# 18 success stories:

How the Department of Medicine and Medical Services are **improving care for thousands of Albertans**.

calgary health region

leaders in health - a partner in care

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Clinical Innovation initiatives such as this one through the Calgary Health Region and the University of Calgary's Faculty of Medicine are something we can be very proud of and are a reflection of what this province has to offer.

Made possible through Alberta Health and Wellness's Academic Medicine Unit's Academic/Clinical Alternate Relationships Plan, projects like this enable the recruitment and retention of leading specialists in this province, and support maintaining, enhancing and improving access to quality health services.

When we talk about finding new and innovative ways of delivering health services, this unique project and its eighteen outstanding success stories are precisely what government is talking about and aspiring to achieve.

Extensive collaboration and the application of compelling and modern approaches to health care are revolutionizing the way health services are delivered in the CHR with enhancements to health service access, quality, safety, efficacy, and integration.

Through much hard work and expertise, I am proud to say this worthwhile project not only yields deliverables that are highly beneficial to Albertans, but also those that are cost effective to administer and deliver.

It has taken an exceptional amount of time and planning on the part of health care teams to make this project an overwhelming success. I commend them on their vision and dedication to improving the health of Albertans.

**Dave Hancock, Q.C.**

Minister of Alberta Health and Wellness

Two years ago, the Calgary Health Region's Department of Medicine and Medical Services, with support from Alberta Health and Wellness, undertook the $7.4 million Innovation Initiatives project. The impetus for this expansive venture was a belief among the many physicians and healthcare workers involved that the way we deliver specialized medical services can – and needs to be - done differently.

To address the challenges that healthcare currently faces – including a rapidly growing and aging population and a worldwide shortage of healthcare workers – we need to closely re-examine our current practices and seek out innovative solutions that will position us to better respond to current and future needs.

With the support of Alberta Health and Wellness, the Innovation Initiatives project made use of an Alternate Relationship Plan, or compensating specialists on a contractual basis instead of through the usual fee for service method.

This work offers practical examples of how improved access to timely, quality care enhances the patient experience with the health system. It also engenders a high level of satisfaction for the patient, members of the care team, family physicians and specialists. Lastly, data suggests that improved access averts or reduces the use of emergency and hospital inpatient services.

Overall, this work emphasizes the importance of supporting the implementation of front-line care provider ideas about revitalizing and changing the way we deliver care. It also provides examples of how we can continue to innovate in our health system.

Sincerely,

**Jack Davis**

President and CEO
Calgary Health Region

# Introduction

Twenty-first century health care requires more than just medicine, technology and people to deliver care. The challenge is to get all these components working together to deliver effective, efficient care that enhances quality and supports patients and all those involved in the system. The Canadian health care system is at a crossroads: change the practices with which we deliver care, or face the increasing demands of an aging population with the current system in place. Patients and health care providers know all too well what lies ahead if there are no changes to the current system: increased wait times, escalating expenses and heightened challenges in recruiting and retaining employees.

In light of this need for change, the Calgary Health Region's Department of Medicine and Medical Services undertook the Innovation Initiatives – an opportunity for our own physicians and health care providers to implement their ideas about revitalizing and changing the way we deliver care. The Innovation Initiatives were concepts born from specialists' and team member's perceptions, observations, and understandings of best practice in medicine. The result is 18 remarkable projects, each of which has provided insights about how we can approach our work, make referrals, and help patients navigate through the health care system, and ultimately enhance the patient experience.

This document provides details about the Innovation Initiatives that have been undertaken, highlights our successes, and includes recommendations for how these important projects can continue and flourish.

Signed,

**Dr. Alain Tremblay**
Co-Chair, Innovation Steering Committee

**Ed Mantler**
Director Medical Access and Innovation
Co-Chair, Innovation Steering Committee

**Dr. Jeff Schaefer**
Chair, ARP Management Committee

**Dr. Sid Viner**
Executive Medical Director
Northeast Community Portfolio

**Dr. John Conly**
Regional Clinical Department Head, Medicine

# Executive Summary

Delivering care to a population of more than one million people, the Calgary Health Region serves as Alberta's largest health region. In addition to providing health care to a region geographically the size of Switzerland, care is provided to individuals from Southern Alberta, Southeastern British Columbia and Southwestern Saskatchewan.

Across the spectrum of care - from hospitals to clinics - patients and family physicians have expressed that accessing specialized services is one of the greatest challenges they face with the health care system. The Calgary Health Region has recognized that alternative ways of delivering care is a priority to best serve its population.

The Alternate Relationship Plan compensates specialists on a contractual basis instead of through the usual fee-for-service method. This allows specialists to oversee the work of nurses, therapists, dietitians and other professional as they care for common aliments while the specialist focuses on complex patients. Specialists can also support innovations in health care delivery, educating physicians and others and researching new medical treatments. Currently, more than 50 per cent of the 250 medical specialists within the Region are on an Alternate Relationship Plan, which supports changes to physician practices, allowing novel and innovative approaches to enhance patient care.

In addition to the significant shift in the way physicians are paid, in May 2005 $7.4 million in clinical innovation funding was supported equally by Alberta Health and Wellness and the Calgary Health Region. The grant for this work ended in June 2007 – however, given the impact of this work, sustained funding for the services implemented through the innovations grant was approved by the Calgary Health Region Executive.

Eighteen innovation initiatives, implemented as a result of this funding, aimed to improve:

- patient and primary care access to medical specialist services
- system quality, safety and effectiveness
- service integration with primary care and other care providers
- system efficiency and sustainability

A variety of approaches were used to accomplish these objectives, including: enhancing linkages and connections with primary care physicians, the first point of contact for patients accessing the medical system; centralizing referral and triage processes; developing models of care supported by alternate care providers such as nurse practitioners and allied health professionals; developing and applying standardized clinical practice guidelines; and enhancing and/or creating new specialty clinics. A team-based approach has also played a central role in accomplishing these objectives and enhancing care for Albertans.

# ACCESS

Patients, families, specialists and primary care physicians have recognized that accessing specialized medical services can be a time-consuming and fragmented process. Surveys indicate that accessing specialist services for patients ranks as a primary care provider's greatest challenge. Meetings with rural and urban physician groups reveal that many are unaware of the services available within the Region and are uncertain of how to access these services.

Several projects within the Innovation Initiatives sought to make the process of accessing specialized medical services easier. Ultimately, this helps to ensure patients obtain the care they need when they need it.

## ATRIAL FIBRILLATION CLINIC

Atrial Fibrillation is the most common of all irregular heartbeat conditions, affecting thousands of Canadians. In the Calgary Health Region, atrial fibrillation is the cause of hundreds of emergency department visits and hospitalizations each year.

The greatest barrier facing patients with atrial fibrillation is timely access to a cardiac electrophysiologist, a specialist who studies the mechanisms, functions and performance of the electrical activities of the heart. Prior to the establishment of the Atrial Fibrillation Clinic there were few dedicated resources to serve patients with atrial fibrillation, resulting in increased emergency department visits and hospital admissions.

The Atrial Fibrillation Clinic, based at the Foothills Medical Centre, is made up of three full-time staff members, including two nurse clinicians and one clerk. One internal medicine specialist and four cardiac electrophysiologists also staff the clinic. In May 2005 to March 2007, a total of 472 referrals were made to the clinic, resulting in 3,253 patient contacts in person, via mail, and over the phone.

The clinic is an example of care delivered by a health care team, which includes alternate care providers and specialists who work together to provide comprehensive, personalized care for each patient. Alternate care providers are those who typically have not played a significant role in specialized care delivery and can include nurse clinicians, social workers, dietitians, physiotherapists, and nurse practitioners. The Atrial Fibrillation Clinic team sees the patient as an individual with a variety of physical, physiological, and psychological needs, all of which can impact a patient's condition. The team works together to address all of these elements and create unique treatment plans for each patient. Nurse clinicians act as case managers, screening and treating patients in consultation with physicians. Follow up care is readily available to patients by phone, and education classes are provided to help patients learn how to best manage their conditions without always needing to go to an emergency department. Once a patient is stable and well educated about managing their condition, they are discharged from the clinic.

