



CIHR IRSC

TOUCHING LIVES

CANADIAN INSTITUTES OF HEALTH RESEARCH ANNUAL REPORT 2006-2007

Canada



Canadian Institutes
of Health Research

Instituts de recherche
en santé du Canada



“They took me to see this old guy. He was asking me all these questions about the pain and I started to cry, because he really understood what I was going through.”

MARCEL BEAULIEU

READ THE REST OF MARCEL’S STORY ON PAGES 34-37.



“You can’t deal with what’s behind why you’re not eating if you’re starving. You become like a robot, hard, tough, rigid.”

DIANE SAHAKIAN

READ THE REST OF DIANE’S STORY ON PAGES 14-17.

TURN THIS PUBLICATION OVER TO SEE DIANE ON THE FRENCH COVER.

All people profiled in this annual report have agreed to their appearance in it and approved their individual stories.

Canadian Institutes of Health Research

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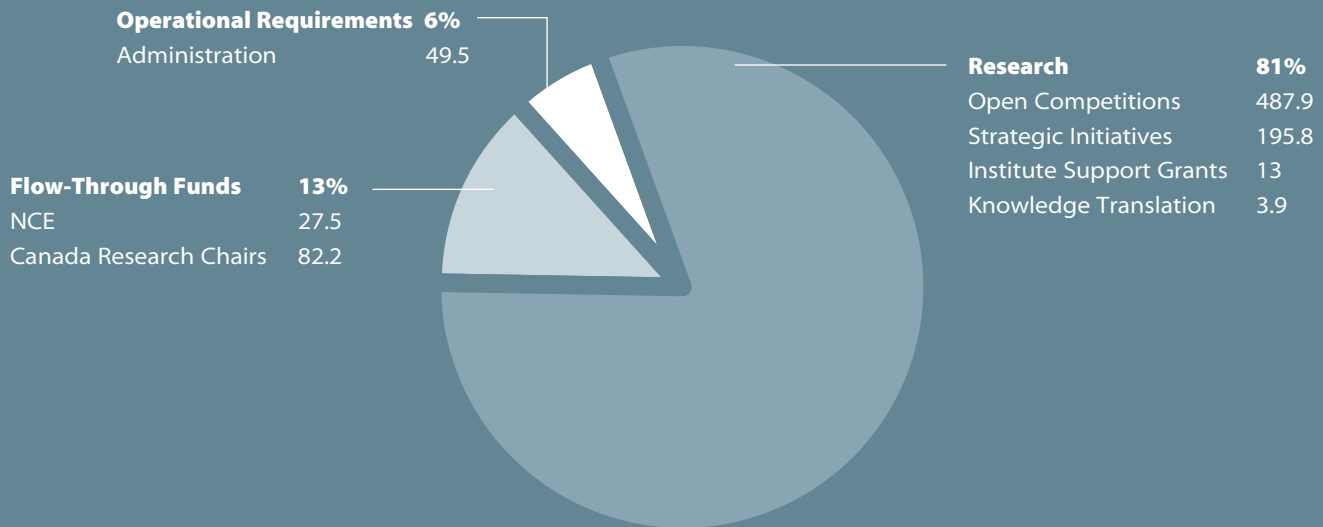
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TOUCHING LIVES

CANADIAN INSTITUTES OF HEALTH RESEARCH ANNUAL REPORT 2006-2007

2006-07 EXPENDITURES BY RESEARCH AREA

(in millions of dollars)



TOTAL: 859.8

Note: Figures do not include refunds of previous years' grants and awards.

BREAKDOWN BY STRATEGIC OUTCOME

(in millions of dollars)

Health research	511	60%
Health researchers in innovative environments	284.4	33%
Transforming health research into action	62.4	7%
TOTAL	857.8	100%

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DR. ALAN BERNSTEIN, O.C., FRSC
PRESIDENT
CANADIAN INSTITUTES OF
HEALTH RESEARCH

MESSAGE FROM THE PRESIDENT

There is a revolution taking place in health research. Emerging areas of science are offering exciting new opportunities for improving health. In the coming decades, key drivers are going to transform our approach to human health and health care delivery.

Biology, today the most exciting and fast moving of all the sciences, is the first of these drivers. Insights from biology today are leading to the new diagnostics, new therapies and a new era of individualized medicines tomorrow.

Information and communication technologies are changing how we analyze individuals, populations and health systems. These technologies have the power to link our homes, our bodies, our electronic health records, our clinics and our hospitals.

Regenerative medicine is the third driver, leading to changes in how we repair or replace defective or worn-out body parts.

Together, these three factors are driving this revolution in health research.

The Canadian Institutes of Health Research (CIHR) was created within the context of this rapidly changing landscape. Today, we stand poised to help Canada take its place at the forefront of global productivity and achieve health and prosperity for our nation.

We are doing this in several ways:

We are ensuring excellence in research by only funding the very best grant applications, as determined by peer review.

We are supporting the development of what the Government of Canada has called, in *Advantage Canada*, the best-educated, most-skilled and most flexible workforce in the world. Since 2000, CIHR has doubled the number of graduate students we support, investing more than \$100 million in their career development.

We are targeting our investments to areas where Canada has the potential to be a world leader, such as clinical research, human genetics and health-services research and to areas of government and Canadian priority, such as obesity and autism.

We are leveraging investment on large-scale national scientific and commercialization projects. In 2006-07, CIHR partners contributed nearly \$90 million to health research. Industry-partnered programs leverage public sector funding at a rate of 2:1 or more.

We are enhancing the commercialization of Canadian discoveries by facilitating linkages between universities and the private sector.

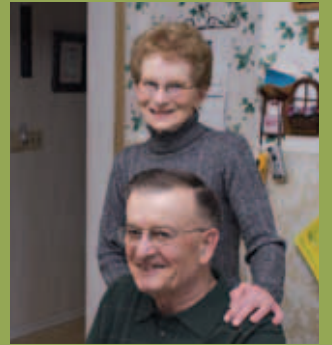
Canada is receiving worldwide recognition for CIHR's outcomes-driven, inclusive and strategic approach. A prestigious International Review Panel applauded CIHR for what it has accomplished to date, noting that we are setting an example for the world. And in the United Kingdom, the Cooksey Review, which dealt with support for health research in the UK, singled out CIHR and Canada as a model to follow.

In all of this, we never lose sight of the ultimate goal of health research: to improve the health of Canadians and of people around the world – people like those you will read about in this report.

We know that investing in research, particularly health research, is one of the wisest, most efficient and most prudent investments any society can make. Seeing the impact that health research has on individuals reaffirms for all of us the importance of the work that CIHR does.

Our success is due, in no small measure, to the dedicated and talented staff of CIHR, as well as to the contributions of our Governing Council, our 13 Scientific Directors and Institute Advisory Boards, our volunteers on peer review committees, and hundreds of partners from the public and private sectors. And, of course, our work would not be possible without the continuing support of Parliamentarians. I would like to take this opportunity to thank them for their contributions and support, past, present and future.





INTRODUCTION

Health researchers generally measure their success by indicators such as papers published, conferences and workshop papers presented, prizes awarded, patents filed. But there is a more central indicator – the application of the knowledge generated by health research to improve the health of Canadians.



AUTISM

REHABILITATION

EATING DISORDERS



You are going to meet in these pages some of the people whose lives have been improved by health research – people who, faced with their own or their families' health challenges, have been helped by the results of health research funded by CIHR. You are also going to meet some of the talented women and men who carry out this research – Canadian researchers who are among the very best anywhere.

The stories of these and many other Canadians motivate and are a source of tremendous satisfaction for the thousands of researchers throughout Canada who have devoted their careers and their lives to finding solutions to the health problems that affect so many people. They provide poignant examples of the ways that

health research is, indeed, “touching lives”.

DEMENTIA

BREAST CANCER

WAIT TIMES

**WORKPLACE HEALTH
AND SAFETY**

CHRONIC PAIN

GETTING A HEAD START ON AUTISM

Alex Wright, London, Ontario



I WOULD WALK THE



Judy Wright lives in London, Ontario, along with her husband Rob and their two children, Alex (4) and Olivia (18 months). She works part-time as a developmental service worker for children with physical and developmental disabilities. When Alex was just six months old, Judy became suspicious that he had autism. With help from CIHR-funded researcher Dr. Lonnie Zwaigenbaum, the family was able to confirm this diagnosis, helping them to get the care and the support they need. Dr. Zwaigenbaum's research has also helped reassure the family about Olivia's early development.

When Alex was still in his crib and awake for the day, Judy would sit there watching him, waiting for Alex to look at her before she would take him out. Her family thought she was cruel, but she was simply doing what she knew was best. This was confirmed when Alex was diagnosed with autism.

“I’d stand in front of his crib. I’d dance a little jig. But there was no response. I needed him to look at me, to realize that he needed Mommy. It was really hard, sometimes it would be 20 minutes, a half an hour waiting for him to look at me, acknowledge me. And we’d do this for everything,” Judy recounts.

a major relief considering that having one child with the condition increases the risk that future children will have it too.

Ask Judy and she’ll tell you that a lot of the credit goes to a researcher named Dr. Lonnie Zwaigenbaum.

“ALEX WAS GOING DOWNHILL FAST.”

Alex turned 4 in September. He is getting the care he needs and has made dramatic improvements. Instead of backing into mom or dad with his arms at his side, Alex’s previous way of hugging, he is learning to give hugs facing people with his arms open. He can say, Mama, Dad, More, Yes, No and Hi. Alex’s sister, Olivia, does not have autism,

Dr. Zwaigenbaum, now at the University of Alberta in Edmonton but previously based at McMaster University in Hamilton, was part of a CIHR-funded team of researchers who developed a unique tool for detecting autism at a really early age. Judy and Alex met Dr. Zwaigenbaum when Alex was just 12 months old. As it turned out, it was just in time.

EARTH FOR THAT MAN



Dr. Susan Bryson
Dalhousie University



Dr. Lonnie Zwaigenbaum
University of Alberta

EARLIER DIAGNOSIS CAN MAKE THE DIFFERENCE

Drs. Susan Bryson of Dalhousie University and Lonnie Zwaigenbaum of the University of Alberta are well-known in the autism research community. The two have worked together to develop a new tool called the Autism Observation Scale for Infants. The scale helps systematically track behaviours associated with autism. While it does not provide a diagnosis of autism, it helps identify early behaviours that may indicate a risk of autism, such as not smiling in response to the smiles of others, not responding to one’s name and delayed language. The scale, which has been disseminated to pediatricians across Canada, can pick up signs of autism in children as young as 12 months, an accomplishment previously not thought possible.

Early detection maximizes the chances of early diagnosis and early treatment. In fact, Dr. Bryson will soon be starting a pilot program to study the effectiveness of treating children as young as 15 months old identified as requiring help, based on the results of the observation scale. Both researchers are also working on a unique project studying the siblings of children with autism. The research involves approximately 300 children from Nova Scotia, Ontario and Alberta; the kids will be closely followed until they reach five years old. Drs. Bryson and Zwaigenbaum both stress the impact on families. “This is a very special study. For families, the stakes are high because they are aware of the recurrence risks associated with autism. What we learn from the research assessments may have profound implications for their children’s futures and may also create opportunities to intervene and change the course of their development,” Dr. Zwaigenbaum notes.

“Lonnie saw him and said he was at a fork in the road. He could improve or he could get worse. It was difficult because we had been working so hard with Alex, but the chance he may get better and not have autism gave us hope,” she remembers.

Judy continued to work with Alex, trying to change the course of the autism.

A second visit with Dr. Zwaigenbaum when Alex was 18 months resulted in a firm diagnosis of autism – a diagnosis neither her family doctor nor the pediatrician had been able to make.

Dr. Zwaigenbaum also offered to write recommendations to help convince the Thames Valley Children’s Centre in London to allocate a spot for Alex immediately, as there was a two-year waiting list for services. “Alex was going downhill fast,” Judy says. “Dr. Zwaigenbaum diagnosing Alex at such a young age put us in the right place at the right time.” He now receives 28 hours a week of in-home Intensive Behavioural Intervention therapy from four therapists, and goes to Junior Kindergarten two mornings a week.

After an in-depth discussion with Dr. Zwaigenbaum about the statistics on siblings born with autism, Judy became pregnant with Olivia. She describes the

experience as “nine months of being terrified” that the child would have autism like her brother. “With her, you were constantly watching and looking. With him, it just happened, so you had no time to be prepared,” she reflects.

Olivia also went to see Dr. Zwaigenbaum as part of a unique study of children who have siblings with autism. In Olivia’s case, it meant that they were able to follow her from the outset to see if there were any early signs of autism. So far, nothing has appeared; however, Olivia will go for more check-ups when she’s 2, 3 and 5 years. “I’m just thankful that a team of experts are monitoring things,” Judy says.

For Alex, having a younger sibling has resulted in many benefits. The two children play together and Alex is learning to respond to his sister, which is teaching him how to respond to others.

Judy has nothing but praise for Dr. Zwaigenbaum.

“I would walk the earth for that man. Alex wouldn’t be doing as well and getting the therapy he needs without him.”

“We wanted a big family but we’re stopping at two. We’ve been blessed.”



“WE WANTED A BIG FAMILY BUT WE’RE STOPPING AT TWO. WE’VE BEEN BLESSED.”



ALEX USES A PICTURE EXCHANGE BOOK TO COMMUNICATE, CHOOSING AND ARRANGING DIFFERENT PICTURES TO MAKE A SENTENCE.



Dr. Stephen Scherer
University of Toronto



Dr. Peter Szatmari
McMaster University

Two Canadian researchers are part of an international team that has pinpointed several new regions of DNA thought to cause at least some cases of autism in children. Dr. Stephen Scherer of Toronto's Hospital for Sick Children and Dr. Peter Szatmari of McMaster University were part of a group that used genome-scanning technology to find regions in the genome linked to autism susceptibility genes. Their work will help researchers better understand autism and could lead to improved diagnosis and treatment for patients and their families.

