2006;1:3-8.

97. Legare JF, Hirsch G. Off-pump coronary artery bypass graft surgery is standard of care: where do you stand? The Canadian Journal of Cardiology 2006;22(13):1107-10.

98. Mayich J, Cox JL, Buth KJ, Legare JF. Unequal access to interventional cardiac care in Nova Scotia in patients with acute myocardial infarction complicated by cardiogenic shock. The Canadian Journal of Cardiology 2006;22(4):331-5.

99. Legare J, Hirsch G. Off pump CABG Surgery is standard of care: where do we stand? Expert review of cardiovascular therapy. Can J Cardiol 2006 Nov;22(13):1107-10.

100. Ricci WM, Schwappach J, Tucker M, Coupe K, Brandt A, Sanders R, Leighton R. Trochanteric versus piriformis entry portal for the treatment of femoral shaft fractures. J Orthop Trauma 2006;20-10:663-7.

101. Bining HJ, Saigal G, Goswami RS, Gill D, McNeely PD. Spinal hamartomain a neonate: Unusual presentation and MR imaging findings. AJNR 27:810-812, 2006.

102. McNeely PD, Atkinson JD, SaigalG, O'Gorman AM, Farmer JP. Subduralhematomas in infants with benign enlargement of the subarachnoid spaces are not pathognomonic for child abuse. AJNR 27:1725-1728, 2006.

103. Merrimen J LO, McNeely PD, Bendor-Samuel RL, Schmidt MH, Fraser RB. Congenital placental-cerebral adhesion: an unusual case of amniotic band sequence. J Neurosurg: Pediatrics104:352-355, 2006.

104. Hebb MO, Chiasson P, Lang AE, Brownstone RM, Mendez I. Sustained relief of dystonia following cessation of deep brain stimulation. Mov Disord. 2007 Aug 2; [Epub ahead of print]

105. Zubin M, McLeod M and Mendez I. Benefits, risks and ethical considerations in translation of stem cell research to clinical applications in Parkinson's Disease. J Medical Ethics 2007 Mar;33(3):169-73.

106. McLeod M, Hong M, MukhidaK, SadiD, UlaliaR and Mendez I. Erythropoietin and Glial Cell line-derived neurotrophic factor enhance ventral mesencephalic fiber outgrowth and capillary proliferation following neural transplantation in a rodent model of Parkinson's Disease. European Journal of Neuroscience 24:361-370, 2006.

107. Hebb MO, Gaudet P, Mendez I. Deep brain stimulation to treat hyperkinetic symptoms of Cockaynesyndrome. Movement Disorders 21: 112-115. 2006.

108. Mitchell, AD, Tallon JM, Sealy B. Air versus ground transport of major trauma patients to a tertiary trauma centre: a province-wide comparison using TRISS analysis. Can J Surg. 2007 Apr;50(2):129-33

109. Laryea M, Watt K, Molinari M, Walsh M, McCallister V, Marotta P, Nashan B, Peltekian K. Metabolic Syndrome in Liver Transplant Recipients: Prevalence and Association with Major Vascular Events. Liver Transplantation, Aug: 13(8): 1109-14

110. Molinari M, Dixon E, Walsh M, Sherman M, Gallinger S, Kachura, J, Rajan D, Ash M, Burnett B, Feld R, Chen E, Greig P, Grant D and Knox J. Transarterial Chemoembolization for Advanced Hepatocellular Carcinoma: Results from a Northern American Cancer Center. Clin Oncol (R Coll Radiol). 2006 Nov;18(9):684-92.

111. Molinari M, Watt K, Kruszyna T, Nelson R, Walsh M, Peltekian K, Nashan B. Acute Liver Failure Induced by Green Tea Extracts: Case Report and Review of the Literature. Liver Transplant 2006 Dec:12(12):1892-5.