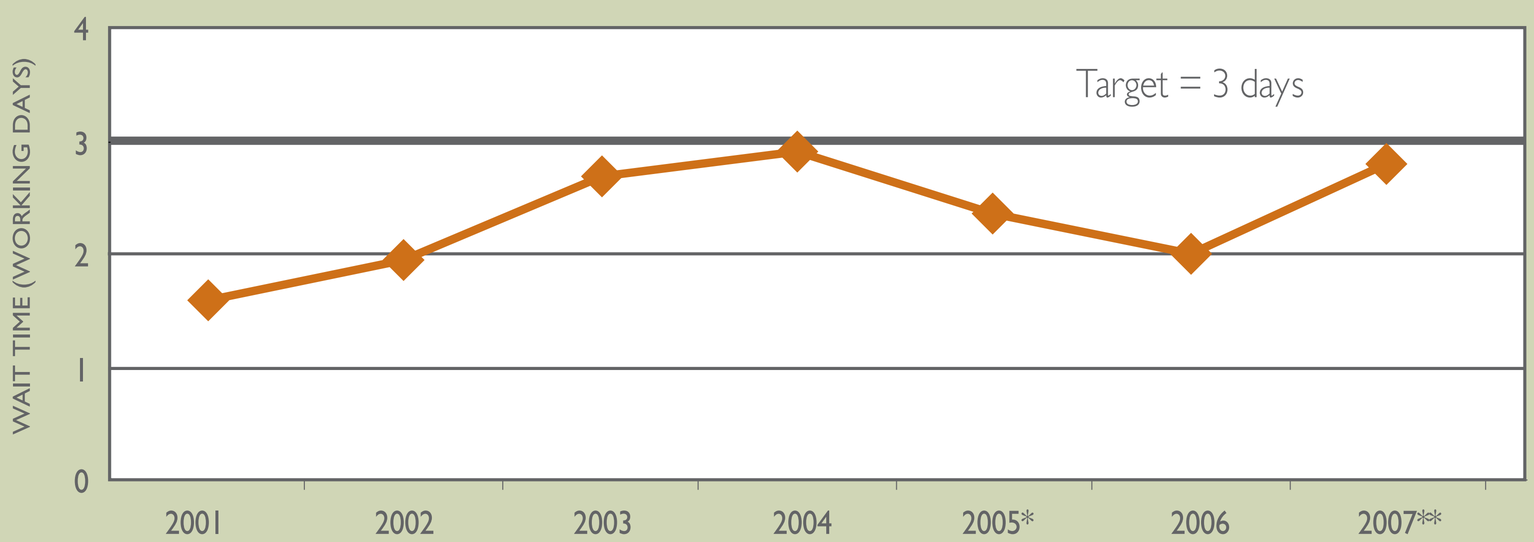
As a result of the establishment of the clinic and the use of alternate care providers, the average wait time to see a cardiac electrophysiologist has decreased from 200 days in 2005 to 30 days in 2006.

A sample of 68 patients involved with the clinic reveals an 82 per cent reduction in emergency department visits; a 56 per cent reduction in hospital admissions; and the average length of hospital stay reduced from five days before the clinic's inception to 1.8 days after its establishment.

The care approach taken by the clinic has benefited patients such as Arlene Stormoenwould, who first experienced atrial fibrillation after her first heart attack in 1994. For the last two years she has been seen by the clinic team, and is able to access their services on an on-going basis.

"It's been an extremely helpful program for me," says the retired Cochrane school teacher. "They have been very helpful in sorting out what meds I should be on. The nurses always have time to talk and answer my questions."

## URGENT ASSESSMENT CLINIC - TOTAL AVERAGE WAIT TIME




* Urgent Assessment Clinic Expansion to Rockyview General Hospital In September 2005

** Data through March 2007

## GASTROENTEROLOGY: CENTRAL INTAKE AND TRIAGE AND COLON CANCER SCREENING

Before the Innovation Initiative, patients and primary care physicians in the Calgary Health Region experienced significant wait times in accessing specialized gastroenterology services. The Canadian Association of Gastroenterology estimated in 2006 that Albertans waited the longest from referral to test, waiting 19 weeks compared to the national average of 13 weeks. Two out of four Calgarians experienced an average wait of 28 weeks for their procedures. Limited resources to perform tests and a shortage of specialists further reduced access for patients. This wait was impacting patients' quality of life, and resulted in an increased number of hospitalizations, decreased productivity at work, and increased frustration with the medical system.

The Innovation Initiatives focused on two key areas: launch of central intake and triage for gastroenterology at the University of Calgary Medical Clinics, and planning for the Colon Cancer Screening Centre.

The establishment of a gastroenterology central intake model resulted in several key successes, including a decrease in wait times of eight per cent, despite an increase in referrals of 153 percent. Through the efficiencies of the central intake model, the clinic is able to respond to an average of 1,000 referrals per month.

The GI central intake model aimed at streamlining patient referral and care by adopting a number of new work processes. This included the development of a standard referral form and consistent processes for handling referrals; the pooling of all referrals, rather than continuing with physician-specific referrals. A direct-to-procedure process was also developed to free up additional clinic space. This process allowed patients requiring only a procedure to have direct access to this service, without causing further delays in the system. Triage nurses were employed to provide consistent evaluation of all gastroenterology referrals, which frees up physician time and improves satisfaction for patients and health care professionals.

The establishment of a central intake model resulted in several key successes, including a decrease in wait times of eight per cent, despite an increase in referrals of 153 percent. Through the efficiencies of the central intake model, the clinic is able to respond to an average of 1,000 referrals per month.

Referrals are now triaged more efficiently, with patient wait time based on urgency and need rather than which physician-specific waiting list a patient happens to be on. Prior to this project, one patient could wait up to 38 times longer than another patient with the same urgency level, based on which specialist physician a patient had been referred to and how long the specialist's waiting list was. Wait list lines were decreased from 45 to three and duplicate referrals are now easily identified and consolidated. A nurse clinician was also hired at the Peter Lougheed Centre to be a regular contact to answer patient's questions and concerns about their ongoing care. This has further streamlined care and improved access.

The Innovation Initiatives have also enabled the completion of planning for the Colon Cancer Screening Centre. With a focus on wellness, cancer prevention, access, innovation and research, this facility is the first of its kind to North America and will open in late 2007. It will support a cancer screening program that will include performing 10,000 colonoscopies per year.

## GENERAL INTERNAL MEDICINE: URGENT ASSESSMENT CLINIC EXPANSION

The General Internal Medicine Urgent Assessment Clinic opened in 2001 at Foothills Medical Centre to provide urgent access, or a general internal medicine consult, within 72 hours, which helps avoid unnecessary emergency department visits and hospital admissions. However, in 2004 it became apparent that the clinic was experiencing increased wait times because of rising patient numbers.

The Innovation Initiative allowed the clinic to expand to the Rockyview General Hospital in September 2005, with 2.3 full-time equivalent staff supporting the expansion. Patients are now seen at the hospital closest to their home, with the triage and referral centre still maintained at Foothills Medical Centre.

The expansion also made use of an alternate care provider and adopted a model that connected back to the primary care physician. Nurses at the two urgent assessment clinics obtain information from patients before their appointment, freeing up time for the specialist. After the consultation, care is transferred back to the primary care physician.

Despite a doubling of patient numbers at both clinic locations, wait times have decreased from 2.7 days before the Innovation Initiatives and expansion, to 2.0 days at Rockyview General Hospital and 1.8 days at Foothills Medical Centre.

## RENAL

An estimated one to five per cent of the general population has evidence of chronic kidney disease, with higher rates among the elderly and Aboriginal populations. Strong potential exists for those with kidney disease to also develop cardiovascular complications or progress to end-stage renal disease. The proportion of Canadians with end-stage renal disease continues to increase by 10 percent each year; in Alberta $80 million is allocated annually to renal dialysis and transplantation.

“…Dr. Connelly has a cardiac support outpatient clinic with a cardiac nurse specialist, Leslie Reed. Leslie is the person who has managed (under Dr. Connelly's direction) balanced and supported Mom's very complicated disease and great assortment of medications. This has regained Mom's independence and relative health. There is no question in anyone's mind that Leslie has kept Mom alive this past year. She has definitely kept Mom out of the ER on several occasions. The intensive assessment Leslie performs on every visit ensure that the clinic knows Mom's current condition and the reality of congestive heart failure is that her condition can and does change frequently.

This is a type of intensive care that prevents many ambulance calls, ER visits and more. It is working very well. I don't know if there are other specialty clinics of this sort, where a patient has access to a Health Care Professional who KNOWS them, understands their condition and can advise or accommodate their needs. It would seem to me that there would be many instances where specialized chronic care is needed and outpatient specialist like this could be provided for the greater benefit of both the patients and the overall system.”

The opportunity to review processes and examine ways to revitalize care has been a critical step for success. A Rapid Follow up Clinic at the Peter Lougheed Centre was developed for patients with existing respiratory disease. In a sample of 171 patients, preliminary data suggests that the establishment of this clinic has resulted in a reduction of emergency department visits by 58 per cent.