IN A TIGHT SITUATION, YOU HAVE TO DO A WHEELIE

Cecil Condo, Whycocomagh, Nova Scotia

ONLY YOU CAN



Born in Restigouche, Quebec, Cecil Condo now calls Whycocomagh, Nova Scotia, home. Cecil lives on the reserve in a house overlooking Cape Breton's Bras d'Or Lakes with three dogs, Blue, Smokey and Blacky. Even though he's been in a wheelchair for more than six years, he's been known to surprise innocent bystanders at the pool hall by how quickly he can rack up balls – and winnings. Cecil has also raised eyebrows when he does a wheelie on his wheelchair. Most people would think that the safest place for a wheelchair is planted firmly on the ground, but CIHR-funded researcher Dr. Lee Kirby and his colleagues at the Nova Scotia Rehabilitation Centre (NSRC) have taught Cecil and many others that popping a wheelie is a useful and necessary way of getting through life's many obstacles.

In his 63 years of life, Cecil hasn't let much get him down or, if he did, it was never for long.

He relied on his positive attitude to sustain him through nine hard years of residential school in Shubenacadie, Nova Scotia, far from home and his parents for years at a time. He used it during his time as a paratrooper and later when his first marriage ended. So, he certainly wasn't going to let a wheelchair get him down. That wouldn't go with his philosophy in life.

"I said 'I tell you what, you cut it off here'. I pointed to a spot just below my knee, they made a mark, and that's pretty much where they cut it off," he says.

Cecil says he anticipated that they were going to have to amputate part of his leg but, all the same, it's not something he had really

"YOU'RE NOT GOING TO MAKE IT UNLESS YOU HAVE A GOOD ATTITUDE."

"Nobody can fail you, only you can fail yourself," Cecil believes.

More than six years ago he was admitted to the North Sydney Hospital for an operation to help restore the circulation in his legs. When he woke up, however, his left leg was numb. The doctors tried another surgery, but then the right leg started to bother him even worse than the other leg. Out of options, Cecil took the initiative and proposed an amputation.

prepared for. He was living in a one-bedroom house at the time which was not wheelchair accessible (he now has an accessible house on the Whycomomagh reserve). And, he had to wait for almost a year before he had the chance to get into a full-time rehabilitation program at the NSRC in Halifax and met Dr. Kirby, a Dalhousie University professor.

FAIL YOURSELF



Dr. Lee Kirby
Dalhousie University

GETTING OVER LIFE'S OBSTACLES

A door threshold, a rug, grass or a curb; almost all people on foot would have no problem with these, but for wheelchair users, they can be major obstacles, catching their front wheels until they are stuck and unable to move. In 1996, Dr. Lee Kirby and his Wheelchair Research Team of Dalhousie University and the NSRC began developing and testing a training program to help wheelchair users get past these obstacles. Dr. Kirby's research has shown the program to be safe, practical, inexpensive and efficacious in a rehabilitation-centre setting.

According to Dr. Kirby, improving mobility is often as simple as shifting weight to the rear wheels, freeing the wheelchair's smaller front wheels and allowing the user to go forward. "Wheelies are not a party trick. In a wheelchair, getting up on the back wheels opens up all kinds of possibilities," he notes. Dr. Kirby says just 2-3 hours of training creates major improvements and, best of all, skills such as the wheelie will stay with the user for life.

"You can think of the Wheelchair Skills Program as similar to swimming lessons. It's based on science, but you don't need to understand the science to teach these skills or to learn them. It's a low-tech, high-impact intervention."

Details about the program are available free on the Internet (www.wheelchairskillsprogram.ca). The program is now being used or at least tested in several provinces and is being adopted internationally. Dr. Kirby has also gone on to develop, with CIHR funding, a new device to prevent wheelchair tipping, called an Arc-RAD.

“I can’t say enough about Dr. Kirby and that program. That man is a saint,” declares Cecil.

For 30 days, Cecil was put through his paces as part of the rehabilitation program. In addition to being fitted for a prosthetic leg, the program included daily workouts in the gym and the pool, weights and, the most unique part of the routine, a skills-training program on an obstacle course for wheelchairs.

Navigating the course meant going through gravel, over curbs and uneven surfaces. It also demanded the use of a key wheelchair technique – popping a wheelie.

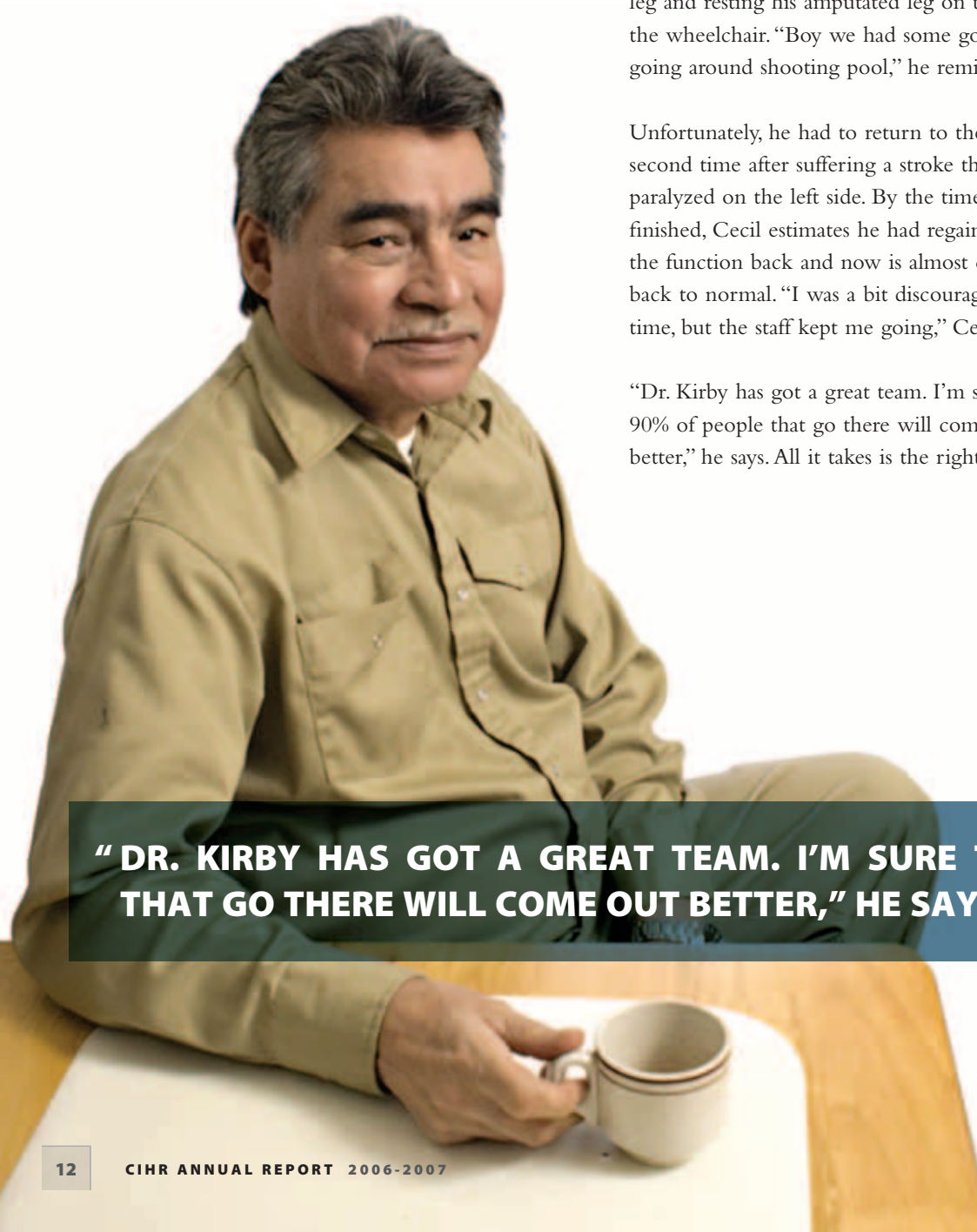
Cecil says the wheelie has proved a lifesaver. “It’s an important technique for people – when you’re in a tight situation, you have to do a wheelie,” he says. “Once I started doing the wheelie, I thought, ‘OK, here I go.’”

The program was hard work. “You’re not going to make it unless you have an open and good attitude,” Cecil stresses.

With his increased confidence and mobility, he started doing things again that kept him active and happy, such as playing in pool tournaments with his late friend Malcolm. He developed a unique style for shooting pool, standing with his good leg and resting his amputated leg on the seat of the wheelchair. “Boy we had some good times going around shooting pool,” he reminisces.

Unfortunately, he had to return to the NSRC a second time after suffering a stroke that left him paralyzed on the left side. By the time the program finished, Cecil estimates he had regained about half the function back and now is almost completely back to normal. “I was a bit discouraged that time, but the staff kept me going,” Cecil admits.

“Dr. Kirby has got a great team. I’m sure that 90% of people that go there will come out better,” he says. All it takes is the right attitude.



“DR. KIRBY HAS GOT A GREAT TEAM. I’M SURE THAT 90% OF PEOPLE THAT GO THERE WILL COME OUT BETTER,” HE SAYS.

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David Shannon
Executive Director
Canadian Paraplegic Association
(Nova Scotia)

“Persons with disabilities need to learn the necessary skills and build confidence to handle a wheelchair. We believe now is the time to support efforts such as the Wheelchair Skills Program. It will act as a major support for persons with mobility disabilities as they work to achieve independence, self-reliance and full community participation.”

I WAS TRYING TO CONTROL MY UNIVERSE BY RESTRICTING MY EATING

Diane Sahakian, Montreal, Quebec

THREE MEALS,



Diane Sahakian was born in Paris, France, to a French mother and an Armenian father. She moved to Montreal in 1996 because she wanted to live in a place she felt free. An engineer by training, she now works as a technical writer for a firm that makes integrated software systems for hospitals. She has struggled with anorexia and bulimia since before she came to Canada and last year entered a treatment program at Montreal's Douglas Hospital Research Centre that has helped her to overcome her eating disorder.

Three meals and three snacks every day. It's one of two things Diane says she learned from the Eating Disorders Program at the Douglas Institute. The second? Eating disorders are simply a mask, a way to avoid the real problem. And now that she's sticking to the first rule, she says she's not obsessed, not craving, not scared of bingeing – and she's ready to tackle the underlying issues.

“You can't deal with what's behind why you're not eating, if you're starving,” she says. “You become like a robot, hard, tough, rigid. Before, I was so uncomfortable in my body, I would not listen to my emotions. Now, I'm starting to feel my emotions.”

A petite woman, Diane at 115 pounds (52 kilos) is a different person than she was four years ago, when she weighed just over 90 pounds (42 kilos).

cakes and cookies, then on maple syrup and honey. She made lists – what to eat, what to wear, what to do, all in an effort to exert some control over and give some structure to her life.

Finally, her boyfriend told her she needed help and encouraged her to enter the Douglas Institute Eating Disorders Program in August 2006. Diane turned to Dr. Howard Steiger, whom she had been seeing as a therapist and who is Director of the program. Fortunately,

“YOU BECOME LIKE A ROBOT, HARD, TOUGH, RIGID.”

At that time, she rigorously restricted her food intake, eating only proteins and vegetables, no fat, no sugar, no carbohydrates. At other times, however, she would binge – at first on

there had been a cancellation and Diane was admitted to the program almost immediately.

THREE SNACKS



Dr. Howard Steiger
Douglas Institute
McGill University

BRIDGING THE DISTANCE BETWEEN RESEARCH AND TREATMENT

The Douglas Institute Eating Disorders Program delivers cutting-edge care based on the best available evidence – at the same time as it creates that evidence. And that, according to the program's director, CIHR-funded researcher Dr. Howard Steiger, is exactly how it should be.

“There's a constant cross-talk between clinical developments and new research questions which leads to new findings, which in turn leads to new clinical developments,” he says. “We are trying to erase the distinction between clinicians and scientists, to understand that research is how we improve patient care.”

The Douglas Institute Eating Disorders Program offers a full continuum of care, from the highest-intensity inpatient program to a low-intensity outpatient program. And since, as Dr. Steiger says, the program can't treat everyone with an eating disorder in Quebec, he and his team engage in a lot of community outreach, sharing their knowledge with the people on the front lines of providing care to those with eating disorders.

Dr. Steiger's own research into the genetic basis of eating disorders has led him to understand that an eating disorder is not a moral weakness or a family fault. While anyone can develop an eating disorder if they diet enough, some people may have a genetic susceptibility that can be activated by stressors such as adverse childhood experiences. This understanding has affected treatment, moving it away from “blaming” patients and their families and toward helping the patient to understand and deal with the traits, some of them hereditary, that may have made them susceptible.



For two months, Diane was at the clinic from 9:30 a.m. to 8 p.m., making and eating lunches and dinners with her co-participants and taking part in therapy and workshops. For another month, she left at 4 p.m., having dinner at home. Then, for one more month, she went to the clinic once a week. Nutritionists, social workers and psychologists all played different roles in the process.

Today, Diane is no longer involved with the program, but she is working on listening to her own emotions and needs, instead of trying to live up to others' expectations of her. She says that, in many ways, she still feels like a young girl, waiting to be told what to do.

One thing Diane has discovered, however, is how fortunate she is. Many of the women in the program, who ranged in age from early 20s to over 40, had experienced rape, abuse and other situations that played a role in their eating disorders.

“Being anorexic did give me something,” Diane says. “It made me more open to the suffering of others. I realized that we all have something to deal with.”

“ BEING ANOREXIC DID GIVE ME SOMETHING: IT MADE ME MORE OPEN TO THE SUFFERING OF OTHERS. I REALIZED THAT WE ALL HAVE SOMETHING TO DEAL WITH.”