112. Alsaif F, Molinari M, Al-Masloom A, Lakey JRT, Kin T, Shapiro AMJ. Pancreatic Islet Autotransplantation with Completion Pancreatectomy in the Management of Uncontrolled Pancreatic Fistula after Whipple Resection for Ampullary Adenocarcinoma. Letters to the Editor, Pancreas 2006; 32 (4): 430-431

113. Morris DP, Alian W, Maessen H, Creaser C, Demmons-O'Brien, Van Wijhe R, Bance M. Cochlear implantation in Cockayne syndrome: our experience of two cases with different outcomes. Laryngoscope. 2007 May;117(5) : 939-43

114. Morris, DP. Bacterial biofilm in upper respiratory tract infections. Curr Infect Dis Rep. 2007 May;9(3):186-92.

115. Morris DP. Tinnitus. Common problem; practical approach. Canadian Journal of Continuing Medical Education (2006)

116. Morris DP, Wong L, van Wijhe RG, Bance ML. Effect of adhesion on the acoustic functioning of partial ossicular replacement prostheses in the cadaveric human ear. J Otolaryngol. 2006 Feb;35(1):22-5.

117. Ahmadzadeh, R., Bergeron, L., Tang, M., Geddes, C.R., Morris, S.F.: The posterior thigh flap or profunda femoris artery perforator flap. Plast. Reconst. Surg. 119: 194-200, 2007

118. Tatlidil, C., Parkhill, W.S., Giacomantonio, C.A., Greer, W.L., Morris, S.F., Walsh, N.M.: Detection of tyrosinase mRNA in the sentinel lymph nodes of melanoma patients is not a predictor of short term disease recurrence. Mod Pathol. 20:426-34, 2007 Epub. 2007. Mar 2.

119. Bergeron, L., Tang, M., Morris, S.F: The Vascular basis of the DCIA perforator flap. Plast. Reconst. Surg. 2007 Jul;120(1):252-8.

120. O'Blenes, C A., Delbridge, C. L., Miller, B. J., Pantelis, A., Morris, S. F., Prospective Study of Outcomes after Reduction Mammoplasty, Long Term follow up. Plast. Reconstr. Surg. 117, 351-8, 2006

121. Morris, S.F. Invited discussion: Pedicled deep inferior epigastric perforator flap: an alternative method to repair groin and scrotal defects. Ann Plast Surg. 57:685-686, 2006

122. Yang, D., Morris, S.F., Tang, M., Geddes, C.R.: A modified longitudinally split segmented rectus femoris muscle flap transfer for facial reanimation, anatomic basis and clinical applications. J. Plast. Reconstr. Aesthet. Surgery 59:807-14, 2006

123. Bergeron, L. Tang, M., Morris. S.F.: A review of vascular injection techniques for the study of perforator flaps. Plast Reconstr Surg. 117(6):2050-7, 2006

124. Morris, S.F., Tang, M., Geddes, C.R.: Vascular anatomical basis of perforator skin flaps. Cir Plast. Iberolat. 32:225-236, 2006

125. Koch M, Mengel M, Poehnert D, Nashan B. Effects of Everolimus on cellular and humoral immune processes leading to CAN in a rat model with sensitized recipients. Transplantation 2007; 83(4):498-505

126. Ekberg H, Grinyo J, Nashan B, Vanrenterghem Y, Vincenti F, Voulgari A, Truman M, Nasmyth-Miller C, Rashford M on behalf of the CAESAR study group. Cyclosporine sparing with mycophenolate mofetil, daclizumab and corticosteroids in renal allograft recipients: The CAESAR Study. Am J Transplant. 2007; 7(3):560-70

127. Pietruck F, Abbud-Filho M, Vathsala A, Massari P, Po-Huang L, Nashan B. Conversion From Mycophenolate Mofetil to Enteric-Coated Mycophenolate Sodium in Stable Maintenance Renal Transplant Patients: Pooled Results From Three International, Multicenter Studies. Transplantation Proceedings 2007; 39 (1):103-108

128. Riafai K. Kirchner GI, Bahr MJ, Cantz T, Rosenau J, Nashan B, Klempnauer JL, Manns MP, Strassburg CP. A new side effect of immunosuppression: High incidence of hearing impairment after liver transplantation. Liver Transpl. 2006: 12:411-4115