The increasing prevalence of kidney disease and the risk of developing other life-threatening complications prompted the exploration of alternate diagnosis and treatment options through the Innovation Initiatives. A number of projects were undertaken to establish new clinics, centralize the referral process, and make use of alternate care providers to deliver specialized services to patients.

Like the gastroenterology initiatives, a central intake and referral process was developed in Nephrology. When Nephrology central intake was launched an urgent nephrology clinic also opened to serve patients with urgent kidney disease concerns. A centralized intake system allows for a single point of contact in referring patients with urgent renal concerns needing access to a specialist consult. Between May 2006 and April 2007 more than 1,400 referrals were processed. During the same time period over 160 urgent renal patients were seen in the Nephrology Urgent Assessment Clinic. These are patients whose level of kidney function would have put them at risk for an emergency department visit and potential admission to hospital, were it not for the Renal Urgent Assessment Clinic. The establishment of central intake has led to a 50 per cent improvement in wait times for urgent patients and a 25 per cent reduction in wait times for moderate and routine patients.

Within nephrology and renal care, further specialized services can benefit people with more complex health concerns. The Innovation Initiatives allowed for the launch of three specialized renal clinics:

- **Aboriginal Outreach Clinic:** As noted previously, the rate of kidney disease is much higher amongst Aboriginal peoples. The Diabetic Outreach Clinic for First Nations communities is run by a nurse practitioner who will assess patients with diabetes who have a high risk for kidney failure, so that a treatment plan to help manage their condition can be developed. The nurse practitioner provides the assessment and recommendations to the patient's general practitioner who can then implement changes to a patient's treatment, in addition to providing added counseling and resources to a patient to encourage lifestyles changes.
- **Stage III Chronic Kidney Disease Clinic:** This clinic was established to help patients experiencing moderately reduced kidney function. Patients are followed by a nurse clinician who will identify and manage cardiovascular risk factors. This clinic also provides an opportunity for patients to receive additional support from other health care providers – such as a nephrologist or dietitian - to stabilize or improve their health care before returning to the care of their general practitioner. This support highlights the team success of the Innovation Initiative – joint efforts between physicians, specialists, nurses, primary care physicians and other health care providers to deliver optimal patient care.
- **Glomerulonephritis Clinic:** Established a Glomerulonephritis Clinic, organized by a nurse clinician.

Access to specialized care was further developed through dialysis education and support. A Dialysis Modality Education program was launched in November 2005 to support informed choice about dialysis options. A total of 41 sessions have provided information and education to 172 patients. These sessions have been particularly beneficial for patients considering self-care dialysis, an option that can benefit the health care system and encourage patients to be more directly involved in their care and treatment plans. Prior to attending an education session, only 40.6 per cent of dialysis patients chose self-care. After attending, 68.8 per cent of patients opted for self-care. Multiple requests from across the country for this education program have been received. The DVD has also been subtitled into eight foreign languages to support the ethnically diverse renal population.

## RESPIRATORY: PETER LOUGHEED CENTRE OUTPATIENT SERVICES

Outpatient respiratory services at the Peter Lougheed Centre have been challenged with increasing numbers of respiratory patients with chronic, complex needs. A concern was brought forward to staff and physicians that clinic processes were not entirely supportive of quality patient care, and that few resources existed to do the work required to clarify issues, complete process redesign, and ensure quality patient care.

Integral to the successes of this Innovation Initiative was the hiring of a position to support clinical staffing and to also explore process redesign and innovation with the clinic. This role supported process mapping of the Peter Lougheed Centre Pulmonary Clinic, which revealed opportunities to improve patient flow, reduce bottlenecks, and ensure patient safety. This resulted in the establishment of a number of streamlined processes and new clinics. The opportunity to review processes and examine ways to revitalize care has been a critical step for success.

A Rapid Follow up Clinic at the Peter Lougheed Centre was developed for patients with existing respiratory disease, who have already experienced a hospital admission due to their illness. This clinic serves to prevent emergency visits and inpatient hospital admissions. It has also reduced inefficiencies in regular clinic bookings. The Rapid Follow up Clinic seeks to ensure the right person gives the right care at the right time. 320 patients were seen from July 2006 to March 2007, with an average of 36 patients seen per month. In a sample of 171 patients, preliminary data suggests that the establishment of this clinic has resulted in a reduction of emergency department visits by 58 per cent.

The Urgent Assessment Clinic was created for patients newly diagnosed with respiratory disease and ensures medically compromised patients have rapid access to specialist consultation without going to Emergency. A total of 53 patients were seen from July 2006 to March 2007, with an average of six patients seen per month.

## RHEUMATOLOGY

Accessing rheumatology specialist care for arthritic conditions can be a difficult process for many patients and primary care physicians. A lack of rheumatologists and inefficiencies in referral processes, scheduling and care delivery, are all factors affecting access to specialists. Wait times to see a rheumatologist continue to increase because of a growing demand for services by an aging population with a variety of chronic conditions.

**Rheumatology Mean (SD) Wait Time in Days**

| | 2005 Wait Time | | 2006 Wait Time | |
|---|---|---|---|---|
| Urgency | N | Days | N | Days |
| Urgent | 51 | 29 (46) | 74 | 29 (27) |
| Moderate | 88 | 110 (57) | 291 | 69 (51) † |
| Routine | 333 | 155 (88) | 1235 | 128 (66) † |
| Overall | 472 | 133 (89) | 1600 | 113 (69) † |

† $p < 0.00005$. Note: 2006 data are estimated wait times

A declining number of rheumatologists due to retirements and a lack of new trainees increases wait times. These demographic and manpower factors also influence the quality of care that can be provided to patients with arthritis. Effective new treatments, including biologic agents, require careful patient monitoring and add to the complexity of managing rheumatic disease.

Prior to the Innovation Initiatives, referral wait time averaged 4.5 months and ranged from one day to 14.5 months, resulting in multiple referrals. Eight per cent of patients did not show up for their appointments, and six per cent were duplicate referrals. The Rheumatology Innovation Initiative allowed for the improvement of the referral process, the establishment of new clinics, and the ability to take advantage of alternate care provider support.

The development of a central referral and intake model has created a critical service "hub" that serves to prioritize patient referrals and streamline patients to the most appropriate clinic or provider. All referrals to rheumatology are sent to the Central Triage office using a single fax number. Additional data is collected if needed from referring physicians by the central triage personnel. The referral is then triaged by a

Rheumatology central intake has resulted in decreased wait times and timely access for patients requiring urgent care. Wait times for each physician have now equalized and duplicate referrals have been virtually eliminated.

nurse clinician, with the support of two rheumatologists, and forwarded to the next available rheumatologist based on urgency. If a specific rheumatologist is requested by the referring physician the referral is sent directly to that rheumatologist for an appointment.

All 13 rheumatologists in the Calgary Health Region participate in this new referral process. During the first year, referrals were received at approximately 100 referrals per week with over 4,676 referrals triaged. Results indicate wait times are decreasing, and timely access is being achieved for patients requiring urgent care. Additionally, wait times for each physician have now equalized and duplicate referrals have been virtually eliminated. The number of physician-specific referrals has declined, from 72 per cent in April 2006 to 45 per cent in March 2007, suggesting family physicians and patients value timely access over care by a specific physician.

Four specialty clinics – The Early Inflammatory Arthritis Clinic, the Urgent Rheumatology Clinic, the Nurse Practitioner Clinic, and the Young Adult Rheumatic Disease Clinic - were established or expanded to provide specialized services to patients accessing rheumatic care. A Central Referral and Triage Office was also established to ensure that patients would be treated at the appropriate specialty clinic.

The Early Inflammatory Arthritis Clinic expanded from the Peter Lougheed Centre to the Foothills Medical Centre. This clinic serves patients who have been experiencing arthritis symptoms for less than six months. Academic and community rheumatologists, registered nurses, social workers, and physiotherapists work together to provide treatment and care. 106 patients have been seen during the first year of operation of Central Referral and Triage Office, with an average wait time of 26 days. The clinic has now expanded from two to four clinic days per month and expansion of the clinic to Rockyview General Hospital is underway.

An Urgent Rheumatology Clinic was established with 158 urgent/semi-urgent patients seen during the first year of operation of the Central Referral and Triage Office. The average wait time is 24 days.

Through a new Nurse Practitioner Clinic, 184 new patients were evaluated during the first year of operation. The patients seen at this clinic are those whose referrals have been deemed to be moderate or routine in urgency. Average wait time for an initial appointment is 45 days.

## THORACIC ONCOLOGY PROGRAM

Lung cancer is the leading cause of cancer death in Canada for both men and women. Lung cancer accounts for more deaths than breast, prostate, colon and pancreas cancer combined. The overall five-year survival rate for lung cancer is a dismal 14 per cent. However, multiple advances in the screening, diagnosis, and treatment of lung cancer have been made in the past decade.