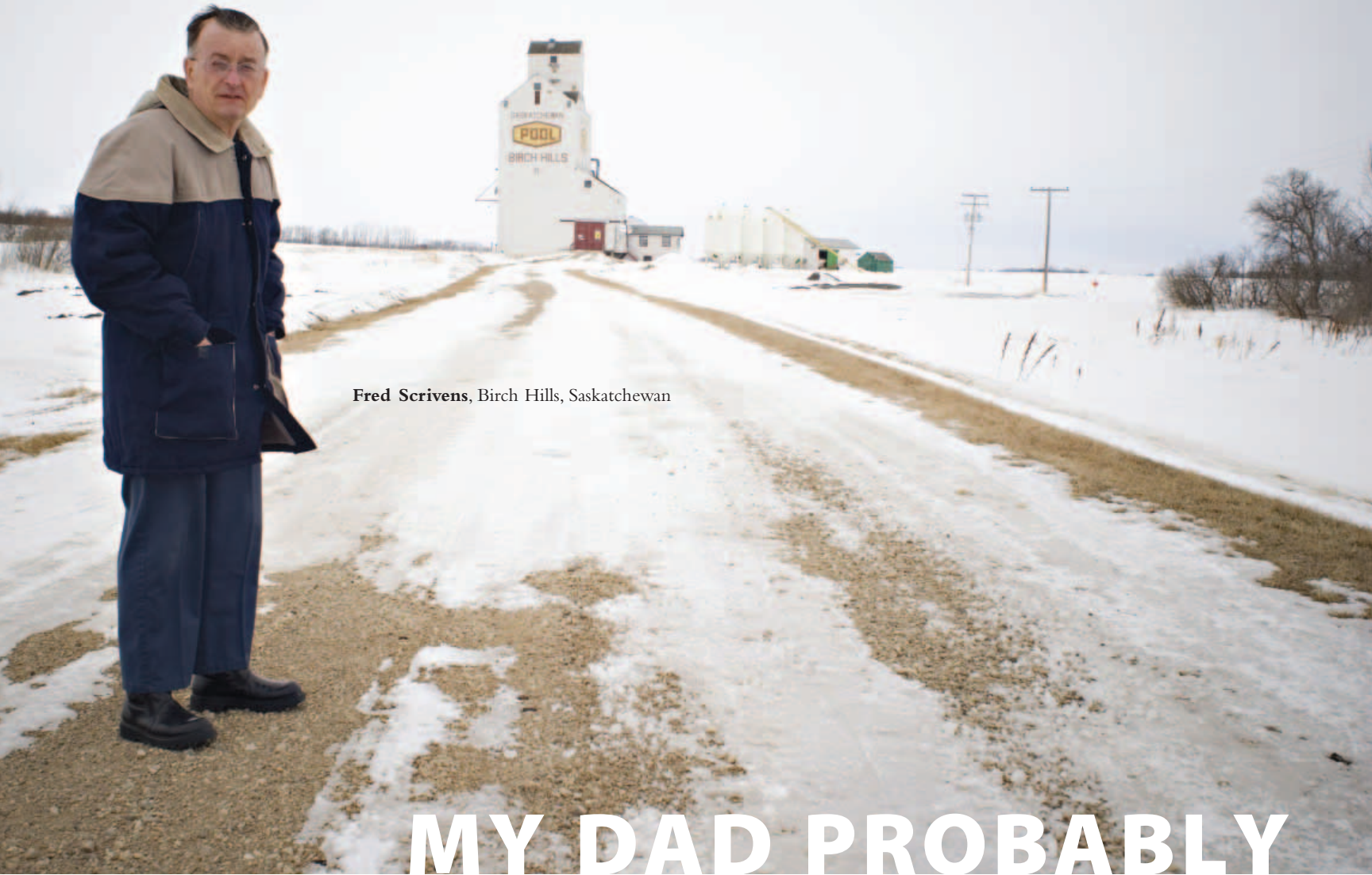
FINALLY, HER BOYFRIEND TOLD HER SHE NEEDED HELP AND ENCOURAGED HER TO ENTER THE DOUGLAS INSTITUTE EATING DISORDERS PROGRAM IN AUGUST 2006.



Joan Montgomery
Executive Director
Canadian Psychiatric
Research Foundation

“The relationships among patients, clinicians and researchers, such as the one Diane Sahakian, Dr. Howard Steiger and the many care providers at the clinic share, help lead to new treatments, and possibly even cures, for psychiatric illnesses such as eating disorders. Sadly, families often do not feel that they are part of the process. Supporting research through agencies like CPRF gives them the opportunity to contribute. Their contribution leverages CIHR funding and helps to extend the benefits of research to their own family members and to so many others. CPRF is proud to join with CIHR in advancing research to better help people like Diane.”

IT'S HARD TO GET HELP WHEN YOU LIVE NORTH OF NOWHERE



Fred Scrivens, Birch Hills, Saskatchewan

MY DAD PROBABLY



Heather Dyck spends much of her time keeping an eye on her aging parents, Fred and Norma Scrivens, who still live in their own home at 74 and 72, respectively. Heather, her husband, Norm, and her parents live in Birch Hills, a town of about 1,000 people in North Central Saskatchewan. With only one of her four children still at home, she's glad she has time for her parents. "They're my project, I guess you could say."

A year ago, Heather Dyck didn't think her father, Fred, would make it through the winter. He was unable to walk, had lost control of his bladder and was becoming increasingly forgetful. At the very least, she and her family were looking at placing him in a nursing home. Their family physician referred them to the Rural and Remote Memory Clinic, established as part of a CIHR-funded project to develop and evaluate strategies to enhance the care of seniors with dementia in rural and remote areas.

Heather had never heard of the clinic, which is located at the University of Saskatchewan. But, "when the nurse called and said what was going to happen, I couldn't believe we were going to get all those services in one day and in one place – it was incredible."

team gathered together to give its diagnosis and recommendations for treatment.

Heather really appreciated the team approach, particularly given her father's multiple health problems, including heart disease and epilepsy.

"I COULDN'T BELIEVE WE WERE GOING TO GET ALL THOSE SERVICES IN ONE DAY AND IN ONE PLACE – IT WAS INCREDIBLE."

She and her parents saw a neurologist, a geriatrician, a neuropsychologist and a physical therapist and her father had a CT scan. At the end of the day, the entire

"The team got together with us as a group, and that is incredibly important and incredibly rare. We've had problems before with one doctor not talking to another."

WOULDN'T BE HERE TODAY



Dr. Debra Morgan
Canadian Centre for Health
and Safety in Agriculture
University of Saskatchewan

WHEN CARE IS FAR AWAY

A quarter of Canada's seniors live in rural areas. With the prevalence of dementia expected to double in the next 30 years, there is a growing need for specialized services and personnel. Strategies to Improve the Care of Persons with Dementia in Rural and Remote Areas is a CIHR-funded project led by Dr. Debra Morgan from the Canadian Centre for Health and Safety in Agriculture at the University of Saskatchewan. The team has developed, implemented and is evaluating the Rural and Remote Memory Clinic as a unique one-stop destination for dementia care, with close ties to Telehealth for follow-up care. The team's work has improved access to specialized care for seniors, while reducing the burden of travel for multiple purposes, such as assessment, diagnosis and follow-up.

The team has also conducted an evaluation of the Enhancing Care program in two rural nursing homes. This program was designed to help nursing homes implement the Guidelines for Care developed by the Alzheimer's Society of Canada. Another area of focus is dementia among northern Aboriginal populations, where issues surrounding care are quite different. These studies are developing and evaluating culturally appropriate assessment protocols, examining access to care in remote northern communities and exploring dementia care issues with nurses employed in these communities.

The diagnosis was the very one the family had suspected after some Internet research – normal pressure hydrocephalus. Normal pressure hydrocephalus happens when there is too much cerebrospinal fluid in the brain's cavities. The fluid, which normally protects and cushions the brain, creates pressure on it instead, resulting in the symptoms Fred was experiencing. Doctors surgically inserted a shunt to drain the fluid and now Fred is walking, he's regained his bladder control and his memory is "not great, but not as bad as it was," says Heather.

That's a good thing, since Heather's mother, Norma, has now become a patient of the Memory Clinic as well. She asked for the referral herself, after noticing she was starting to forget things and lose her keys too often. Norma's now been diagnosed with mild cognitive impairment but, having watched her own mother suffer from severe Alzheimer's disease, Norma is positive her problem is worse than it seems. Heather agrees.

"Now that she's a patient at the clinic, though, she's going to be able to get the help she needs, when she needs it," she says.

Heather now shoulders the responsibilities for her parents. She phones every day, makes sure appointments are written on the calendar and goes with them to the appointments

since, she says, they won't remember what the doctor tells them otherwise.

"They're making do in their own home, with a little bit of intervention they don't even know they're getting," says Heather. "They get along, they just need a little bit of help sometimes."

The help she got from the Memory Clinic was invaluable. First, the clinic put everything together into a one-day visit – no small matter when you have to travel two hours to get there.

The day-long visit wasn't the end of it. The team follows up after six weeks and again at the three-, six- and 12-month marks. Using Telehealth helps to minimize the burden of travelling into the city. They will help arrange any follow-up services that are needed, such as home care or physiotherapy. As well, Heather and her parents have the nurse's phone number, so they can call at any time with any concerns.

"The bottom line for us," Heather says, "is that without the clinic, we would have had no place to turn. And when you're north of nowhere, it's nice to know which direction to go for help."



"THEY'RE MAKING DO IN THEIR OWN HOME, WITH A LITTLE BIT OF INTERVENTION THEY DON'T EVEN KNOW THEY'RE GETTING," SAYS HEATHER. "THEY GET ALONG, THEY JUST NEED A LITTLE BIT OF HELP SOMETIMES."



**“THE BOTTOM LINE FOR US,”
HEATHER SAYS, “IS THAT
WITHOUT THE CLINIC, WE WOULD
HAVE HAD NO PLACE TO TURN.”**



Dr. Jack Diamond
Scientific Director
Alzheimer Society of Canada

“Research is absolutely central to giving us the tools we need to defeat Alzheimer’s disease. The Alzheimer Society of Canada and CIHR are partners in ensuring that important research is funded. While I truly believe that we will, one day, as a result of this research, be able to prevent or cure this devastating disease, we need to know more about how to treat those who have the disease now. We need to prolong their periods of high-quality life and ensure they get the care they need. Dr. Morgan’s research is helping us learn how best to do this with an important group of seniors – those who live in rural and remote areas.”



I ALWAYS HAD A GOOD ATTITUDE

Dana Markoff, Brampton, Ontario

I DIDN'T HAVE TIME



Dana Markoff is 47 years old. She lives in Brampton, Ontario, with her husband and her four daughters, aged 12-22. She is a dynamo of activity. She spends every morning at fitness class and lunch times at the local primary school as a lunchroom supervisor. Before and after school she provides daycare to neighbourhood children. She sells Avon. And, in her spare time, she and her husband coach her youngest daughter's baseball team. Four years ago, a mammogram detected a lump in her breast. Two surgeries and a course of radiation therapy later, she's in good health.

Dana's mother made sure her three daughters knew about the importance of regular mammograms. Mother really does know best. From the age of 37, Dana went for a mammogram every two years. And on the fourth mammogram, when she was 43, the mammogram detected a growth.

That was her first piece of luck.

"I had no symptoms. It didn't hurt, I had no lumps, no bumps, no discharge, nothing. If I'd waited until I had symptoms, it would have been much further along and the cancer would have travelled," she says.

After two surgeries to remove the lump, she was sent to Dr. Jean-Philippe Pignol at Sunnybrook Health Sciences Centre. That was

intensity modulated radiation therapy (IMRT), is less toxic to the skin, reducing the chance of burning. Dana took him up on the offer. That meant that she would be randomized to receive either the regular treatment or the IMRT.

"I didn't know which treatment I got, but I could tell by the way that I didn't react to anything – I was pretty sure I had the good one," she says. "There was another lady I used to see – her treatment was either before or after

"I HAD NO SYMPTOMS. IT DIDN'T HURT, I HAD NO LUMPS, NO BUMPS, NO DISCHARGE, NOTHING."

her second lucky break. Dr. Pignol offered her the chance to participate in a clinical trial of a new method of delivering radiation therapy that he had developed. The treatment, called

mine. And she was having a really hard time of it, with lots of blistering. Meanwhile, I hosted Christmas dinner that year. I had twenty-some people over, with one treatment still to go."

TO FALL APART



Dr. Jean-Philippe Pignol
Sunnybrook Health Sciences Centre

A BETTER WAY TO TREAT BREAST CANCER

Women whose breast cancer has not spread beyond the breast are generally treated by a lumpectomy, followed by radiation treatments five times a week for several weeks. The treatment can be as unpleasant as the disease, causing the skin to become red, itchy and tender. In half of women who undergo it, the radiation causes the skin to be burnt right off.

Dr. Jean-Philippe Pignol of Toronto's Sunnybrook Health Sciences Centre proposed a better way to deliver radiation that is less toxic to the skin. Intensity modulated radiation therapy (IMRT) was tested in more than 350 women, as part of a CIHR-funded clinical trial. Half the women received the standard "wedge" treatment, while half received IMRT. The results were dramatic. Women receiving IMRT were two to three times less likely to suffer painful radiation burns.

"I never realized how important it is for patients to be able to participate in a trial of a new technology that reduces side effects," says Dr. Pignol. "When women heard we were offering this, they asked to be referred to our clinics."

The study was one of the few multi-centre phase III clinical trial of a technology. Most clinical trials test medications. Today, IMRT has been accepted as the standard way to deliver radiation for breast cancer in hospitals across Canada.

The IMRT gets part of the credit for what Dana calls a “manageable” experience. She’s convinced, though, that her attitude also played an important role.

“I had a good attitude,” she says. “I joked about it. It’s either that, or you fall apart. And I didn’t have time to fall apart – I had four kids to look after.”

Dana also coped by making the therapy part of her regular life. She’d take her children to the hospital with her when she went for treatments – except for the oldest. She had thyroid cancer when she was 10 and, while she’s healthy now, she’s had enough of hospitals, Dana says.

But while breast cancer treatment was just part of life, having breast cancer has changed Dana.

“I’m much more aware of what’s going on around me. And I’m much more vocal about telling people to go for their checkups and tests. Fifty is way too late to start mammograms.”

And like her mother before her, Dana will make sure that her four daughters all get regular mammograms – starting early.



“ I JOKED ABOUT IT. IT’S EITHER THAT, OR YOU FALL APART. AND I DIDN’T HAVE TIME TO FALL APART – I HAD FOUR KIDS TO LOOK AFTER.”



AND LIKE HER MOTHER BEFORE HER, DANA WILL MAKE SURE THAT HER FOUR DAUGHTERS ALL GET REGULAR MAMMOGRAMS – STARTING EARLY.



Nicola Lewis
Executive Director
Canadian Breast Cancer
Research Alliance

“Ultimately, we want to cure women. But if we can improve the quality of the treatment they get as well, it’s a huge step forward. Women have to go on with their lives, right through radiation treatment. We’ve been partnering with CIHR on breast cancer research since 1993, when CIHR was the Medical Research Council. Back then, breast cancer research funding across Canada was less than \$2 million a year. Today, CBCRA alone is investing more than \$13 million each year and it is making a difference. Without research in breast cancer, more women would be suffering and dying – that’s the bottom line.”