129. Levy G, Schmidli H, Punch J, Tuttle-Newhall E, Mayer D, Neuhaus P, Samuel D, Nashan B, Klempnauer J. Langnas A, Calmus Y, Rogiers X, Abecassis M, Freeman R, Sloof M, Roberts J. Safety tolerability and efficacy of everolimus in de novo liver transplant receipients: 12 and 36 Month results. Liver Transpl. 2006 April 5; (Epub ahead of print)

130. Kirchner GI, Rifai K, Cantz T, Nashan B, Terkamp C, Becker T, Strassburg C Barg-Hock H, Wagner S, Luck R, Klempnauer J, Manns MP. Outcome and quality of life in patients with polycystic liver disease after liver or combined liver-kidney transplantation. Liver Transpl. 2006 Jun 1; [Epub ahead of print]

131. Nashan D, Radny P, Kosters NC, Nashan B. Skin Tumors in Organ-Transplant Reciepients. 2006 Jun 7; [Epub ahead of print] German

132. Vincenti F, de Andres A, Becker T, Choukroun G, Cole E, Gonzalez-Posada JM, Kumar MA, Moore R, Nadalin S, Nashan B, Rostaing L, Saito K, Yoshimura N. Interleukin-2 receptor antagonist induction in modern immunosuppression regimens for renal transplant recipients. Transpl Int. 2006;19(6):446-57. Review

133. Rosenau J, Hooman N, Rifai K, Solga T, Tillman HL, Grzegowski E, Nashan B, Klempnauer J, Strassburg CP. Wedemeyer H, Manns MP. Hepatitis B virus immunization with an adjuvant containing vaccine after liver transplantation for hepatitis B-related disease: failure of humoral and cellular immune response. Transpl Int. 2006;19:828-33.

134. Salvadori M, Budde K, Charpentier B, Klempnauer J, Nashan B, Pallardo LM, Eris J, Schena FP, Eisenberger U, Rostaing L, Hmissi A and Aradhye S for the FTY720 0124 Study Group. FTY720 versus MMF with Cyclosporine in de novo Renal Transplantation: A 1-Year, Randomized Controlled Trial in Europe and Australasia. Am J Transplant 2006 Oct 25; [Epub ahead of print]

135. Foote CJ, Greer W, Kiberd BA, Fraser A, Lawen J, Nashan B, Belitsky P. MDR1 C3435T Polymorphisms Correlate With Cyclosporine Levels in De Novo Renal Recipients. Transplant Proc 2006; 9:2847-9

136. Nashan B, Suwelack B, Ivens K, Arns W, Lhotta K, Bourbigot B, Budde K, Fischer W, Pietruck F. For the ERL2405-DE02 Study Group. Conversion to enteric-coated mycophenolate sodium from various doses of mycophenolate mofetil: results of a prospective international multicenter trial in maintenance renal transplant patients receiving cyclosporine. Transplant Proc 2006; 9:2856-9

137. Molinari M, Watt KD, Kruszyna T, Nelson R, Walsh M, Huang WY, Nashan B, Peltekian K Acute liver failure induced by green tea extracts: Case report and review of the literature. Liver Transpl. 2006 Nov 28;12(12):1892-1895

138. Lee JY, Hanks SW, Oxner W, Tannoury C, Donaldson WF, Kang JD. Use of small suture anchors in cervical laminoplasty to maintain canal expansion: a technical note. J Spinal Disord Tech. 2007 Feb;20(1):33-5.

139. Wallach CJ, Kim JS, Sobajima S, Lattermann C, Oxner WM, McFadden K, Robbins PD, Gilbertson LG, Kang JD. Safety assessment of intradiscal gene transfer: a pilot study. Spine J 2006;6-2:107-12.

140. Baguma-Nibasheka M, Barclay C, Li AW, Geldenhuys L, Porter GA, Blay J, Casson AG, Murphy PR. Selective cyclooxygenase-2 inhibition suppresses basic fibroblast growth factor expression in human esophageal adenocarcinoma. Mol Carcinog. 2007 May 3

141. Lau R, Vair BA, Porter GA. Factors influencing waiting times for elective laparoscopic cholecystectomy. Can J Surg. 2007 Feb;50(1):34-8.