However, these advances involve multiple specialists and tests before an appropriate evaluation can be given and treatment can begin. This leads to higher costs, patient anxiety, and the possibility of progression of disease during lengthy evaluations. Additionally, the Lung Cancer Wait List Project, a part of the Calgary Health Region's Regional Initiative to Reduce Wait Times, already indicates that evaluation and referral patterns for lung cancer in Calgary are often inefficient, variable, and prolonged.

To address these issues a highly specialized clinic, the Thoracic Oncology Program, was established in September 2006. The Thoracic Oncology Program supports efficient diagnosis and timely treatment for suspected lung cancer. To accomplish this a team consisting of a respirologist who specializes in lung cancer, an oncologist, thoracic surgeon, nurse practitioner, and a clerk work together to care for patients.

Demonstrating the importance of alternate care providers, the nurse practitioner is an integral member of this team. The role includes patient triage, care, and diagnostic coordination. Importantly the nurse practitioner reduces physician time spent in the clinic, freeing them up to see other patients.

Between September 18, 2006 and April 27, 2007 there were 112 individuals seen in the Thoracic Oncology Program with

The Department of Medicine Alternate Relationship Plan represents an opportunity to establish new processes of care to address some of the needs of rural sites and isolated urban populations in accessing specialist services in a coordinated fashion.

an average of four new patients per week. The average wait time from date of referral to the first clinic date is seven days. There is no wait list for the Thoracic Oncology Program. With the addition of the nurse practitioner, the respirologist can now see one to two additional patients per day. About 15 per cent of patients referred to the Thoracic Oncology Program are non-oncology related. The nurse practitioner provides follow-up to ensure that these patient receive appropriate care after leaving the clinic.

The clinic team has also made use of new technology practices, conducting telehealth consultations to improve access for patients from rural and out of Region areas.

## TELEHEALTH

The Department of Medicine has long recognized a responsibility to provide care and service across the Region and, in some instances, to Southern Alberta. Historically this has been provided to patients through periodic visits to smaller health care facilitites by specialists or by booking an appointment for a patient to come to Calgary.

The technical infrastructure to provide telehealth exists within the region and will continue to expand. What has not been readily available in the Region is the infrastructure to develop and integrate clinical telehealth services into the care processes within a division or department.

While the Department of Medicine has accessed provincial grant funding to develop clinical telehealth services, these efforts have been hampered by the targeting of the funds to specific projects, leading to isolated pockets of development within the department. The limited term nature of the project funding has also been an obstacle, creating an inability to retain skilled individuals either during or after completion of projects. Gains achieved by these projects are then reduced or lost during transitions, especially when key personnel take their experience with them at completion and contacts and relationships cannot be maintained. There is the need to consolidate and integrate the programs into the department, to take clinical telehealth to the next level and to work with other regional groups with similar goals.

The Department of Medicine Alternate Relationship Plan represents an opportunity to establish new processes of care to address some of the needs of rural sites and isolated urban populations in accessing specialist services in a coordinated fashion, and to develop strategies to allow other divisions and departments to integrate these types of programs into their service delivery models. It will allow more productive use of specialist time by reducing the need to travel, and support the ability to provide clinical service to multiple sites in a single day.

The Innovation Initiatives allowed for a needs assessment of rural telehealth and access concerns to be completed in fall 2005. Working collaboratively with regional telehealth, a telehealth tool kit was also created. This kit documents telehealth processes and procedures, and contains the information required to facilitate the development of new telehealth services for groups considering telehealth as an option for service delivery or education.

Equipment purchased under the Innovation Initiatives supported telehealth expansion at the Diabetes Hypertension and Cholesterol Centre. A diabetes in pregnancy telehealth clinic was also launched in Lethbridge in September 2005. This is a weekly clinic supported by two endocrinologists. By the end of June 2007, 88 clinics had been held, 216 patients seen, and 249 case conferences held, in which varying specialists discussed particular cases. As a result, the department has treated five thyroid patients in Lethbridge who would otherwise have had to travel to Calgary for a specialist consult.

Areas currently using telehealth include: Geriatrics, Endocrinology, Nephrology, Respiratory, General Internal Medicine and Infectious Disease. A survey was also conducted to identify telehealth needs across all medical divisions. As well, program development to launch a dermatology telehealth service at three geographically distributed sites was completed. The first clinic was held August 1, 2007.

NEC
Medical Physiology
Good Health Eating Guide Resource

# QUALITY, SAFETY AND EFFECTIVENESS

In a sample of 103 patients, data reveals that as a result of the increased availability of clinics, emergency visits by patients with congestive heart failure have been reduced by 83 per cent. Inpatient hospital admissions have been reduced by 69 per cent.

Quality, safety and effectiveness means that care received by patients has had the desired effect. While improving access supports patients getting care when they need it, quality care focuses on ensuring the right care.

## CARDIAC FUNCTION CLINIC

Increasing numbers of Calgarians are living with congestive heart failure. It is widely accepted that care of patients with congestive heart failure in specialized clinics results in improved outcomes and largely reduced hospitalizations. Some data suggest that mortality may also be reduced. However, there are often limitations for patients accessing specialized care for cardiac function. Currently in Canada, fewer than half of patients with heart failure are assessed by a specialist (internist or cardiologist).

The Cardiac Function Clinic was established at the Foothills Medical Centre prior to the Innovation Initiatives; however, there were significant challenges for congestive heart failure patients in accessing care. Fewer than half of all cardiologists in the Calgary Health Region used the clinic, and only about 12 used the clinic regularly.

The Innovation Initiatives allowed the Cardiac Function Clinic to examine ways to deliver more accessible care to patients. This included expanding clinic services to both the Rockyview General Hospital and Peter Lougheed Centre. The Rockyview clinic opened in October 2005 and the Peter Lougheed clinic opened in December 2005. In a sample of 103 patients, data reveals that as a result of the increased availability of clinics, emergency visits by patients with congestive heart failure have been reduced by 83 per cent. Inpatient hospital admissions have been reduced by 69 per cent.

The Cardiac Function Clinic also made use of alternate care providers in delivering care to patients. In the clinic, about 70 per cent of appointments are nurse visits without a physician present – much of the care is provided according to a plan or, if necessary, changes can be made by simply contacting the attending cardiologist. Through the clinics, a given number of physicians can manage a greater number of patients with nurse support.

The team approach to the clinic employs means patients are able to access care in a more efficient manner – resulting in high patient satisfaction. One patient letter revealed the following about Cardiac Care Clinic nurse Leslie Reed:

"There is no question in anyone's mind that Leslie has kept Mom alive this past year. She has definitely kept Mom out of the ER on several occasions. The intensive assessment Leslie performs on every visit ensures that the clinic knows Mom's current condition and the reality of congestive heart failure is that her condition can and does change frequently. This is a type of intensive care that prevents many ambulance calls, ER visits and more. It is working very well."

The group is also exploring ways in which effective care can be delivered to patients not able to physically access the clinic. The Cardiac Function Clinic supports patients from urban (82 per cent), rural (14 per cent) and non-Calgary Health Region (five per cent) locations. The Clinic piloted the feasibility of using telehealth to better support congestive heart failure patients remotely. This pilot was successful and plans are underway to develop a Cardiac Function Clinic using telehealth to increase access for rural patients.

## DIABETES

Diabetes is fast becoming one of the dominant ailments of the 21st century, with increasing prevalence throughout the population. In addition to the health concerns associated

with diabetes itself, it is also a contributor to heart disease and chronic kidney disease, and as such will be a dominant health risk in the coming decades.

The majority of those with diabetes are not acutely unwell or even experiencing symptoms - many are oblivious to the risk of serious health complications they are exposed to. The increasing numbers of those with diabetes clearly indicates that direct specialist care is not sustainable, and that specialized care needs to be directed at the most complex patient groups. As a chronic disease, diabetes is most effectively cared for by primary care physicians. However, the intricate treatment of diabetes can overwhelm primary care practitioners. It is becoming increasingly evident that support from a multidisciplinary team and a case management strategy is required for success.

The Innovation Initiatives focused on creating linkages with primary care physicians and using the skills of alternate care providers. Four full-time diabetes educators joined forces with 45 family physicians to screen, assess and support patients with difficult-to-treat diabetes. This was extended to rural areas, where a diabetes educator assists with providing information and education.

Helmuth Schroeder is a Calgary diabetes patient who has benefited from the diabetes education received because of the Diabetes Innovation Initiative.