IT'S IMPORTANT TO BE ABLE TO WALK AROUND

AS DIFFERENT AS



Bud McLean, 70, retired in 1998 from a career as an engineer in the oil industry in Calgary. His wife, Geri, 60, a former teacher, is also retired, leaving the couple lots of time to enjoy their main interest – travelling. Bud has two sons, aged 47 and 44, and seven grandchildren. Bud has had both hips replaced, the first in 1999 and the second in 2005, as part of a pilot project to improve patient care and reduce wait times. Geri has taken care of him through both surgeries.

Bud and Geri have travelled the world. They've been all over Europe, gone through much of Asia, explored South America and, just last year, visited one of their sons, a schoolteacher, in Mombassa, Kenya.

“THAT’S WHY IT’S IMPORTANT TO BE ABLE TO WALK AROUND,” SAYS BUD.

Unfortunately, his body wasn't always up to the task. Twice, he had to have a hip replaced. And, he says, the difference between the two surgeries was like night and day.

The first time was in 1999. He had spent three months in the hospital battling a hip infection. Eventually, he had to have an operation to literally scrape the infected tissue out of his left hip. He had so little hip left after that, he says, it was just bone scraping on bone – no cartilage to ease the movement. Five feet, five inches tall, Bud weighed just 110 pounds (50 kilos) when he came out of the hospital. He had a new hip, but he was, Geri says, in terrible shape.

“He was totally emaciated when he came home,” recalls Geri. “He was fragile to the point that I had to bathe one half of his body at a time, in the kitchen, with the oven on for heat and with the towels heated in the dryer.”

It took him three months to progress from wheelchair, to a walker, to crutches, to short walks. He had minimal physiotherapy at home and used the specially adapted pool at the Vocational Rehabilitation and Research Institute to exercise.

Just a short while later, Bud began experiencing pain in his right hip. It took three years, however, for the hip to deteriorate enough to require a hip replacement.

NIGHT AND DAY



Dr. Cyril Frank
University of Calgary

INNOVATIVE APPROACHES TO IMPROVING CARE

Alberta's experiment with a coordinated approach to delivering knee and hip replacements has been so successful that three of the province's health regions, representing 80% of all such surgeries performed in the province, have adopted the approach – even before a final report is available.

The new approach is the product of research and design by the Alberta Bone and Joint Health Institute (ABJHI). Dr. Cyril Frank, former Scientific Director of CIHR's Institute of Musculoskeletal Health and Arthritis, and his colleagues worked with ABJHI toward its vision of world-leading bone and joint health care for Albertans. Together with ABJHI, they developed the “shared care” approach tested in the Alberta pilot. Patients entering the system for a hip or knee replacement received all the services they needed, including assessment, diagnosis and treatment, from a multidisciplinary team of health-care professionals in one clinic, with all services coordinated by a case manager. Under the former system, a patient would travel from care provider to care provider, facility to facility – not an easy task for a senior with limited mobility.

Interim results indicate that wait times dropped dramatically. The wait from referral to first appointment was reduced from 35 to 6 weeks, while the wait from that first appointment until surgery was reduced from 47 to 4.7 weeks. The length of hospital stay after surgery also declined, from 6.2 days to 4.3. Patient and care provider satisfaction both increased.

Wait times for hip or knee replacement surgery should not exceed six months, according to additional CIHR-supported research that helped provincial ministers of health in setting benchmarks for wait times in key priority areas. The studies also emphasized the importance of establishing management strategies, such as that developed by ABJHI, alongside benchmarks, to deal with wait times.

That was the good news. The bad news was that the wait was likely to be at least eight months.

Then, he was invited to participate in an Alberta pilot project to reduce wait times for hip and knee replacement surgery and improve service quality and patient outcomes. In less than a month, he'd had his pre-operative preparation, had his hip replaced and recovered to the point that he was walking freely.

The secret, he says, was the coordination of all the services he needed through one case manager – known as a “shared-care approach”.

“It all went so smoothly and I was so comfortable with what was going on before my operation, and it really was that one person, who coordinated everything for me.”

“Everything” included meetings with Bud's physician, the surgeon and the physiotherapist. Bud attended a pre-surgery “school”, where he learned what to expect and what he'd need after the operation, like a walker, crutches and a special seat that would allow him to use the toilet more easily. He learned about the exercises he would need to do – and, just as important, what not to do.

From there, it was straight to surgery, in just four days.

“I ran around, getting my x-rays, renting the equipment I needed, getting my blood typed. I even got a vitamin K shot to bring up my blood's ability to clot, since I didn't have a full week before the surgery to stop taking

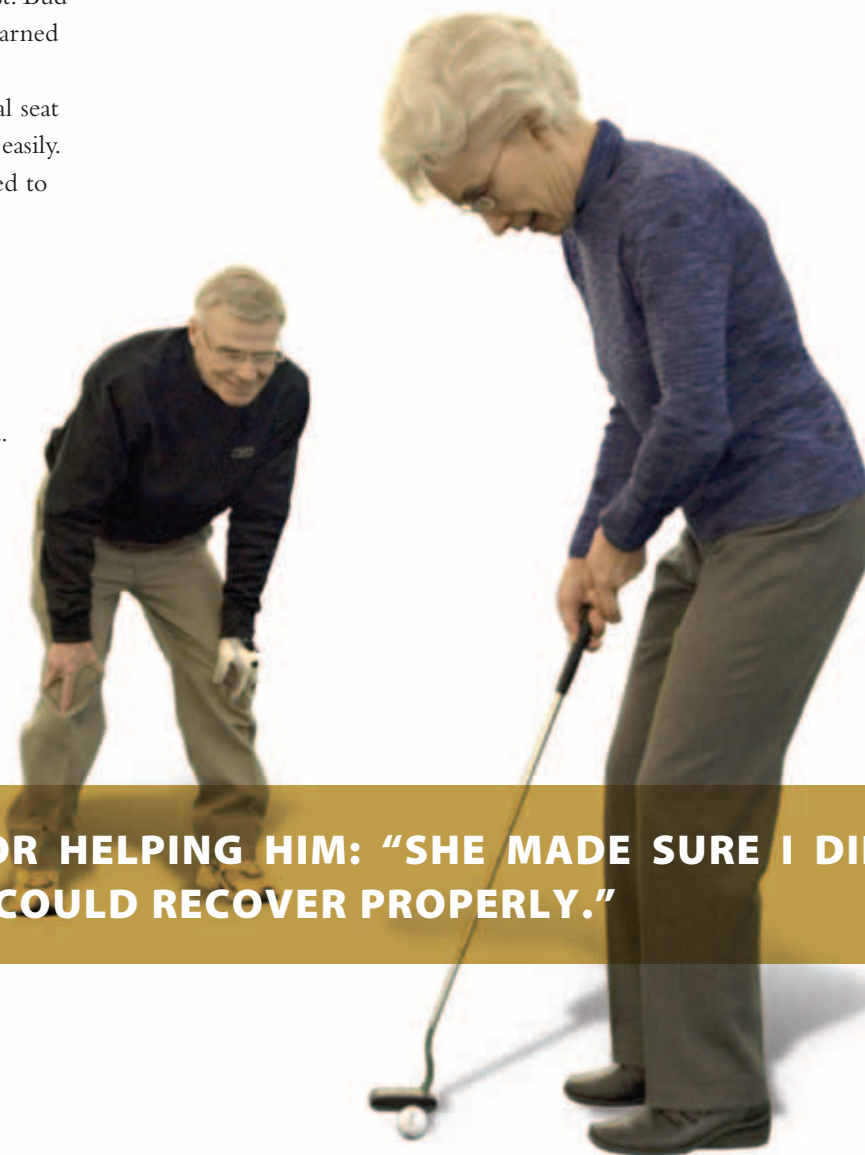
my blood thinners,” says Bud. “I said to Geri and the nurse, ‘I know I'm physically ready, but mentally, I haven't adjusted!’”

Bud was up and walking the day of the surgery, helped by a visit from the physiotherapist, and was home four days later. In less than two weeks, he was walking on his own steam.

Bud credits Geri for helping him: “She made sure I did my physiotherapy so I could recover properly.”

Geri, on the other hand, says it was all Bud: “He really did take care of himself. He knew it was essential to his getting better and that I couldn't do it for him.”

They both agree, though, that the new approach to care made all the difference in the world. Today, the only debates they're having are about their next trip – should it be Eastern Europe or Japan?



BUD CREDITS GERI FOR HELPING HIM: “SHE MADE SURE I DID MY PHYSIOTHERAPY SO I COULD RECOVER PROPERLY.”

BUD WAS UP AND WALKING THE DAY OF THE SURGERY, HELPED BY A VISIT FROM THE PHYSIOTHERAPIST, AND WAS HOME FOUR DAYS LATER. IN LESS THAN TWO WEEKS, HE WAS WALKING ON HIS OWN STEAM.



James P. Waddell, MD, FRCSC
Coordinator, Canadian National
Action Network
Bone and Joint Decade Canada

“Research into health-care delivery is a very relevant contribution to the discussions around wait times. Projects such as Alberta’s experiment with the coordinated approach are important for determining the most appropriate method of care delivery for joint patients. While questions remain around cost per case, patient selection and quality of outcome, these and other research projects are demonstrating the importance of structured research in health care delivery.

Bone and Joint Decade Canada is helping to coordinate the results of such research being done in many centres across Canada with the expectation that sharing the results on a national level will enhance patient care in all jurisdictions.”

I CAN HELP MY CO-WORKERS

NO TIME



Paul Kean is a Newfoundlander to the core. He was born in the town of Pound Cove, grew to adulthood there and now lives in nearby Lumsden, on the northeast coast of Bonavista Bay. He and his wife, Alva, both work at Beothic Fish Processors Limited, a company whose origins date back to the 1950s, where Paul has been involved in CIHR-funded research to reduce injuries among its workers.

Being involved in his community is a tradition for Paul. He's been a volunteer firefighter, a member of his town council and president of the local minor hockey association. And he's been part of the FFAW union – the Fish, Food and Allied Workers – for the last 15 years, spending three terms on its provincial executive committee. He is currently the president of its local, representing 420 union employees at the Beothic fish plant. For Paul, it's simple: it's all about "doing your bit to make your workplace and your community a better place."

His co-workers at the fish plant are a big part of his community – after all, the plant is the main employer in the area. Year after year, Paul has been seeing his co-workers at the drugstore, buying painkillers. Their work processing Atlantic snow crab – lifting, reaching, bending

“You're working 10-hour shifts, 14 days without a day off. Imagine the effect on your body, the lifting, the twisting.”

But the nature of the work doesn't allow for taking time off to care for your injuries.

FOR PAUL, IT'S SIMPLE: IT'S ALL ABOUT "DOING YOUR BIT TO MAKE YOUR WORKPLACE AND YOUR COMMUNITY A BETTER PLACE."

and moving on production lines, or butchering – was causing arm, wrist and shoulder pain. They were getting soft tissue and repetitive strain injuries, like carpal tunnel syndrome and neck and shoulder sprains. And, as the workers aged (the average age is 48), they were becoming even more susceptible to injuries.

“In the fishing industry, you work as hard as you can, as long as you can, and everything else falls by the wayside. It's sad, but that's the way it is in most fishing communities,” Paul says.

FOR INJURIES



Dr. Barbara Neis
Memorial University

PREVENTING INJURIES AT WORK

Working in a fish processing plant is hard on workers' bodies. A multidisciplinary team of researchers from Memorial University and the University of Quebec at Montreal collaborated with workers, managers and the union at Beothic Fish Processors Limited in a CIHR-funded study to reduce the number and severity of work-related musculoskeletal disorders among the workers. This was an innovative study of the health and safety risks faced by workers in a crab-processing plant, but that's not all that makes it unique. It combined a psychosocial survey, biomechanics research, participatory ergonomics interventions and a study of workers' strategies for coping with pain. It also included workers in the plant, their union and the plant's managers not simply as research subjects, but as full partners and active participants.

This research is one of the studies undertaken by SafetyNet, a comprehensive research program examining the occupational health and safety of marine and coastal work. Led by Drs. Barbara Neis and Stephen Bornstein of Memorial University, this multi-university and multi-province team brings together researchers in medicine, nursing, social sciences, natural sciences, engineering and marine sciences and involves partners in the public and private sectors and the coastal communities in which research is taking place. Its core objectives include conducting research that is relevant to the communities taking part in the studies and offering direct and concrete results. Its studies have focussed on fisheries, oil and gas projects and human cold working conditions.

That means masking the pain with over-the-counter drugs is often the best workers can do.

That wasn't enough for Paul.

"I took it on myself," he says. "I knew more needed to be done, so through research on the computer and an ergonomics course, I learned about soft tissue injuries."

"I'm always trying to learn more, to gain new knowledge," he says. "I just like to research these things."

Research was the first step. Next, he worked with the plant's health and safety committee to encourage the company to consider the workers' physical needs when it installed new machinery. Then, one day, he was called into the office. Some people from Memorial University wanted to talk. They were from SafetyNet, a CIHR-funded team of researchers studying occupational health and safety in marine and coastal work.

The conversation snowballed into a full-fledged research project to improve working conditions and decrease work-related injuries suffered by workers.


The company was involved, the union, the health and safety committee, the workers, and a team of researchers, all of whom, Paul says, were critical to the project's success. The recommendations they came up with were often simple and inexpensive. Workstations requiring standing for long periods of time, for instance, had foot stands or rests installed to help alleviate workers' back pain and tired legs.

"It was a really big thing for our workers to have the research team help us create a safer environment. We just don't have the resources to do it. And now, every day, we're benefiting from it. We're more aware of how to do our jobs more effectively and reduce injuries. And the company is benefitting because we're all more productive."

Paul already has his next target in view – shellfish asthma. Airborne pollutants are common in shellfish plants and they cause all sorts of breathing problems. He wants to keep working with the health and safety committee and SafetyNet to address this issue.

"That's something I'd like to continue to play a major role in. I'd like to educate myself more."