142. Mitchell AD, Inglis KA, Murdoch JM, Porter GA Emergency Room Presentation Of Colorectal Cancer: A Consecutive Cohort Study. Annals Surg Onc 2007; 14:1099-104.

143. Casson AG, Zheng Z, Porter GA, Guernsey DL. Genetic polymorphisms of microsomal epoxide hydroxylase and glutathione S-transferases M1, T1 and P1, interactions with smoking, and risk for esophageal (Barrett) adenocarcinoma. Cancer Detect Prev. 2006;30:423-31.

144. Veugelers PJ, Porter GA, Guernsey DL, Casson AG. Obesity and lifestyle risk factors for gastroesophageal reflux disease, Barrett esophagus and esophageal adenocarcinoma. Dis Esophagus. 2006;19:321-8.

145. Johnson PM, Porter GA, Ricciardi R, Baxter NN Increasing negative lymph node count is independently associated with improved long-term survival in stage IIIB and IIIC colon cancer. J Clin Oncol. 2006;24:3570-5.

146. Porter GA, Baxter N, Pisters PWT. Retroperitoneal sarcoma: a population-based analysis of epidemiology, surgery and radiotherapy. Cancer 2006 ;106:1610-16

147. Porter GA, Inglis KM, Murdoch JL, Veugelers PJ, Wood LA. Impact of Obesity on Presentation of Breast Cancer. Annals Surg Onc 2006; 13:327-332

148. Sigurdson L, Mykhalovskiy E, Kirkland SA, Pallen A. Symptoms and related severity experienced by women with breast hypertrophy. Plast Reconstr Surg. 2007 Feb;119(2):481-6.

149. Sigurdson LJ, Kirkland SA. Breast volume determination in breast hypertrophy: an accurate method using two anthropomorphic measurements. Plast Reconstr Surg. 2006 Aug;118(2):313-20.

150. Barnsley GP, Sigurdson LJ, Barnsley SE. Textured surface breast implants in the prevention of capsular contracture among breast augmentation patients: a meta-analysis of randomized controlled trials. Plast Reconstr Surg. 2006 Jun;117(7):2182-90.

151. Corbiere M, Sullivan MJL, Stanish WD, Adams H. Pain and Depression in Injured Workers and Their Return to Work – A Longitudinal Study. Canadian Journal of Behavioral Science; 39(1):23-31, 2007

152. Sullivan MJ, Adams H, Tripp D, Stanish WD. Stage of chronicity and treatment response in patients with musculoskeletal injuries and concurrent symptoms of depression. Pain. 2007 Jul 21; [Epub ahead of print]

153. Adams H, Ellis T, Stanish WD, Sullivan MJ. Psychosocial factors related to return to work following rehabilitation of whiplash injuries. J Occup Rehabil. 2007 Jun;17(2):305-15. Epub 2007 May 8.

154. Landry SC, McKean KA, Hubley-Koszey CL, Stanish WD, Deluzio KJ. Knee biomechanics of moderate OA patients measured during gait at a self-selected and fast walking speed. J Biomech. 2007;40(8):1754-61. Epub 2006 Nov 7.

155. Sullivan MJ, Thibault P, Savard A, Catchlove R, Kozey J, Stanish WD. The influence of communication goals and physical demands on different dimensions of pain behavior. Pain 2006;125-3:270-7.

156. Sullivan MJ, Adams H, Thibault P, Corbiere M, Stanish WD. Initial depression severity and the trajectory of recovery following cognitive-behavioral intervention for work disability. J Occup Rehabil 2006;16-1:63-74.

157. Sullivan MJ, Adams H, Rhodenizer T, Stanish WD. A psychosocial risk factor--targeted intervention for the prevention of chronic pain and disability following whiplash injury. Phys Ther 2006;86-1:8-18.