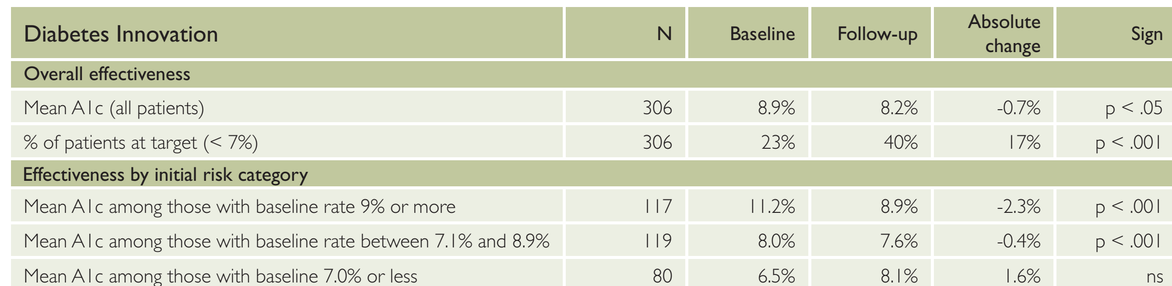
"The information and the treatment I'm getting is great," said Schroeder. "They're giving me the answers my doctor just doesn't have the time to give."

Further specialist care was delivered in family physician offices by providing laptops and Soprano software licenses for rural educators; provider-to-provider chronic disease online collaboration support; online patient education; and telehealth for patient and staff education.

A diabetes in pregnancy clinic was also launched in Lethbridge, with patients and specialists connecting via telehealth.

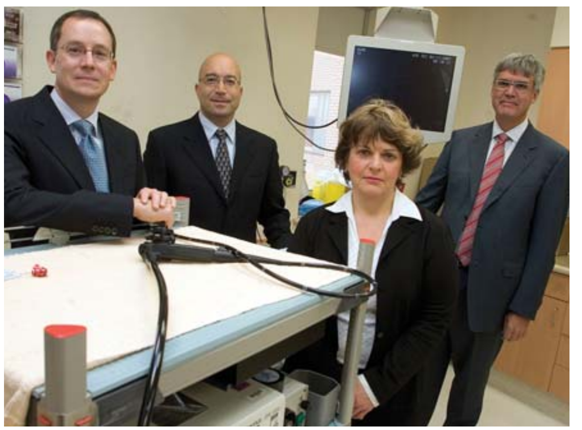
Based on increased partnership between specialized services and primary care physicians, 1,903 patients received 2,339 face-to-face visits and 1,873 phone contacts. Forty-five new primary care physicians chose to participate in the Chronic Disease Management Program – a 40 per cent increase in participation, representing 25 per cent of family physicians in the Calgary Health Region. Data has revealed significant improvements in patient biochemical markers – indicating that intervention has been highly effective for patients at the greatest risk.

Significant reductions in HbA1c, a key clinical indicator of how effectively diabetes is being managed, were realized. It appears this intervention was highly effective for those patients at greatest risk. For patients with a HbA1c greater than nine per cent, intervention by a diabetes educator



| Diabetes Innovation | N | Baseline | Follow-up | Absolute change | Sign |
|---|---|---|---|---|---|
| **Overall effectiveness** | | | | | |
| Mean A1c (all patients) | 306 | 8.9% | 8.2% | -0.7% | p < .05 |
| % of patients at target (< 7%) | 306 | 23% | 40% | 17% | p < .001 |
| **Effectiveness by initial risk category** | | | | | |
| Mean A1c among those with baseline rate 9% or more | 117 | 11.2% | 8.9% | -2.3% | p < .001 |
| Mean A1c among those with baseline rate between 7.1% and 8.9% | 119 | 8.0% | 7.6% | -0.4% | p < .001 |
| Mean A1c among those with baseline 7.0% or less | 80 | 6.5% | 8.1% | 1.6% | ns |

Improved access to timely quality care enhances patent satisfaction and averts the use of emergency and hospital services.



based in a family physicians office, resulted in an absolute reduction of 2.3 per cent; large clinical trials support that a reduction in HbA1c of 0.5 percent in a diabetes population will have measurable impact on health outcomes and economic burden on the health system.

## INFECTIOUS DISEASE: SHARED CARE GUIDELINE DEVELOPMENT AT 8TH & 8TH HEALTH CENTRE

There are a small number of infectious disease specialists in the Calgary Health Region and they have not had the resources to extend activities into the community. As a result, community physicians have not had access to infectious disease expertise. One of the areas in where infectious disease input would be important is the treatment of community-acquired infection. Unfortunately, in many cases the choice of therapy for these infections is determined by the availability of antibiotics samples in the office, or by previous prescribing patterns, versus being evidence based. This leads to the over-use of newer, broader spectrum antibiotics and contributes to the development of antibiotic resistance.

The Innovation Initiative allowed Infectious Diseases and the physicians at the 8th and 8th Community Health Centre to collaborate in developing guidelines for the treatment of commonly seen infections acquired in the community, including bite wounds, surgical site infections, and cellulitis, an inflammation of the connective tissue underlying the skin.

Additionally, the initiatives also allowed for the contribution of $25,000 to an existing fund at 8th and 8th to ensure that patients who are unable to pay for required medications could still obtain prescriptions.

The guidelines developed have been well received by both physicians and patients. A survey of physicians revealed that 100 per cent of responding physicians found the guidelines useful in the treatment of bite wounds and uncomplicated cellulitis – a strong indicator that they will continue to use the guidelines in the future.

The guidelines developed and implemented increased compliance for the management of cellulitis. Prior to the guideline development, compliance was 56 per cent; post-implementation it was 90 per cent.

The development of this project involved a greater initial time investment than the infectious disease physician had originally anticipated. However, in the long run it is expected that this will contribute to a decrease in the need for regular access to the infectious disease specialist. Primary care physicians who participated in this project are now better equipped to manage, diagnose, and treat cellulitis, bite wounds, and surgical site infections.

## RESPIRATORY: CHRONIC COUGH

Chronic cough is one of the most common complaints in an outpatient clinic setting and a frequent reason for specialist referral. Given that cough is a cardinal sign for cancer, it is taken seriously by primary care physicians and warrants a chest x-ray if sustained for longer than one month. Chronic cough has a significant impact on morbidity and patient quality of life. It can cause sleep disruption, school and work absences and affect social activities.

Many symptoms are associated with chronic cough, including retching, vomiting, incontinence, headaches, muscle strains, rib fractures and hernias. Patients with chronic cough are frequently very anxious because they fear they have a severe health problem.

The Chronic Cough Clinic was established in January 2006 as part of the Innovation Initiatives, to support rapid assessment and management of patients with chronic cough. An asthma educator (respiratory therapist) was hired to support this clinic. After training in chronic cough, the educator is involved in assessing, educating and managing the majority of patients referred to this clinic. This is done under the supervision of the attending respirologist. The educators contact the patients by telephone two and six weeks after their initial clinic visits and see the patient in follow-up at four and eight weeks to ensure they are responding favourably to treatment.

Research conducted in the chronic cough clinic indicates that care delivered by an alternate care provider under the guidance of a specializing physician is as effective as care delivered by the specialist. This approach frees up specialist time to see additional patients.

Research conducted with this clinic indicates that care delivered by an alternate care provider under the guidance of a specializing physician is as effective as care delivered by the specialist. This intervention frees up specialist time to see additional patients. The Chronic Cough Clinic has also decreased unnecessary referrals to other specialists, such as ear nose and throat specialists, gastroenterologists, and allergists.

Since the inception of the clinic in January 2006, 260 patients have been referred, resulting in 732 contacts. 100 per cent of patients have been offered an appointment in less than three weeks – prior to the clinic patients waited an average of six to nine weeks for specialist care. The clinic has also shortened wait lists for other respirologists, reducing wait times throughout the system. This Innovation Initiative also focused on improving quality of life for chronic cough patients. Since the clinic was established, health care providers have been successful at curing or improving symptoms for 72 per cent of chronic cough patients. Incidences of vomiting, retching, incontinence and anxiety have been reduced in most patients visiting the chronic cough clinic.

The clinic has been a welcome relief for Odile Grenier, a registered nurse from Canmore, Alberta. She has greatly benefited from the care received at the Chronic Cough Clinic.

"I was just very pleased with the thoroughness of their investigation," said Grenier. She says the accessibility of clinic staff between appointments has been exceptional, with a staff member regularly available to quickly respond to her phone inquiries.

"I had their numbers and could call them for anything, even minor concerns, and they got right back to me," said Grenier.