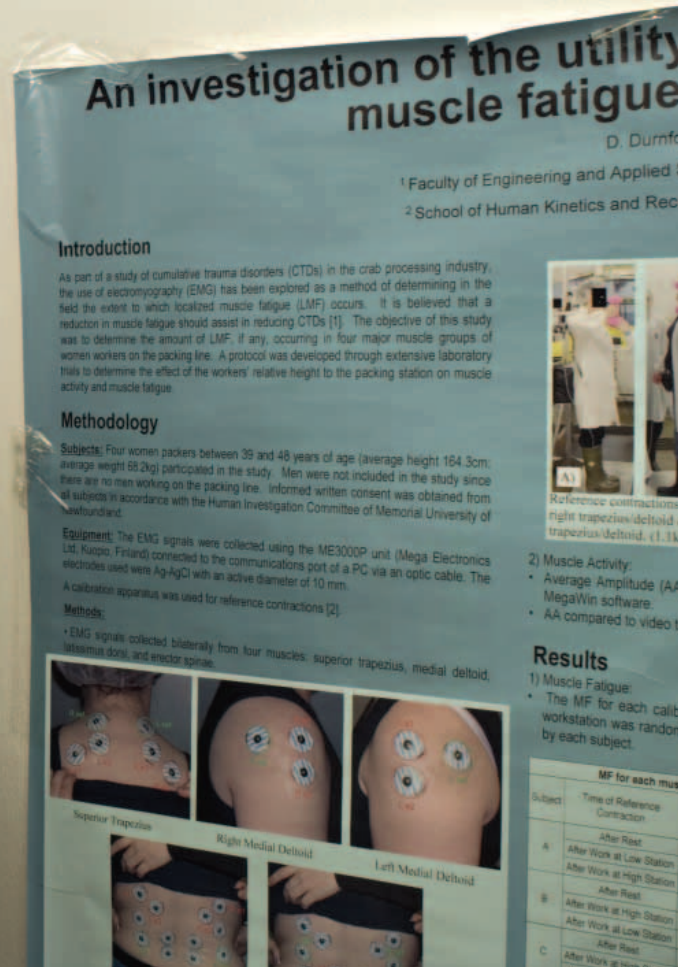
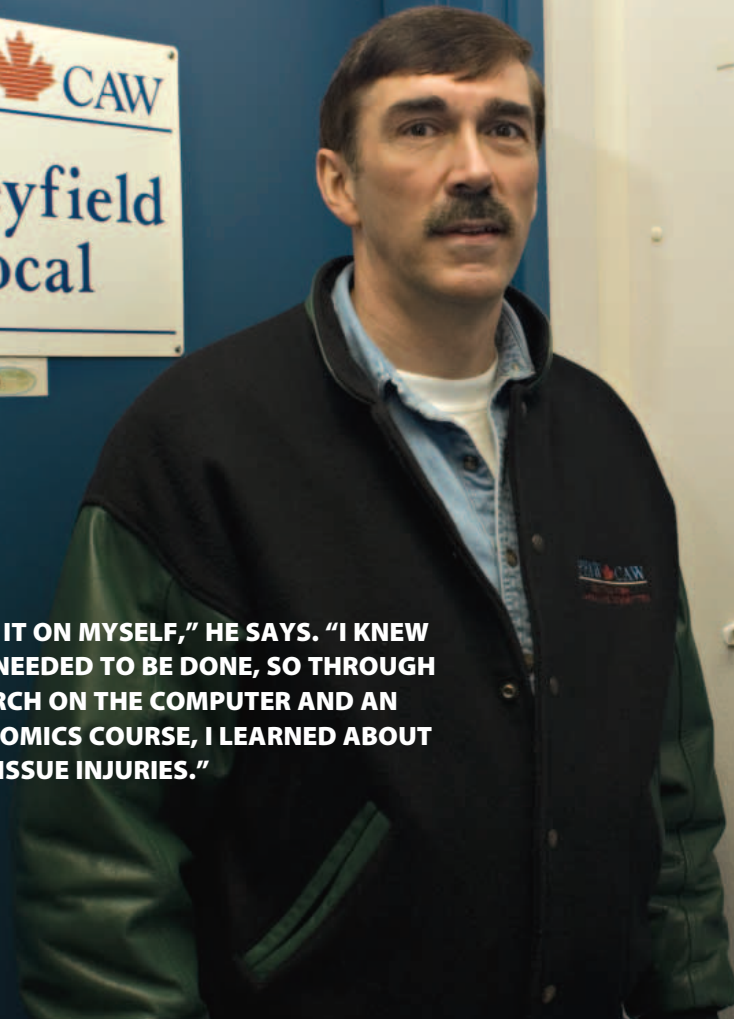
"When our workers do well, I feel good."



" IN THE FISHING INDUSTRY, YOU WORK AS HARD AS YOU CAN, AS LONG AS YOU CAN, AND EVERYTHING ELSE FALLS BY THE WAYSIDE. IT'S SAD, BUT THAT'S THE WAY IT IS IN MOST FISHING COMMUNITIES."



“I TOOK IT ON MYSELF,” HE SAYS. “I KNEW MORE NEEDED TO BE DONE, SO THROUGH RESEARCH ON THE COMPUTER AND AN ERGONOMICS COURSE, I LEARNED ABOUT SOFT TISSUE INJURIES.”



“It has been an enjoyable experience working with the SafetyNet research team. Employees are now aware of issues surrounding repetitive strain injuries in the workplace and are better able to cope with the pain associated with those injuries. As a result of the studies completed by SafetyNet, the Company gained considerable knowledge on ways to prevent soft tissue injuries. Various techniques enable workers to effectively perform their duties without sustaining injuries, making them more productive. Our ability to recognize conditions that expose employees to musculoskeletal disorders has improved and we look forward to addressing issues related to the demands of the workstation.”



Roma Howell
Plant Manager
Beothic Fish Processors Limited

Marcel Beaulieu, Alban, Ontario

I WON'T LET PAIN
TAKE OVER MY LIFE

THE FUTURE BELONGS TO



Marcel Beaulieu lives in Alban, south of Sudbury, Ontario. He used to live in Vancouver, where he worked in construction. One day, Marcel was helping pour foundations at a cattle farm. The concrete supply hose suddenly kinked, buckling and knocking down several heavy pens used for holding cattle. Marcel, on his knees at the time, caught the full weight of the pens on his back, crushing several vertebrae. The accident left him paralyzed from the waist down. He has broken both legs in other, subsequent accidents. Being paralyzed does not mean one cannot experience pain. Marcel lived in chronic leg pain for years before he had an operation that has helped him cope with the torment.

Pain has been a constant and unwanted companion for Marcel. It has plagued him day and night, causing insomnia for weeks on end, depression and addiction to painkillers and alcohol. It wasn't until Marcel visited Dr. Ronald Tasker, a doctor at Toronto Western Hospital, that he met someone who could comprehend his pain. The experience left him in tears.

"They took me to see this old guy. He was asking me all these questions about the pain and I started to cry, because he really understood what I was going through," he says.

That was in 2000, nearly 20 years after his original accident. Marcel, desperate for relief, decided to try a treatment that had never been used before for pain.

Parkinson's disease. With DBS, electrodes are implanted into the brain and connected to a battery placed in the chest. A current from the electrodes hits the nerves carrying the pain signal, eliminating the sensation of pain.

For Marcel, the effect was immediate. "It was like all of a sudden – boom! I screamed. The doctor ran over to see what was wrong because

"I HAD GOALS. AFTER THE ACCIDENT, PAIN TOOK OVER MY LIFE."

Deep brain stimulation (DBS), pioneered by Canadian researchers, has been used for years to reduce or eliminate tremors caused by

he thought I was in pain. I yelled at them to do it again – it was the first time I had felt my legs in years," he remembers.

PEOPLE WHO HAVE DREAMS



Dr. Michael Salter
Hospital for Sick Children
University of Toronto

PAIN RELIEF – A CASE OF NERVES

Research on stimulation of the brain has been going on for more than 40 years and Canadian researchers have played a key role. The present form of brain stimulation therapy, for example, was developed from pioneering work on pain processing areas in the brain by Drs. Ronald Tasker and Jonathan Dostrovsky at the University of Toronto. Research has demonstrated that stimulating parts of the brain may have an impact on the sensation of pain, either by helping activate pain control systems or by interfering with the transmission of pain-related signals. Research suggests about one-third of patients with a spinal cord injury suffer from chronic pain. "The spinal cord does a lot of sensory processing. When changes take place in the spinal cord, nerves often become more hyperactive, transforming small sensations into painful ones," notes CIHR-funded researcher Dr. Michael Salter.

As an experienced researcher in the field, he also points to major challenges in treating chronic pain, not the least of which is getting your pain taken seriously. "Many people with chronic pain look completely normal and, unless they end up in the right hands, they may not get relief and may be stigmatized," he says. Looking forward, Dr. Salter and other researchers in the field are searching for ways to improve the diagnosis of chronic pain that will help sufferers get the treatment they need. "New therapies are essential, but diagnostic methods are critical too because they will help establish objectively that there is a problem."

In all, Marcel ended up having two electrodes installed to help control pain in both legs.

In the past few years, he's been back to the hospital a number of times as doctors and researchers came up with improvements to the system. He's also had to return for repairs to the DBS. Then there are the wires and electrodes he's damaged in the course of playing wheelchair tennis and body-building.

Marcel has been an athlete since long before the DBS surgery. After his accident, despite his pain, Marcel started a new life as a wheelchair athlete. He participated in several disabled games and completed marathons. More recently, he has been helping young disabled people in the Sudbury area learn how to play wheelchair tennis.

Marcel recently suffered a car accident, damaging the stimulator. It's been several months since the accident and, while he waits for surgery to repair the stimulator, he's suffering again with pain, long periods of sleeplessness and depression.

"I have a tape recorder that I carry around and use to make plans. I've got all these things I want to do. I stare at a sign I wrote and put on the wall. 'The future belongs to people who have dreams.' I've ended up starting to say that the future belongs to me now."



"IT WAS LIKE ALL OF A SUDDEN – BOOM! I SCREAMED. THE DOCTOR RAN OVER TO SEE WHAT WAS WRONG BECAUSE HE THOUGHT I WAS IN PAIN. I YELLED AT THEM TO DO IT AGAIN – IT WAS THE FIRST TIME I HAD FELT MY LEGS IN YEARS."

HE PARTICIPATED IN SEVERAL DISABLED GAMES AND COMPLETED MARATHONS. MORE RECENTLY, HE HAS BEEN HELPING YOUNG DISABLED PEOPLE IN THE SUDBURY AREA LEARN HOW TO PLAY WHEELCHAIR TENNIS.



Dr. Terry Snutch
University of
British Columbia



Dr. Michael Hayden
University of
British Columbia

Canadian researchers are making a name for themselves in pain research – and generating headlines on the business as well as the health pages.

Dr. Terry Snutch of the University of British Columbia has a new drug in development to treat chronic and neuropathic pain (pain with no apparent physical cause). His company, Neuromed Pharmaceuticals, has signed a record \$US475 million deal with Merck Inc. – the largest-ever licensing agreement in Canadian history – to further develop the drug.

Dr. Michael Hayden, also of the University of British Columbia, was part of an international team that has found a genetic mutation that renders at least 17 people worldwide unable to feel pain. He and his team hope to develop new drugs that will mimic the effects of this mutation to help the millions of people worldwide suffering from uncontrolled chronic pain. Xenon Pharmaceuticals, Inc., a company that Dr. Hayden co-founded, will take the lead in developing a potential new drug.

The Canadian Institutes of Health Research (CIHR) is the Government of Canada's agency for health research. Its mandate is to *"excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health-care system."*

CIHR: OVERVIEW AND

CIHR is composed of 13 Institutes and provides leadership and support to more than 11,000 researchers and trainees across Canada. Through CIHR, the Government of Canada is supporting health research that addresses society's highest-priority health issues and contributes to economic growth and prosperity.

“THE NOVELTY OF THE INCLUSIVE MODEL OF HEALTH RESEARCH FUNDING AS PROSECUTED BY THE CIHR IS CLEAR. THROUGH THIS PROCESS, CANADA HAS BECOME AN INTERNATIONAL LEADER IN BRINGING DIFFERENT COMPONENTS OF HEALTH RESEARCH TOGETHER. ... IT IS LIKELY THAT THIS MODEL WILL PROVIDE IMPORTANT NEW RESEARCH OUTPUTS RELEVANT TO HUMAN HEALTH THIS INCLUSIVE MODEL MAY PROVE TO BE ONE OF CANADA’S MOST IMPORTANT GIFTS TO THE INTERNATIONAL HEALTH RESEARCH COMMUNITY.”

CIHR: YEAR 5 – INTERNATIONAL REVIEW PANEL REPORT, 2000-2005, PP. 12-13.

HIGHLIGHTS OF 2006-07

INTERNATIONAL PANEL OF EXPERTS REVIEWS CIHR’S FIRST FIVE YEARS

CIHR’s success at achieving its goals over its first five years was assessed by a 27-member International Review Panel. In its report, which was released in June 2006, the panel applauded CIHR for what it has accomplished to date, concluding that CIHR is setting an example to the world and noting that the creation of its 13 Institutes has unleashed a flood of energy and creativity that is benefitting the health of Canadians.

IN RESPONSE TO THE INTERNATIONAL REVIEW PANEL’S REPORT, CIHR HAS INTRODUCED A NUMBER OF CHANGES:

- It has created a single Research and Knowledge Translation Committee (RKTC), replacing the Research Priorities and Planning Committee and the Standing Committee on the Oversight of Grants and Awards Competitions. CIHR’s Governing Council is assessing the need for additional changes to its structure, such as the number and scope of standing committees, sub-committees and working groups.
- It is developing a three-year operating plan that focuses on peer review innovation; better, simpler program design and evidence-based decision making.
- It is improving CIHR’s service delivery and streamlining processes.
- It is working to revitalize the Knowledge Translation (KT) strategic plan by the end of 2008.
- It has launched two strategic initiatives promoting ethics in research, both of which will help to build capacity in this priority area in Canada, and is promoting education in research ethics.
- It is developing an end-of-grant report and research results database that will be mandatory for CIHR grant holders.
- It has introduced a variety of tools and activities to engage a diverse range of audiences and developed guidelines on publications to encourage researchers and research institutions to highlight CIHR involvement in their work.

CIHR MAKES STRIDES AS AN ORGANIZATION

Throughout 2006-07, CIHR made important strides in many areas, including its international activities, partnership activities and in specific areas of health research. It also developed a Human Resources Strategy to ensure that CIHR, as a workplace, is comparable with Canada's top employers. Over the next three years, CIHR will develop and implement action plans in five areas of human resources to help achieve this objective.