158. McKean KA, Manson NA, Stanish WD. Musculoskeletal injury in the masters runners. Clin J Sport Med 2006;16-2:149-54.

159. Penn DD, Milne AD, Stanish WD. Detecting and Managing Jumper's Knee. The Journal of Musculoskeletal Medicine; Vol 23, No 8, pp 554-564, August, 2006

160. Hubley-Kozey CL, Deluzio KJ, Landry SC, McNutt JS, Stanish WD. Neuromuscular Alterations Dur¬ing Walking in Those with Moderate Knee Osteoarthritis. Journal of Electromyography and Kinesiology; 16:365-378, 2006

161. Sullivan MJL, Stanish WD, Thibault P, Kozey J, Catchlove R, Adams H, Savard A. The Influence of Communication Goals and Physical Demands on Different Dimensions of Pain Behavior. Pain 2006 125:270-277,

162. Hubley-Kozey CL, Deluzio KJ, Landry SC, McNutt JS, Stanish WD. Neuromuscular alterations dur¬ing walking in persons with moderate knee osteoarthritis. J Electromyogr Kinesiol 2006;16-4:365-78.

163. Gauthier N, Sullivan MJ, Adams H, Stanish WD, Thibault P. Investigating risk factors for chronicity: the importance of distinguishing between return-to-work status and self-report measures of disability. J Occup Environ Med 2006;48-3:312-8.

164. Tallon JM, Ahmed JM, Sealy B. Airway management in penetrating neck trauma at a Canadian tertiary trauma centre. CJEM. 2007 Mar;9(2):101-4. Review. Erratum in: CJEM. 2007 May;9(3):181.

165. Fleming M, Smith S, Slaunwhite J, Sullivan J. Investigating interpersonal competencies of cardiac surgery teams. Can J Surg. 2006 Feb;49(1):22-30.

166. Ahmed JM, Tallon JM, Petrie DA. Trauma management outcomes associated with nonsurgeon versus surgeon trauma team leaders. Ann Emerg Med. 2007 Jul;50(1):7-12, 12.e1. Epub 2006 Nov 15.

167. Rigby M, Taylor SM. Endoscopic Treatment of Cis-T2 Glottic Cancer with CO2 Laser: Preliminary Results from a Canadian Centre. J Otolaryngol. 2007 Apr;36(2):106-10.

168. Jamieson L, Taylor SM, Smith A, Bullock M, Davis M. Metastatic Acinic Cell Carcinoma of the Parotid Presenting with Ectopic ACTH Production. Otolaryngol Head Neck Surg. 2007 Jan;136(1):149-50.

169. Hong P, Taylor SM, Trites JRB. The Use of the External Jugular Vein as the Sole Recipient Vein in Head and Neck Free Flap Reconstruction. J Otolaryngol. 2006 Dec;35(6):361-5

170. Lareya M, Peltekiank, Molinari M, Walsh M, Watt K. Metabolic syndrome in liver transplant recipients: Prevalence and associated with cardiovascular events. Accepted in Liver Transplantation 2007

171. Michele Molinari, Kymberly D.S. Watt, Thomas Kruszyna, Rebecca Nelson, Mark Walsh, Weei-Yuan Huang, Bjorn Nashan, Kevork Peltekian. Acute liver failure induced by green tea extracts: Case report and review of the literature. Liver Transplantation 12(12):1892-1895, 2006

172. Williams JG, Lalonde DH. Randomized comparison of the single-injection volar subcutaneous block and the two-injection dorsal block for digital anesthesia. Plast Reconstr Surg. 2006 Oct;118(5):1195-200.

173. Zhu CQ, Popova SN, Brown ER, Barsyte Lovejoy D, Navab R, Shih W, Li M…Tsao MS. Integrin alpha11 regulates IGF2 expression in fibroblasts to enhance tumorigenicity of human non-small-cell lung cancer cells. Proc Natl Acad Sci U S A. 2007 Jul 10;104(28):11754-9. Epub 2007 Jun 28.

174. Herman C, Jackson S, Wood J. Blind surgical coronary revascularization. J Card Surg. 2007 Jan-Feb;22(1):65-6.

175. Wood J, Ferguson C. Best evidence topic report. Procedural sedation for cardioversion. Emerg Med J. 2006 Dec;23(12):932-4. Review

176. Wood J. Patients get four choices for NHS treatments: choose and book will hinder development of good outpatient services. BMJ. 2006 Jan 21;332(7534):180.