## RESPIRATORY: INDUCED SPUTUM ANALYSIS

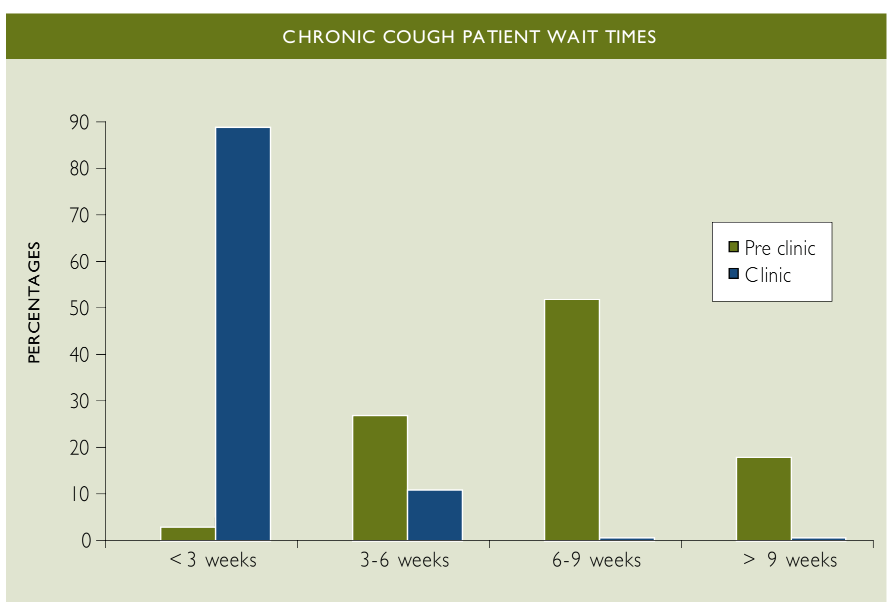
About two million Canadians have asthma, and the prevalence of this condition increased by two to three per cent between 1995 and 2001. Despite the availability of anti-inflammatory medications, more than 50 per cent of Canadians with asthma have uncontrolled symptoms, which can often require urgent medical attention. This translates to an estimated cost of $162 million per year in Canada for urgent care.

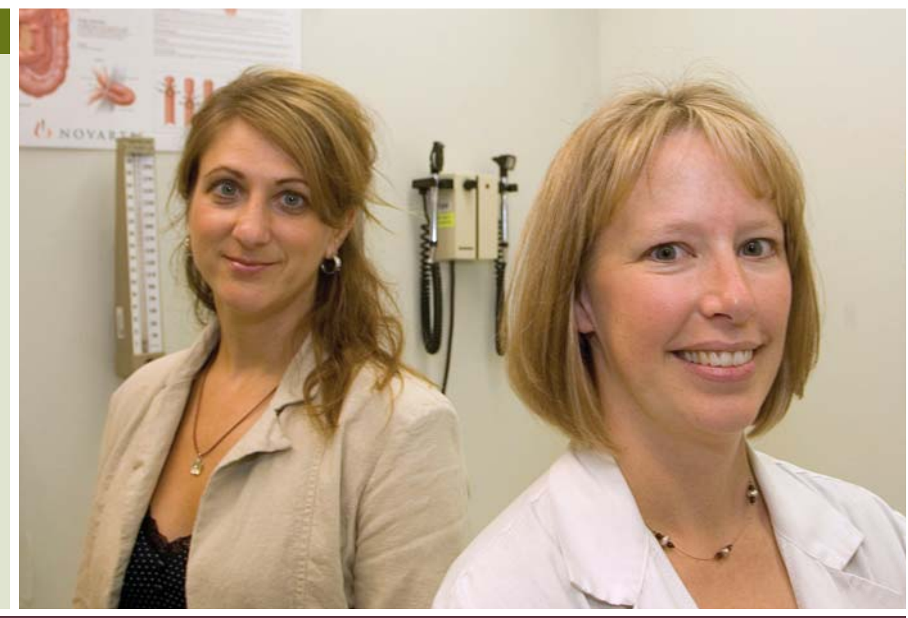
Asthma requires objective measurements to confirm the diagnosis, monitor treatment and improve symptom control. Induced sputum analysis represents a non-invasive, relatively easy tool to meet this need. This sample consists of mucus coughed up from the lower airways.

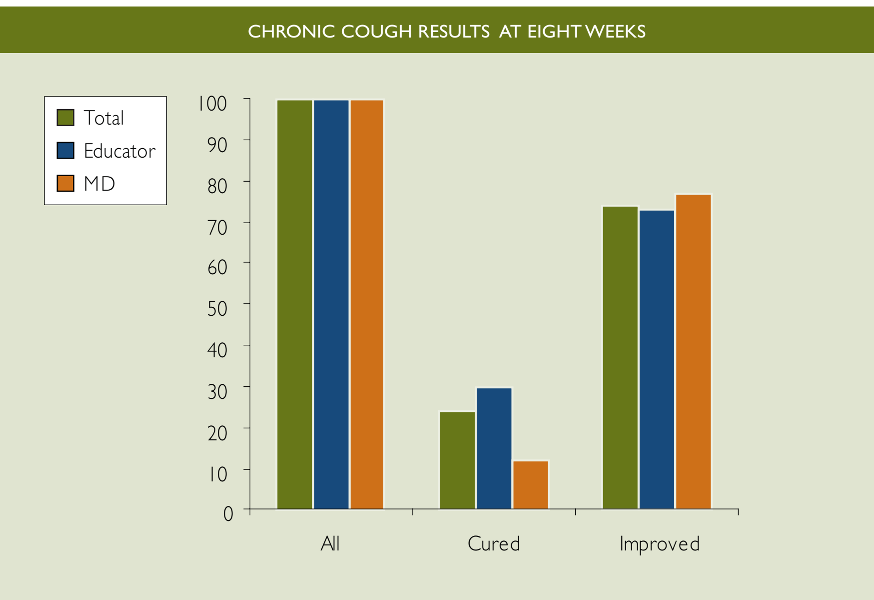
Without sputum cell counts respiratory specialists are no better than non-specialists in identifying and assessing airway inflammation. Without objective measurement, enabled by sputum analysis, diagnosis and treatment of asthma can be inaccurate and result in increased use of the health care system and affect quality of life.

The Innovation Initiatives allowed for the introduction of induced sputum analysis at Foothills Medical Centre in April 2005. Lab equipment required to perform analysis of samples was purchased and between May 2005 and March 2007, 387 sputum samples were processed. Reasons for test referrals include: assessment of difficult-to-treat asthma; confirmation of asthma diagnosis; assessment of chronic cough; assessment of dyspnea, or shortness of breath; and assessment of chronic obstructive pulmonary disease.

Induced sputum analysis allowed for proper diagnosis and referral for treatment because of the objective measurement. As a result of the sputum analysis, proper diagnoses were made for patients experiencing airway inflammation. In a sample of 65 patients this led to a reduction in emergency department visits of 67 per cent, and a decrease in hospital admission rates of 75 per cent.


CHRONIC COUGH PATIENT WAIT TIMES
PERCENTAGES
0
10
20
30
40
50
60
70
80
90
< 3 weeks
3-6 weeks
6-9 weeks
> 9 weeks
Pre clinic
Clinic




CHRONIC COUGH RESULTS AT EIGHT WEEKS
Total
Educator
MD
0
10
20
30
40
50
60
70
80
90
100
All
Cured
Improved

## RESPIRATORY: SLEEP CENTRE ALTERNATE CARE PROVIDER MODEL

Sleep apnea, a disorder characterized by pauses in breathing during sleep, is highly prevalent and affects about two to four per cent of the population. The prevalence of sleep apnea is significantly higher in patients with heart failure (40 per cent), renal failure (50 per cent) and stroke (60 per cent). The obesity epidemic is expected to increase the prevalence of sleep apnea.

The Sleep Centre at the Foothills Medical Centre currently has a wait list of about 10 months and is not able to meet current level of demand for service. Diagnostic testing is not adequate; not enough sleep physicians are being trained; and physician recruitment is difficult. It has been estimated that the Calgary Health Region requires 14 full-time sleep physicians to meet current clinical demands. Currently, there are seven part-time sleep physicians working at the Sleep Centre.

In order to provide more effective care and access for patients of the Sleep Centre, an alternative care provider model was introduced. A position was created at the centre for a respiratory therapist with a specialized skill to work closely with sleep physicians. This new position supports follow-up visits, education and long-term follow-up for patients with severe sleep apnea.

Access to specialty care for patients with sleep apnea has improved with the introduction of the respiratory therapist, an alternate care provider role. The alternate care provider has the opportunity to play an increased role in clinical and patient care and this position helps free up physician time to see more complex patients.