INTERNATIONAL

On the international front, CIHR strengthened its presence with the development of its first *Framework for International Relations and Cooperation*, which provides coherence, guidance and strategic direction for CIHR's international endeavours. CIHR also established the Canada-China Health Research Scholarship Program with the Chinese Ministry of Education to enable Chinese students of high academic merit to pursue PhD research at Canadian universities. The first cohort of 30 Chinese students will arrive in Canada in September 2007. This program complements the China-Canada Joint Health Research Initiative, jointly managed and funded by CIHR and the National Natural Science Foundation of China. This initiative promotes the development of Canadian-Chinese scientific cooperation through the support of collaborative research grants.

In addition, CIHR, together with its partners in the Global Health Research Initiative (the International Development Research Centre, the Canadian International Development Agency and Health Canada), announced the 13 successful teams selected as recipients of the first Teasdale-Corti Global Health Research Partnership Program Team Grants. Each team will receive up to \$1.6 million over four years.

PARTNERSHIPS

Effective health research requires the collective effort of many people and organizations. For this reason, partnerships are at the core of CIHR's work. CIHR works with national and provincial research funding organizations, voluntary health organizations, the private sector and all members of the health research community to deliver its mandate. The importance of these partners goes far beyond money. Partnerships

help build capacity for health research within Canada; share knowledge; minimize redundancy and duplication; align the priorities and programs for research among different funders; and set the Canadian health research agenda.

Partners also help ensure that knowledge created by health research is used to improve health and strengthen the health-care system. Recognizing this key role, CIHR, in 2006-07, moved its Partnerships Branch into the Knowledge Translation Portfolio.

CIHR is also in the process of evaluating its Small Health Organization Partnership Program, which was created in 2005 to foster partnership opportunities with small health charities and not-for-profit organizations that have modest health research funding capacity. The program supports training and salary awards for researchers in order to strengthen the organizations' research capacity.

AREAS OF HEALTH RESEARCH

CIHR also took many strides to advance different areas of health research. It developed the *CIHR Guidelines for Health Research Involving Aboriginal People*, which were adopted by CIHR's Governing Council in March 2007. The guidelines, which were developed after broad consultation with Aboriginal communities, researchers and institutions, will protect Aboriginal participants in CIHR-funded research and promote health through research that is in keeping with Aboriginal values and traditions.

It also launched the first-ever Request for Applications (RFA) into boys' and men's health. Canadian men have higher rates of 14 of the 15 leading causes of death, including cancers, heart disease, injury and suicide. This RFA is intended to broaden the focus of research into the health of men and boys and to build capacity in this under-researched area.

In another area of growing importance, CIHR awarded 36 grants to researchers focusing on various areas of pandemic preparedness to assist in preparing for a possible influenza outbreak. The projects range from the development of new antiviral medications to the development of public health mechanisms to help contain an outbreak.

HEALTHY CANADIANS IN A HEALTHY ENVIRONMENT

Canadians can't be healthy in an unhealthy environment. Polluted air and water contribute to respiratory diseases such as asthma, endanger the safety of our food and drinking water and have been linked to many other diseases and conditions.

Environment and health linkages are being increasingly explored by CIHR-funded researchers.

BRIDGING HEALTH RESEARCH AND ENGINEERING

One innovative initiative, the Bridge Program at the University of British Columbia (UBC), is a researcher training program that combines public health, engineering and public policy research. Participants in the program are united by their desire to bridge basic science with engineering to apply their knowledge to everyday human situations. Some current Bridge projects include assessments of compost workers' exposure to airborne hazards; neurological outcomes in children exposed to flame retardants known as PBDEs *in utero*; and the impact of mining activities on the health of residents of British Columbia mining communities.

Among the studies undertaken through the Bridge Program is the Langley Water and Health Study. Langley, a mixed urban/rural community on the outskirts of Vancouver, has been concerned about depleting its water supply as its population grows. It has been mapping all the different ways in which its residents get their water, from municipal water systems as well as private and municipal wells, and dispose of their sewage, via municipal sewage systems and septic tanks, for example. Now, a team of researchers and trainees, led by Dr. Kay Teschke of the Department of Health Care & Epidemiology and the School of Occupational & Environmental Hygiene at UBC, is using that data to determine how water source and sewage disposal methods are related to rates of gastrointestinal illness among residents.

"The mix of water supply is wonderful to be able to study the influence of water, sewage and land use on gastrointestinal illness," says Dr. Teschke. Outbreaks of water-borne illness such as the one that occurred in Walkerton, Ontario, in 2000 can usually be traced to a single water source. However, Dr. Teschke's team is more interested in looking at endemic illness, that which exists on an ongoing basis. The results of the study will help public policy makers and engineers prevent future water-borne illnesses.

AIR POLLUTION AND HEALTH

In other environment-related projects, McGill University's Dr. Mark Goldberg has placed "passive monitors" on 130 telephone poles across Montreal to map out the links between neighbourhood and exposure to air pollution. These highly sensitive monitors are measuring levels of nitrogen dioxide, a chemical emitted by vehicles, and volatile organic compounds, which include everything from paints to cleaning fluids to benzene. Eventually, he will be able to determine whether lung and other cancers can be linked to people living in higher-pollution areas.

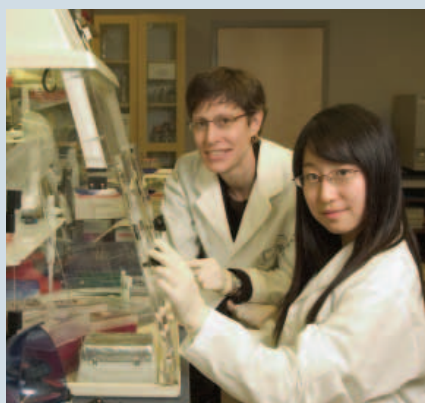
Another study by Dr. Murray Finkelstein of the Ontario Ministry of Labour and Mount Sinai Hospital, University of Toronto, is looking at the effects of traffic pollution on people in Toronto and Hamilton, including those who are healthy and those with heart, lung and other diseases. His research will supply important information on how to improve the health of Canadians through health and environmental policy intervention.



ENGAGING CANADIANS OUTSIDE THE RESEARCH COMMUNITY

Helping Canadians understand the importance of their investment in health research is a priority for CIHR, with activities aimed at engaging the general public, youth and the media in innovative ways.

CIHR presented its first-ever Café Scientifiques this year. Café Scientifique is a place where, for the price of a cup of coffee or a glass of wine, anyone can come to explore the latest ideas in science and technology. The first Café, held in October 2006 in Ottawa, brought together researchers focusing on our aging brains, our aging bodies and the environments in which we're growing old. A second Café Scientifique, focusing on obesity, was held in March 2007 in conjunction with the Food for Health travelling exhibition, which opened at the Canada Agriculture Museum before embarking on a cross-Canada tour. CIHR is a sponsor of the exhibition.



The Synapse youth outreach program, intended to bring young people together with health researchers, got fully underway in 2006-07 and had a highly successful first year, eliciting a strong response from researchers and youth science organizations across the country. More than 2,000 researchers have registered as Synapse youth mentors, with another 700 expressing interest in the program. The first Synapse Mentorship Awards will be announced in summer 2007. Other highlights of the first year include the appointment of a Youth Outreach Advisory Board and the launch of the Synapse website, with sections for both youth and researchers. Four new flash animations will profile CIHR-supported health research for high-school students.

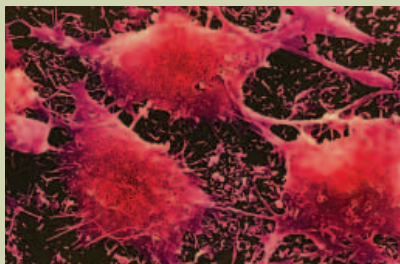
Twelve funding agreements have been signed with leading youth outreach organizations, including the **Science with Impact Workshop and National Tour**, the **Science and Technology Awareness Network**, the **Youth Science Foundation – Health Research Division** and **Actua**.

CIHR also worked with media to help Canadians better understand what advances in health research could mean for them. CIHR brought together top researchers throughout Canada to help journalists navigate the complexities of genetics and of health services, two vitally important topics, through two workshops for health and science reporters. The workshops were held in Toronto in September 2006 and March 2007.

RESEARCH BREAKTHROUGHS

In 2006-07, CIHR funding resulted in important research breakthroughs. These breakthroughs could, one day, translate into direct improvements in the health of Canadians like those portrayed in the pages of this report. These are some of those discoveries:

CANCER BREAKTHROUGHS



© Dennis Kunkel Microscopy, Inc

Cancer is one of the most devastating diseases facing Canadians. More than 38% of Canadian women and 44% of Canadian men will develop some form of cancer in their lifetime, while about a quarter of all Canadians will die of cancer.

Canadian researchers are making important advances in the fight against this dreaded disease. Here are just three research discoveries made during 2006-07.

GETTING TO THE ROOT OF CANCER CELLS – A CANADIAN FIRST

Not all cancer cells are created equal. A Toronto-based research team led by Dr. Peter Dirks of the Hospital for Sick Children, University of Toronto, had earlier discovered that stem cells in brain cancer are hard to eliminate and just a few of them left behind can trigger more cancer growth. This year, Dr. John Dick of the University Health Network found a way to destroy the stem cells that cause a recurrence of leukemia after chemotherapy. He and his team also were able to identify a colon cancer stem cell that initiates tumour growth. Their discoveries are prompting a radical change in how researchers and clinicians are approaching cancer.

DIABETES AND OBESITY GENE PRESENTS NEW HOPE FOR BREAST CANCER

A gene known for its role in diabetes and obesity is also present in two out of five women diagnosed with breast cancer, according to research by McGill University's Dr. Michel Tremblay. The gene, PTP1b, plays a central role in the proliferation and metastasis of cancer tumours. Dr. Tremblay's team had earlier shown that suppressing the enzyme produced by the gene could cure type 2 diabetes and obesity. They will now focus on adapting the compounds to attack breast cancer. New drugs could be fast-tracked for clinical trials as early as this fall.

PUTTING OLD DRUGS TO NEW USES IN THE FIGHT AGAINST CANCER

A drug that has been used for decades to treat children with inborn errors of metabolism due to mitochondrial diseases (diseases caused by the failure of mitochondria to create the energy needed by cells, leading to cell injury and death) could be an effective treatment for many forms of cancer. Dr. Evangelos Michelakis of the University of Alberta has shown that the drug, called DCA, causes regression in cancers of the lung, breast and brain. The drug is already known to be non-toxic in humans and, because it is not patented or owned by a pharmaceutical company, would be relatively inexpensive to administer. Clinical trials of the drug could start as early as summer 2007.

A POSSIBLE CURE FOR TYPE 1 DIABETES

Malfunctioning nerves may play a role in the development of type 1 diabetes, according to research by Drs. Michael Salter and Hans-Michael Dosch of Toronto's Hospital for Sick Children. These misbehaving nerve cells produce chemicals that trigger the immune system to destroy the insulin-producing islet cells of the pancreas. By killing the nerves with a chemical derived from chili peppers, the researchers were able to cure diabetes in mice. Drs. Salter and Dosch hope to begin testing the procedure in humans by 2008.



NEW DEVELOPMENTS IN ALZHEIMER'S DISEASE

Dr. JoAnne McLaurin of the University of Toronto has found that a drug that stops the accumulation of amyloid beta peptide in the brain can halt Alzheimer's disease in mice. The drug has now been approved for the first phase of clinical trials in humans. Meanwhile, in what they term "among the most important scientific discoveries ever made in Canada in dementia research," Drs. Ian Mackenzie and Howard Feldman of the University of British Columbia discovered that mutations in a gene called progranulin cause an inherited form of frontotemporal dementia, the second-most common form of dementia in those under age 65.

SUPERANTIGENS ON THE ATTACK

What do flesh-eating disease, food poisoning and toxic shock syndrome have in common? A study by Dr. Joaquín Madrenas at the Robarts Research Institute, University of Western Ontario, has found that all of these diseases, whose onset is extremely rapid, are caused by tiny amounts of bacterial "superantigens", toxins secreted by some bacteria that trigger a massive activation of immune cells throughout the body. This systemic immune response then sets off its own chain of damaging events that can lead to vomiting, fever, organ failure and even death. Dr. Madrenas' research could help to develop drug therapies targeted to these diseases.

SUBSTANCE ABUSE COSTS ... ALL OF US

Substance abuse exacts a horrific toll on individuals, but its costs are far greater yet – \$39.8 billion, to be exact, which is what Dr. Jürgen Rehm of the Centre for Addiction and Mental Health estimates substance abuse costs the Canadian economy each year. The study, which includes costs associated with tobacco, alcohol and illegal drug use, is a guide for policy-makers seeking to understand the magnitude of these problems and reduce the burden of substance abuse on Canadian society.

SLOWING RATES OF HIV INFECTION

Condom use and awareness programs do help in the fight against HIV/AIDS, according to an international study partly funded by CIHR. The study found a one-third decline in HIV infection rates among young women attending peer-based education programs in the southern states of India. The study was led by Dr. Prabhat Jha of the Centre for Global Health Research, University of Toronto.

DIAGNOSING FETAL ALCOHOL SPECTRUM DISORDER

It's traditionally been difficult to diagnose fetal alcohol spectrum disorder (FASD), but now Dr. James Reynolds of Queen's University is having success with a test based on patterns of eye movement. This fast, simple and portable eye-tracking test has been used in communities in northwest Ontario, and Dr. Reynolds and his team are collaborating with the Canada Northwest FASD Research Network (active in B.C. and Alberta) to include the test as part of its diagnostic tools. The ability to detect the disorder earlier means affected children can receive specialized treatment.

REPLACING DAMAGED SKIN

Dr. Lucie Germain and her colleagues at Laval University are testing reconstructed skin created using a new tissue engineering method they developed to see if it can improve healing for people with chronic wounds or ulcers. The engineered skin could also be used to treat people with severe burns.



PLEASE DON'T DRINK THE COFFEE!

Caffeine is generally thought of as an adult stimulant, but CIHR-funded research has found that it may help regulate the breathing of very premature babies. A study by Dr. Barbara Schmidt of McMaster University found that about a third of infants treated with caffeine for apnea – interrupted or irregular breathing due to their prematurity – required extra oxygen, compared to nearly half of those who received a placebo. The latter group also needed an extra week of ventilator therapy to support their breathing, compared to the babies who received caffeine. Apnea occurs in about 85% of babies born prior to 34 weeks' gestation.