177. Davies DA, Yanchar NL. Appendicitis in the obese child. J Pediatr Surg. 2007 May;42(5):857-61.

178. MacDonald N, Yanchar N, Herbert PC. What's killing and maiming Canada's youth? CMAJ. 2007 Mar 13;176(6):737, 739.

appendix d: research awards

2006 Seed Funding:

- Mark Glazebrook: ($50 000.00) Comparison of the collagen cross linking pattern of achilles tendons from mature rats subjected to an animal model for Achilles tendon disease and humans afflicted with Achilles disease: Further validation of an animal model for Achilles tendon disease.
- Michele Molinari: ($42 000.00) Societal reintegration after liver transplant in Atlantic Canada. Does it impact on long-term outcomes?
- Dr. Ron El-Hawary: (($40 000.00) Evaluation of Hepatic Anatomy and Function in Adolescent Scoliosis.
- Dr. Stacy O'Blenes: ($18 000.00) Proposal Skeletal Myoblast cell transplantation for the treatment of myocardial infarct.
- Juan Zhou: ($24 600.00) Manipulating the immune response to allow kidney transplant survival.

Bridge Funding:

- Camille Hancock Friesen: ($50 000.00) Mechanisms of oral tolerance induction are different in rat cardiac and renal allografts"
- Carman Giacomantonio: ($25 400.00) Evaluation of the effects of core needle biopsies on tumor growth, tumor cell migration and metastasis during the diagnosis work-up of breast cancer.

Matching Funds:

- Manohar Bance: ($50 000.00) "Developing new bone conduction hearing technologies"

Resident Funding:

- Lara Williams: ($50 000.00) Expression of B-catenin, CDX1 and CDX2 in the molecular pathogenesis of esophageal adenocarcinoma
- Dimitri Kalavrouziotis: ($50 000.00) Community Health and Epidemiology Cardiac Surgery.

2007 Seed Funding:

- JF Legare ($50 000.00) Pilot study randomizing patients to CABG surgery performed with total arterial grafting vs conventional grafting.

- Michele Molinari ($50 000.00) Ethical dilemma of living liver transplantation. Are the donors fully aware of the consequences of their decisions? a cross sectional probability trade off study of Atlantic Canadian potential donors.

- Stacy O'Blenes ($50 000.00) Using a lidocaine enhanced pediatric cardioplegia solution for preservation of adult and senile hearts: A study in isolated rat hearts and cardiomyocytes to evaluate the potential of novel pediatric cardioplegia solution to protect older hearts.

2007 Bridge Funding:

- Mike Dunbar ($50 000.00) Neuromuscular and biomechanical characteristics of knee osteoarthritic gait.

- Camille Hancock-Friesen ($50 000.00) Organ specific immune regulation: Response to oral donor antigen"

2007 Resident Awards:

- Mike Bezhuly ($50 000.00) The role of endothelial protein c receptor in ischemia-reperfusion injury and allograft vasculopathy.

- Jane Watson ($50 000.00) Chemosensitization of ovarian and breast cancer cells by prior exposure to curcumin

appendix e: total grant capture

Dal Surgery Total Grant Capture

AGENCY	2002	2003	2004	2005	2006	TOTAL
CIHR	$1,091,031	$2,202,497	$1,249,601	$1,702,836	$2,317,850	$8,563,815
NSHRF	$393,744	$140,119	$106,634	$253,100	$94,968	$988,566
CDHA QEII IWK	$75,815	$45,000	$139,448	$140,715	$101,715	$502,693
DMRF	$30,000	$50,000		$30,000	$121,780	$231,780
AIF CIH	$1,195,682	$1,307,171	$145,682		Text $6,574,775	$9,223,310
FOM	$420,000	$330,000	$330,000	$390,000	$420,000	$1,890,000
DOS			$74,048	$30,000	$328,600	$432,648
NSERC	$63,000	$40,000	$40,000	$69,500	$130,000	$342,500
OTHER	$414,432	$778,919	$566,532	$320,177	$384,775	$2,464,835
TOTAL	**$3,683,704**	**$4,893,706**	**$2,651,945.33**	**$2,936,328.33**	**$10,474,463.74**	**$24,640,147.40**

index


DALHOUSIE
UNIVERSITY
Inspiring Minds
Capital Health
IWK Health Centre