Since the introduction of the alternate care provider position at the Sleep Centre in July 2005 over 1,017 additional patients have been seen (3,255 encounters). Overall, the clinic's alternate care provider now completes an average of 78 visits per month that were previously handled by sleep physicians. This has freed up these specialists to see patients with more complex health needs.

The respiratory therapist also helps patients required to use a Continuous Positive Airway Pressure (CPAP) machine adjust to the therapy, which can often be difficult initially.

A CPAP database was created in September 2005 to track and evaluate patient compliance with the therapy. Of the 845 patients currently receiving CPAP therapy, 533 patients are being monitored to evaluate CPAP compliance. Data indicates an 87 per cent adherence with CPAP therapy, substantially better than the 40 to 60 per cent adherence rates in published literature. Improved compliance and follow-up results in improved health outcomes and supports reduced health care utilization.

In a sample of 797 patients, a number of patients had accessed the emergency and hospital service. Enhanced compliance with CPAP therapy has resulted in an 86 per cent reduction in emergency department visits and a 65 per cent reduction in inpatient hospital admissions.

## CLINICAL DECISION SUPPORT AND DEEP VEIN THROMBOSIS PROPHYLAXIS

Deep vein thrombosis is a common health condition, and has been identified as the number one preventable cause of in-hospital death. This clot formation in a deep vein blocks the circulatory system, frequently resulting in hospitalization or death. Additionally, frontline health care workers indicated a need for a support process and tools to implement best practices in diagnosing and treating patients with deep vein thrombosis.

Given its prevalence, and existing research which indicates that deep vein thrombosis can be averted, deep vein thrombosis prevention was identified as a top clinical priority.

Thromboprophylaxis, the practice of giving small doses of anticoagulant drugs to individuals with an increased risk, has been shown to reduce the incidence of deep vein thrombosis by two-thirds. A 2006 Canadian study examined hospitalized medically ill patients nation-wide who

had indications for deep vein thrombosis, and found that only 16 per cent of these patients received appropriate prevention. Thromboprophylaxis guidelines indicate some of the strongest evidence for positive outcomes when applied appropriately. Based on this, deep vein thrombosis prevention was selected to pilot a model for Clinical Decision Support within the Innovation Initiatives.

The Clinical Decision Support Team advocates taking a structured approach to quality improvement and patient safety strategies. The intention is to continuously learn what tools and processes best enable the adoption of clinical practice guidelines. These learnings will help to accelerate and support future Clinical Decision Support projects.

Since this Innovation Initiatives was launched in fall 2005, the Department of Medicine and Medical Services has adopted a Clinical Decision Support framework to prioritize clinical issues, review evidence, validate content within a local context, support integration into practice, measure impact and sustain change.

Eight units participated in a pilot program with decision support tools and pathways for appropriate thromboprophylaxis. This pilot program resulted in:

- 36 education sessions and pocket guides provided to 113 nurses;
- Four education sessions and pocket guides provided to 60 pharmacists; and
- Seven education sessions and pocket guides provided to 23 physicians and residents.

A variety of information packages and pocket guides were distributed to care providers throughout the health care system and web access to project resources and information is also available. A Region-wide project launch to prevent deep vein thrombosis is also planned.

# EFFICIENCY

Over a 12-month period the Pre-Admission Clinic project team created a screening tool that supported the right patients being seen by the right specialist, and that pre-operative lab testing was standardized according to the best available evidence. The tool also helped ensure the right information was available at the time of a clinic appointment.

System efficiency and sustainability means that care is delivered with a minimum of wasted expense – cost-savings are maximized and appropriateness of care is delivered.

Improved access to timely, quality care decreases use of emergency and hospital admissions. In five of the innovation projects (Sleep Centre, Atrial Fibrillation Clinic, Cardiac Function Clinic, Induced Sputum Analysis, Peter Lougheed Centre Respiratory Rapid Follow-Up Clinic), over a six-month time period, over 495 Emergency visits, and 338 inpatient admissions, were avoided. It is difficult to measure how great of an impact the innovation initiatives have had on inappropriate health care use; it is likely greater than reflected in the data.

## PRE-ADMISSION CLINIC: STANDARDIZATION OF PRE-OPERATIVE CONSULTATION

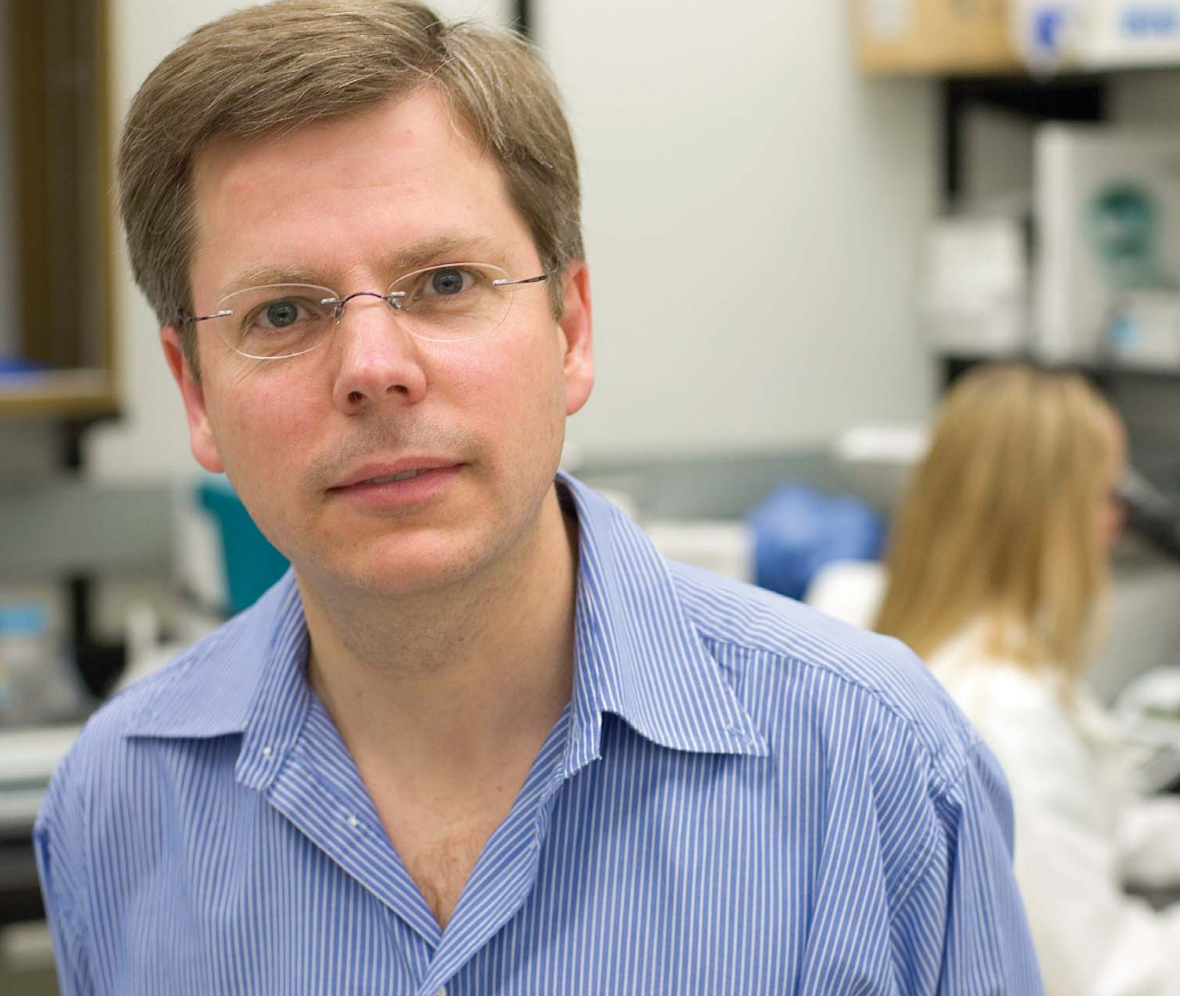
A 2002 study noted a lack of consistency in the way referrals were made for pre-operative patents to the Pre-Admission Clinic, and in preoperative lab work for the clinic. This led to anesthesia and internal medicine consulting on patients that did not need to be seen – and not consulting on patients who should have been seen. There were also inefficiencies when the necessary diagnostics were not available at the time of consult; or, conversely, when unnecessary diagnostics were ordered. This led to the delays of some surgeries and cases of less-than-optimal patient care. The Innovation Initiatives allowed for the Pre-Admission Clinic based at Foothills Medical Centre to develop tools that would allow for better screening of patients requiring care in their clinic.