REALIZING THE ECONOMIC BENEFITS OF HEALTH RESEARCH

CIHR-funded research also contributed to Canada's economic strength, as spin-off companies built on this research marked new milestones:

Amorfix Life Sciences Ltd.

Amorfix Life Sciences Ltd., a Toronto-based company, was nominated as a *Technology Pioneer 2007* by the World Economic Forum, the only Canadian company, out of a total of 47 nominees, selected for this year's award. Amorfix builds on the CIHR-funded discoveries of Dr. Neil Cashman of the University of British Columbia and Dr. Marty Lehto of the University of Toronto that will help to diagnose and treat neurodegenerative diseases such as Alzheimer's.

Bioniche Life Sciences Inc.

A vaccine that fights *E. coli* in cattle has been authorized for use in Canada by the Canadian Food Inspection Agency. The vaccine was developed by Dr. Brett Finlay of the University of British Columbia and Dr. Andy Potter of the University of Saskatchewan and commercialized by Bioniche Life Sciences Inc., of London, Ontario. By preventing *E. coli* in cattle, the vaccine will also prevent its transmission to humans through meat products.

AWARD-WINNING COMPANIES STARTED WITH CIHR FUNDING

Four of Canada's Top 10 Life Science Companies, as named by the Ottawa Life Sciences Council, have their roots in CIHR funding.

Jennerex Biotherapeutics ULC of Ottawa is working on new cancer treatments based on viruses that attack cancerous cells while leaving healthy cells alone and has three products in Phase I and II clinical trials. The company is commercializing the research of Dr. John Bell of the University of Ottawa.

Liponex Inc., also of Ottawa, is in Phase II trials of a new drug to raise HDL, or "good" cholesterol. The drug could be used to prevent and treat heart disease. While initial trial results were disappointing, the firm plans to reformulate the drug for another round of tests. The company is based on the research of Dr. Daniel Sparks of the University of Ottawa Heart Institute.

Rimon Therapeutics Ltd., based in Toronto, is developing a "toolkit" of active, easy-to-use, and cost-competitive wound dressing based on its Theramer™ technologies, medical polymers that act without the use of drugs. It is based on the research of Dr. Michael Sefton of the University of Toronto.

StemPath Inc., also based in Ottawa, specializes in therapeutic solutions that encourage the body's natural regenerative capabilities to replace damaged tissue with new tissues. It is based on the research of Dr. Lynn Megeny of the Ottawa Health Research Institute, University of Ottawa.

MEASURING SUCCESS

CANADIAN HEALTH RESEARCHERS AMONG THE MOST PRODUCTIVE IN THE WORLD

According to a study published in 2006 (*FASEB Journal*, Vol. 20) that looked at the contribution of different world regions to the top 50 peer-reviewed biomedical journals, Canada ranked first in the world in terms of funds spent on health research compared to the articles published.

DEVELOPING AND SUPPORTING THE BEST AND BRIGHTEST

CIHR supported more than 11,000 health researchers and trainees in 2006-07.

Over 100 *new*, early-career health researchers (principal investigators) received their first CIHR investigator-initiated operating grant in 2006-07.

CONTRIBUTING TO THE CANADIAN ECONOMY

Health research leads to new products, companies and jobs. By 2006-07, health research funded by CIHR and its predecessors had led to 128 spin-off companies, 19 of which are publicly traded.

A study by CIHR found that a group of 6,000 of its funded researchers, over the course of their careers, had obtained 939 patents/intellectual property rights as individuals and 2,965 patents/intellectual property rights as collaborators by the end of 2005-06.



Number of investigators and trainees supported in 2006-07:

11,478
(2000-01: 6,004)

Average value of open competition operating grants in 2006-07:

\$112,000
(2000-01: \$92,000)

Number of grants and awards in 2006-07*:

8,263
(2000-01: 5,663)

* Excluding Canada Research Chairs and Networks of Centres of Excellence.

PROVIDING STEWARDSHIP

CIHR reports to Parliament through the Minister of Health. Its Governing Council is chaired by CIHR's President and comprises 20 Canadians who have been appointed by Order-in-Council to renewable three-year terms. Council members represent a wide range of backgrounds and disciplines, reflecting CIHR's broad mandate and vision.

CIHR's Governing Council, 2006-07

Dr. Alan Bernstein

(Chair)
President
Canadian Institutes of Health Research

Dr. James Brien

Professor of Pharmacology and Toxicology
Director of Research
Faculty of Health Sciences
Queen's University

Dr. Michel Bureau

Professor
Faculty of Medicine
University of Sherbrooke
Director General
Ministère de la Santé et des Services
sociaux du Québec

Dr. Arthur Porter

Director General and CEO
McGill University Health Centre

Dr. Ray Rajotte

Professor of Surgery and Medicine
Director, Surgical-Medical Research Institute
Director, Islet Transplantation Group
University of Alberta

Dr. Carol Richards

Director
Centre for Interdisciplinary
Research in Rehabilitation and
Social Integration
Laval University

AND ACCOUNTABILITY

Dr. Harvey Chochinov

Canada Research Chair in Palliative Care
Professor of Psychiatry
University of Manitoba and CancerCare Manitoba

Dr. Nancy Edwards

(Vice-Chair)
Professor
School of Nursing
Department of Epidemiology and
Community Medicine
Director
Community Health Research Unit
University of Ottawa

Dr. Brett Finlay

Professor
Michael Smith Laboratories
Department of Biochemistry and
Molecular Biology
University of British Columbia

Dr. Victor Ling (until September 2006)

(Associate Vice-Chair)
Vice President
BC Cancer Agency

Dr. Patrick John McGrath

Professor of Psychology, Pediatrics and Psychiatry
Dalhousie University

Dr. Louise Nadeau (until June 2006)

(Vice-Chair)
Professor
Department of Psychology
University of Montreal

Dr. Rodney Ouellette

Director
Molecular Pathology Laboratory
CEO & Scientific Director
Beauséjour Medical Research Institute
Head of Research
Dr. Georges-L. Dumont Regional Hospital

Mr. Morris Rosenberg (ex officio)

Deputy Minister
Health Canada

Dr. Janet Rossant

Chief of Research
Hospital for Sick Children

Mr. Joseph Rotman (until June 2006)

Chairman and CEO
Roy L. Capital Corporation

Dr. Jean Rouleau

Dean of Medicine
University of Montreal

Dr. Robert Sheldon

Professor and Associate Dean of Clinical Research
Faculty of Medicine, University of Calgary
Vice-President, Research
Calgary Health Region

Mr. Arnold Steinberg

(Deputy Vice-Chair)
Principal, Retail and Investment Banking
Cleman Ludmer Steinberg, Inc.

Dr. Bill Thomlinson

Executive Director
Canadian Light Source Inc.
University of Saskatchewan

Dr. Cornelia Wieman

Co-Director
Indigenous Health Research
Development Program
Assistant Professor
Department of Public Health Sciences
Faculty of Medicine
University of Toronto

INSTITUTES OF

CIHR is composed of 13 innovative Institutes.

These Institutes bring together all partners in the research process – those who fund research, those who carry it out and those who use its results – to share ideas and focus on what Canadians need: good health and the means to prevent and fight diseases when they happen.

Each Institute is headed by a Scientific Director who is a leader in his or her field. Scientific Directors receive guidance from their Institute Advisory Boards, made up of volunteers from all areas of the health research community.

The following are CIHR's 13 Institutes and their Scientific Directors:



CIHR's Institute of Aboriginal Peoples' Health
Dr. Jeff Reading
University of Victoria



CIHR's Institute of Human Development, Child and Youth Health
Dr. Michael Kramer
Montreal Children's Hospital
McGill University



CIHR's Institute of Aging
Dr. Anne Martin-Matthews
University of British Columbia



CIHR's Institute of Infection and Immunity
Dr. Bhagirath Singh
University of Western Ontario



CIHR's Institute of Cancer Research
Dr. Philip Branton
McGill University

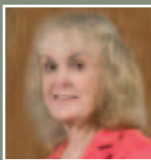
EXCELLENCE



CIHR's Institute of Circulatory and Respiratory Health
Dr. Peter Liu
University Health Network
University of Toronto



CIHR's Institute of Musculoskeletal Health and Arthritis
Dr. Cyril Frank
(until December 31, 2006)
University of Calgary



CIHR's Institute of Gender and Health
Dr. Miriam Stewart
University of Alberta



Dr. Jane Aubin
(as of January 1, 2007)
University of Toronto



CIHR's Institute of Genetics
Dr. Roderick McInnes
Hospital for Sick Children
University of Toronto



CIHR's Institute of Neurosciences, Mental Health and Addiction
Dr. Rémi Quirion
Douglas Hospital Research Centre
McGill University



CIHR's Institute of Health Services and Policy Research
Dr. Morris Barer
(until August 31, 2006)
University of British Columbia



CIHR's Institute of Nutrition, Metabolism and Diabetes
Dr. Diane Finegood
Simon Fraser University



Dr. Colleen M. Flood
(as of September 1, 2006)
University of Toronto



CIHR's Institute of Population and Public Health
Dr. John Frank
University of Toronto

THE POWER OF VOLUNTEERS

Volunteers are the backbone of CIHR's reputation for excellence. They help to set research priorities and strategic directions, ensure that CIHR funding is allocated only to the very best research proposals and provide accountability to the people of Canada – the source of CIHR funding – and to the research community.

Each year, more than 2,200 expert reviewers volunteer their time to one of CIHR's peer review committees, assessing the strengths and weaknesses of each of the many thousands of funding applications CIHR receives. Their work is supplemented by that of thousands of external reviewers who submit written reports for consideration by peer review committees. CIHR's peer review system ensures that CIHR's funding process is fair and open, that taxpayers' money is spent wisely and that only the best and the brightest researchers are funded.

CIHR recognizes the dedication of its volunteers and thanks them for their continuing commitment to improving the lives of Canadians. A full listing of all CIHR volunteers can be found in *The Power of Volunteers 2006-2007*.

FINANCIAL STATEMENT DISCUSSION AND ANALYSIS

Financial Highlights:

- The total CIHR budget for 2006-07, as appropriated by Parliament, reached \$863.5 million, an increase of \$50.4 million (or 6.2%) over 2005-06.
- The total net cost of operations reached \$847.2 million, an increase of 5.7% as compared to 2005-06.
- The number of CIHR-funded Grants and Awards climbed to approximately 9,000 for a total investment of \$810.2 million in the period (an increase of 5.4% over 2005-06).
- CIHR's operating expenses totaled \$49.5 million, an increase of 4.4% over 2005-06. Operating expenses were comprised of \$31.7 million in salary and employee benefits (64%) and \$17.8 million in non-salary expenses (36%). Operating expenses continue to comprise less than the target maximum value of 6% of total CIHR expenditures.
- CIHR did not spend all available and planned funding in 2006-07. A surplus of \$16.5 million arose in the Grants and Awards budget, almost entirely from delays in establishing new Canada Research Chairs. A surplus of \$3.7 million occurred in the Operating budget, mainly the result of difficulties in staffing new and vacant positions.
- Revenues (\$10.6 million), Total Assets (\$21.4 million), Total Liabilities (\$22.1 million) and the acquisition and amortization of tangible capital assets (\$1.4 million and \$1.5 million respectively) all remain relatively modest and generally consistent with the previous fiscal year.

Analysis:

CIHR's growth is almost entirely dependent on increases to its appropriations approved by Parliament. The 6.2% increase to the 2006-07 CIHR budget resulted in commensurate increases to its net costs of operations which in turn is dominated by Grants and Award expenditures. Grants and Award expenses in 2006-07 totaled \$810.2 million, an increase of \$41.4 million or 5.4% as compared to 2005-06.

The following table indicates how 2006-07 Grants and Awards expenses were allocated by program area. Priority is given to funding health research and researchers through open competitions, strategic initiatives and knowledge translation. CIHR also participates with other federal agencies in a number of programs, including the Canada Research Chairs and Networks of Centres of Excellence.

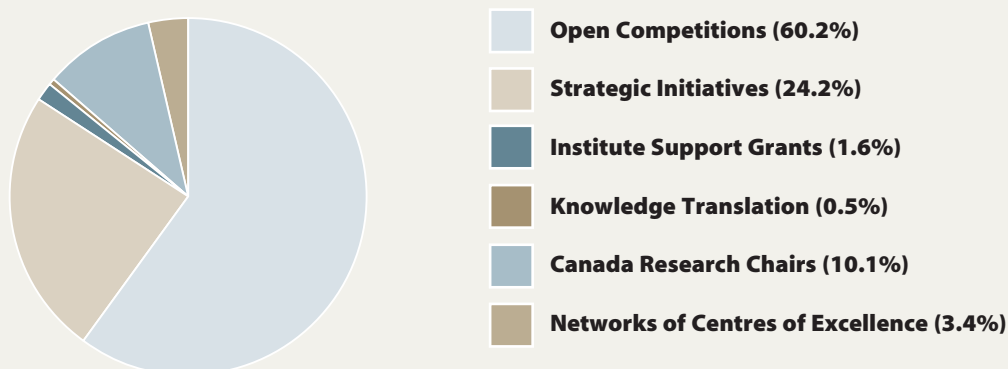
As the graphic indicates, CIHR invests the largest share of its budget on research grants and personnel support awards in "open" competitions, enabling individual researchers, or groups of investigators, to pursue their own research priorities. Applications for assistance undergo rigorous peer review by committees of experts in the field. This process helps ensure that only those proposals that meet internationally accepted standards of excellence are funded.

Strategic Initiatives comprise the second largest area of investment and it targets high priority research areas identified by CIHR's Institutes after broad consultations with stakeholders and partners. These strategic initiatives address emerging health threats and other important health issues of concerns to Canadians such as obesity, cancer, vulnerable populations such as youths and Aboriginals or measures to improve the effectiveness of the health-care system itself.

Knowledge Translation (KT) is a critical and growing part of CIHR's mandate focused on the synthesis, exchange and ethically sound application of knowledge to accelerate the capture of the benefits of research for Canadians through improved health, more effective services and products and a strengthened health-care system.

2006-07 GRANTS AND AWARDS EXPENSES¹

\$810.2 million



Note 1: Figures do not include Refunds of previous years' expenses. Figures may vary due to rounding.