Over a 12-month period the project team created a screening tool that supported the right patients being seen by the right specialist, and that pre-operative lab testing was standardized according to the best available evidence.. The tool also helped ensure the right information was available at the time of a clinic appointment. A team of physicians from general internal medicine and anesthesia, the patient care manager, nurses, clerical staff, data analysts, and project managers all collaborated on the project.

After being tested alongside existing processes, new guidelines and referral tools were formally adopted in May 2007. The standardization of the referral process has enabled health care staff in the Pre-Admission Clinic to more efficiently prepare patients for surgery.

The standardization of lab tests ordered for patients has also translated to a dramatic cost savings for the Calgary Health Region – a projected cost savings of over $410,000 during the 2005-2006 fiscal year. This does not account for additional tests that may have been ordered during the consultation process.

The Innovation Initiatives have resulted in the development of a reliable, valid screening tool that ensures the most appropriate pre-operative patient consultations with specialists. It has also allowed the Pre-Admission Clinic to identify missing and unnecessary diagnostic tests, which has translated to a cost savings for the health care system. Additionally, the use of alternate care providers has enabled the clinic to increase capacity and quality for patients – ensuring the right patients are seen at the right time by the right health care provider.



# INTEGRATION

The Chronic Disease Management Innovation Initiative extended existing chronic disease work to enhance specialist support of primary care teams.

Service integration is care that is coordinated across organizations and systems.

## CHRONIC DISEASE MANAGEMENT

Complications from chronic illness are responsible for many deaths and hospital admissions – including 70 per cent of all deaths and 60 per cent of medical care costs. It is estimated in the future that 80 per cent of health providers will deal with chronic illness care.

Surveys across a variety of chronic diseases including high blood pressure, diabetes, coronary artery disease, asthma and congestive heart failure have shown that 40 to 80 per cent of patients are inadequately treated. The Chronic Disease Management Innovation Initiative extended existing chronic disease work to enhance specialist support of primary care teams to address the needs of the following populations:

- Vascular risk reduction (post-stroke, secondary prevention)
- Weight management
- Congestive heart failure
- Chronic obstructive pulmonary disease (COPD)
- Osteo arthritis

For patients who had suffered a stroke, an alternate care provider model was introduced. This model involved a nurse practitioner using established guidelines to improve care once a patient was discharged from the stroke program and back to receiving care from their primary care physician. Results indicate that 531 patients have been seen for post-stroke treatment since the alterate care provider model began in January 2006.

In January 2007, a pharmacist and nurse were assigned to serve as a resource for physicians and nurses seeking assistance with managing osteo arthritis patients. These two new resources improved linkages through services by making use of clinical guidelines and education for patients and health professionals.

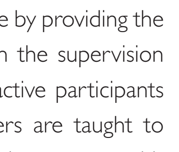
For patients with COPD and congestive heart failure who had been admitted to a hospital, two new nurse clinicians were hired in September 2006 and January 2007 respectively to help facilitate their transition from the hospital back into the community.

The COPD transition nurse saw 297 patients prior to discharge, which supported transition between acute care and the community and integration across systems.

The Innovation Initiatives resulted in the launch of a weight management program in January 2006. Alternate care providers included a dietitian who provided screening, counseling and pre- and post-surgery support. The weight management initiative also made use of new surgical techniques such as lap banding and used existing services such as the customized, community-based Living Well: Obesity programming already in place at three health care sites. As a result of the work to integrate care across the system through the weight management initiative, a total of 427 patients were triaged, with 309 patients seen. An average weight loss of 3.7 kg was seen in patients.

## INFECTIOUS DISEASE: NURSE PRACTITIONER AND HOME PARENTERAL THERAPY PROGRAM

The Home Parenteral Therapy Program is a program operating at Foothills Medical Centre, the Peter Lougheed Centre and the Rockyview General Hospital. This service was introduced in 1992, and has grown rapidly over the years in supporting patients requiring home IV treatment. These patients include those requiring antibiotics, pain control, hydration and other IV therapies.



The program seeks to enhance quality of life by providing the opportunity to receive care at home with the supervision of health care professionals. Patients are active participants in the program, as they or their caregivers are taught to administer medications in a safe and effective manner with support. There are four goals to the program:

- reduce emergency department visits;
- reduce in-patient stays;
- support 8th and 8th and South Calgary Health Centre IV therapy programs; and
- provide linkages for community physicians to access IV therapy programs for patients.

In the past year demand on the program at the Foothills Medical Centre has increased by 28 per cent (1,766 referrals), challenging the sustainability of the program. The increased demand has also placed an increase burden on the infectious disease specialists who service the clinic, preventing them from providing enhanced services at other infectious disease clinics (such as the Sexually Transmitted Disease Clinic, Tuberculosis Clinic, etc. and foot/wound clinics).

The Innovations Initiative allowed for an alternate care provider model to be introduced. Two nurse practitioners were hired to collaborate with a team in treating infectious diseases and supporting the Home Parenteral Therapy Program. This is freeing up infectious disease specialists to treat the more complex patients within the clinic while providing them with the opportunity to provide necessary enhanced services at other infectious disease clinics.

The first nurse practitioner was hired in July 2005, with a second hired in September 2006. These alternate care providers help in supporting patients, including follow-up care, new referrals and transitions for patients from hospitals to the community.

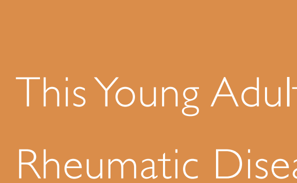
In the past three years, the number of patients seen by the nurse practitioners has increased dramatically – it's estimated that each sees 500 patients per year. Approximately 50 per cent of the patients in the program are being seen by an alternate care provider. In addition to increasing access to specialist care, this Innovation Initiative has also improved patient care from hospital admission through to transition back to the community.

## RHEUMATOLOGY – YARD CLINIC

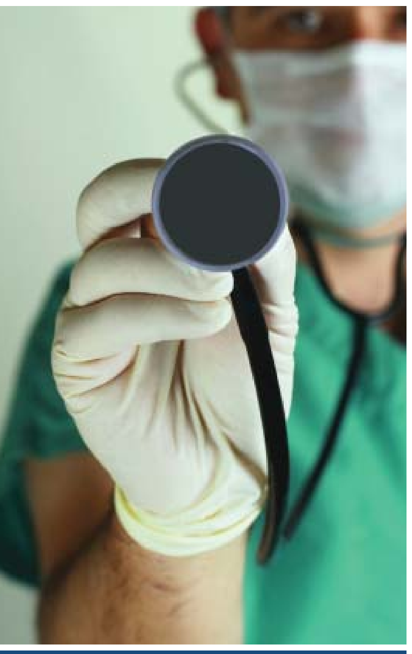
In addition to the various Innovation Initiatives which sought to improve rheumatology care in the Calgary Health Region, the program also saw the establishment of the Young Adult Rheumatic Disease (YARD) Clinic.

This Young Adult Rheumatic Disease Clinic was developed to improve the transition of teenagers with complex medical problems from pediatric to adult care. The clinic, which opened in February 2006, was initially offered twice a month. Since January 2007, it has been offered once per week because of increased demands.

There are between four to five new patients who are transitioned from the Rheumatology Clinic at the Alberta Children's Hospital each month to adult care. The YARD clinic also allows for integrated approaches to referral processes. Focus group evaluations of the YARD Clinic from February 2007 revealed positive feedback, helpful in providing suggestions for improving the clinic's services. Education programs will be developed as a result of the feedback. The mission of the YARD Clinic is to create an integrated approach to providing rheumatic disease care for teenagers.



This Young Adult Rheumatic Disease Clinic was developed to improve the transition of teenagers with complex medical problems from pediatric to adult care.



# Conclusion

Clinical innovation and enhancements to the ways in which we deliver care are necessary to revitalize the health care system. The Alternate Relationship Plan and the Innovation Initiatives have created opportunities for physicians to work together with other health care providers in unique ways. This translates into improved patient and primary care provider access to specialized medical services; improved system quality, safety and effectiveness; improved service integration with primary care and other health providers; and improved efficiency and sustainability.

These improvements have been achieved through dramatic changes that would not have been possible without the Alternate Relationship Plan. Concrete outcomes in improving patient care have resulted in decreased waiting times, decreased emergency department visits, decreased hospitalizations, and decreased length of stay for hospital admissions. The end result has been enhanced care, patient satisfaction and interaction with the health care system.

The Innovation Initiatives have further demonstrated that health care is evolving from a physician-based approach, to a team-based approach involving a number of specialists and health providers. The successes of the 18 Innovation Initiatives were made possible through allocated innovation funding – further support for innovation will greatly benefit the health care system. The demonstrated improvements in patient care translate into a healthier population, are a sound return on investment, and have the potential to create truly transformative changes in the health care system.

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