As noted earlier, the key business driver for CIHR is being provided Parliamentary Appropriations by the Federal Government. The table below summarizes the Parliamentary Appropriations received by CIHR in fiscal year 2006-07:

SUMMARY OF PARLIAMENTARY APPROPRIATIONS

(in millions of dollars)

	2006-07 Main Estimates	2006-07 Supplementary Estimates	2006-07 Total Appropriations
Vote 15 - Operating Expenses (including Salaries & Employee Benefits)	45.9	-	45.9
2006 Operating Budget Carryforward	-	1.9	1.9
2006 Federal Budget Increase	-	0.7	0.7
Funding for Fabry's Disease	-	0.3	0.3
Pandemic Preparedness Funding	-	0.3	0.3
Procurement Savings	-	(0.3)	(0.3)
Other Adjustments	-	(0.5)	(0.5)
Transfer to CIHR Vote 20	-	(1.0)	(1.0)
Total Vote 15 - Operating Expenditures	45.9	1.4	47.3
Vote 20 - Grants & Awards	786.8	-	786.8
2006 Federal Budget Increase	-	16.3	16.3
Funding for Fabry's Disease	-	10.6	10.6
Pandemic Preparedness Funding	-	2.2	2.2
Transfer from CIHR Vote 15	-	1.0	1.0
Net Transfer of Funds to Other Departments	-	(0.7)	(0.7)
Total Vote 20 - Grants & Awards	786.8	29.4	816.2
Total 2006-07 CIHR Parliamentary Operations	832.7	30.8	863.5
Total 2006-07 Authorities Spent			843.3
Total Lapsed Appropriations for 2006-07			20.2

Note: The total CIHR budget for 2006-07, as appropriated by Parliament, increased by \$50.4 million over 2005-06 to \$863.5 million. CIHR received an additional \$30.8 million in Parliamentary Appropriations for 2006-07 through the Supplementary Estimates (see above). CIHR received an additional \$19.6 million for 2006-07 through the Annual Reference Level Update (reflected in the Main Estimates column in the table above), including additional funding for programs such as the Canada Research Chairs (\$15 million), HIV/AIDS research (\$2.4 million) and Canada Graduate Scholarships (\$2.0 million).

CIHR lapsed Parliamentary Appropriations in 2006-07 as follows:

(in millions of dollars)

	Vote	Lapsed Appropriations
15	Operating Expenses	3.7
20	Grants	16.5
	Total Lapsed Parliamentary Appropriations	20.2

- The variance in Operating Expenses resulted primarily from staffing delays and higher than average employee turnover. Please note that CIHR is able to carry forward up to 5% of its operating budget from one period in to the next fiscal year. This means that \$2.1 million of the \$3.7 million lapse in the operating budget will be carried forward and thus increase the 2007-08 fiscal year operating budget.
- The lapsed funds for 2006-07 for Vote 20 (Grants) resulted almost entirely from the Canada Research Chairs Program being under spent by \$16.4 million. This variance resulted directly from difficulties encountered by the Universities in filling the Chairs. CIHR Management has determined that no financial impact will result in future fiscal years from this lapse.

Risks and Uncertainties:

Managing Multi-Year Commitments within an Annual Appropriation Funding Model

- Research is a long-term endeavour and researchers require certainty that the funding provided by government will be available for the duration of the study. As a result, most of CIHR's grants and awards extend over a 3 to 5 year period which also implies that the majority of CIHR's budget in any given year must be set aside to meet the financial obligations created by approvals made in previous years.
- CIHR is required to manage research funding prudently and to carefully consider the multi-year implications of its decisions to ensure that acceptable amounts of funding are available in all years to support approvals of new grants and awards.
- CIHR has introduced the concept of the "steady state" for the Open Competition Operating Grants to avoid the boom-bust cycle whereby the number of new grants awarded and the attendant success rate of applicants fluctuate dramatically from one competition to another. Management also varies the mix of program instruments (i.e. one year grants versus multi-year grants) as a risk management tool.

Rising Demand for Research Funding

- CIHR is confronted with increased application pressure from the health research community caused in part by a robust and growing community of practitioners, CIHR's broadened mandate to serve all health research disciplines and by the significant investments in health-related infrastructure being made by federal and provincial governments and other funders.
- Notwithstanding the more than doubling of CIHR's budget since inception, success rates in major competitions have fallen at a time when the number of applications that are assessed by peer review committees as deserving funding has tripled over that same time frame.
- Going forward, it will be very important for CIHR to rigorously prioritize its activities and to seek additional funding to ensure that Canada does not lose many of its outstanding investigators and fully reap the contribution they can make to improving the health of Canadians, increasing the effectiveness of health services and products and strengthening the Canadian health-care system.
- The 2007 Federal Budget included an additional \$37 million of base funding and an additional annual funding for the Canada Graduate Scholarships program. This funding will: help stabilize the Open competition grants; allow for additional investments in Knowledge Translation; and advance greater tri-agency collaboration as identified by the government's new Science and Technology strategy.

Variance Analysis:

Change in Key Financial Indicators:

As evidenced by the table below, CIHR expenses and other key financial indicators have increased in relative proportion to the increased Parliamentary Appropriations received by CIHR in 2006-07.

(in millions of dollars)

	2006-07	2005-06	Increase	% Increase
Parliamentary Appropriations	863.5	813.1	50.4	6.2 %
Net Cost of Operations	847.2	801.8	45.4	5.7 %
Grants & Awards Expenses	810.2	768.8	41.4	5.4 %
Operations and Administration Expenses	49.5	47.4	2.1	4.4 %
Salaries and Employee Benefits	31.7	29.6	2.1	7.1 %

- In 2006-07, the ratio of operations and administration expenses to total expenses was 5.8%, which was unchanged from 2005-06.

Change in Expenditures by Strategic Outcome:

(in millions of dollars)

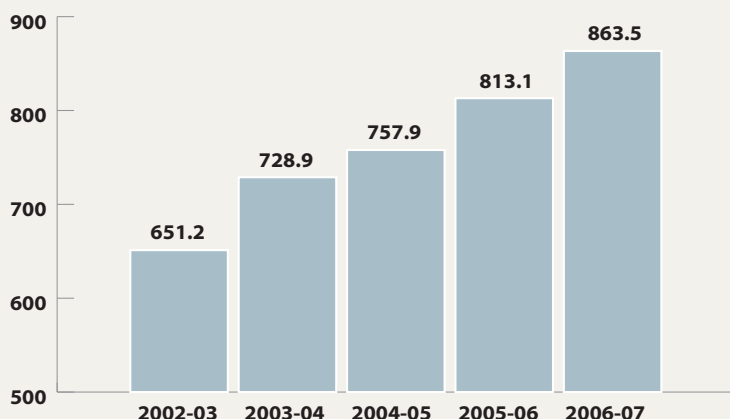
Strategic Outcome	2006-07	2005-06	Increase	% Increase
Health Research	511.0	475.6	35.4	7.4 %
Health Researchers in Innovative Environments	284.3	275.2	9.1	3.3 %
Transforming Health Research into Action	62.5	61.7	0.8	1.3 %
Total Expenses	857.8	812.5	45.3	5.6 %

- Expenses increased significantly in 2006-07 as compared to 2005-06 due to increased Parliamentary Appropriations and due to increased expenses allocated to the Health Research Strategic Outcome.
- This increase to the Health Research Strategic Outcome resulted from CIHR Management allocating a significant portion of the 2006 Federal Budget increase to the Open Competition Operating Grants and from the additional funding received in 2006-07 for Fabry's disease research and pandemic preparedness research.

Trend Analysis:

CIHR Parliamentary Appropriations:

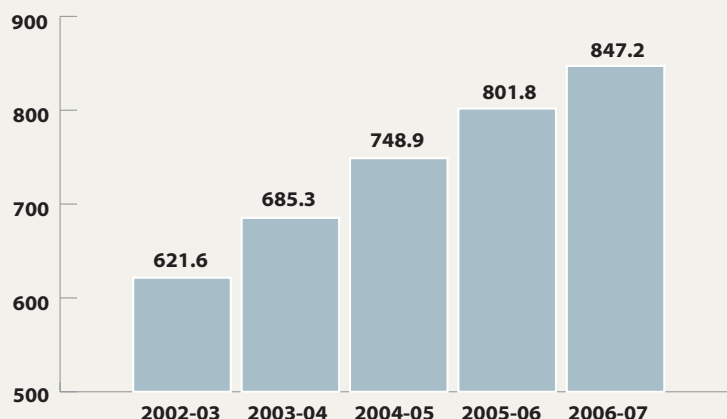
(in millions of dollars)



- CIHR Parliamentary Appropriations have risen steadily over the past five fiscal years, from \$651.2 million in 2002-03 to \$863.5 million in 2006-07.
- CIHR Parliamentary Appropriations have increased by \$212.3 million or 33% since 2002-03, an average yearly increase of 7.3%.

CIHR Net Cost of Operations:

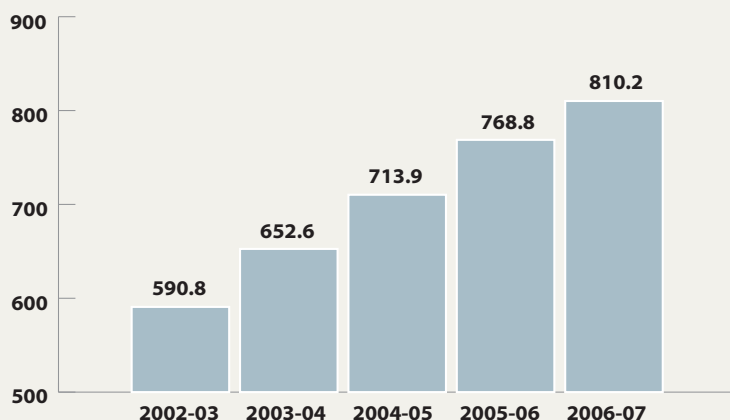
(in millions of dollars)



- CIHR Net Cost of Operations has increased steadily over the past five fiscal years, from \$621.6 million in 2002-03 to \$847.2 million in 2006-07.
- CIHR Parliamentary Appropriations have increased by \$225.6 million or 36% since 2002-03, an average yearly increase of 8.1%.

CIHR Grants and Awards Expenses:

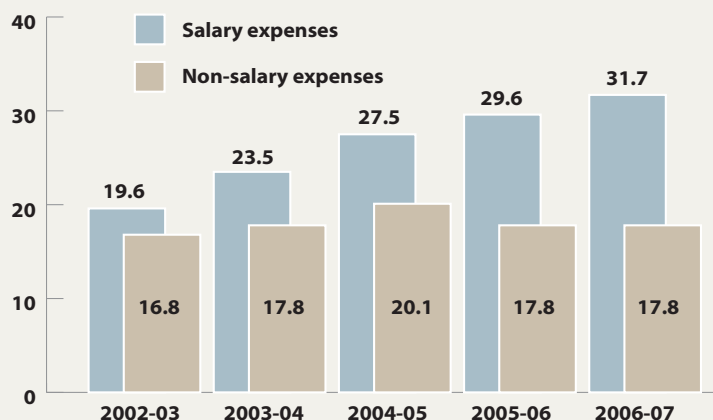
(in millions of dollars)



- CIHR Grants and Awards expenses have increased steadily over the past five fiscal years, from \$590.8 million in 2002-03 to \$810.2 million in 2006-07.
- CIHR Grants and Awards expenses have increased by \$219.4 million or 37% since 2002-03, an average yearly increase of 8.2%.

CIHR Operations and Administration Expenses:

(in millions of dollars)



- CIHR Operations and Administration Expenses have increased significantly over the past five fiscal years, from \$36.4 million in 2002-03 to \$49.5 million in 2006-07.
- CIHR Operations and Administration Expenses have increased by \$13.1 million or 36% since 2002-03.
- In 2006-07, salaries and employee benefits made up 64.0% of total Operations and Administration Expenses, compared to 53.9% in 2002-03.
- As shown in the chart above, the proportion of the operating budget allocated to salaries and employee benefits has increased each year over the past five fiscal years. CIHR Management will continue to monitor this trend closely in future fiscal years.

AUDITOR'S REPORT AND FINANCIAL STATEMENTS

Canadian Institutes of Health Research MANAGEMENT RESPONSIBILITY FOR FINANCIAL STATEMENTS

Responsibility for the integrity and objectivity of the accompanying financial statements of the Canadian Institutes of Health Research (CIHR) for the year ended March 31, 2007 and all information contained in these statements rests with CIHR's management. These financial statements have been prepared by management in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector.

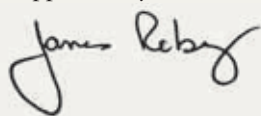
Management is responsible for the integrity and objectivity of the information in these financial statements. Some of the information in the financial statements is based on management's best estimates and judgement and gives due consideration to materiality. To fulfil its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of CIHR's financial transactions. Financial information submitted to the *Public Accounts of Canada* and included in CIHR's *Departmental Performance Report* is consistent with these financial statements.

Management maintains a system of financial management and internal control designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are in accordance with the *Financial Administration Act*, are executed in accordance with prescribed regulations, within Parliamentary authorities, and are properly recorded to maintain accountability of Government funds. Management also seeks to ensure the objectivity and integrity of data in its financial statements by careful selection, training and development of qualified staff, by organizational arrangements that provide appropriate divisions of responsibility and by communications programs aimed at ensuring that regulations, policies, standards and managerial authorities are understood throughout the organization.

The Standing Committee on Performance Measurement, Evaluation and Audit, appointed by the Governing Council of CIHR, has reviewed these statements with management and the auditors, and has reported to the Governing Council. The Governing Council has approved the financial statements.

The financial statements of CIHR have been audited by the Auditor General of Canada, the independent auditor for the Government of Canada.

Approved by:



James Roberge, CMA
Chief Financial Officer



Dr. Alan Bernstein, O.C., FRSC
President

June 1, 2007



Auditor General of Canada
Vérificatrice générale du Canada

AUDITOR'S REPORT

To the Canadian Institutes of Health Research
and the Minister of Health

I have audited the statement of financial position of the Canadian Institutes of Health Research (CIHR) as at March 31, 2007 and the statements of operations, equity and cash flow for the year then ended. These financial statements are the responsibility of CIHR's management. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with Canadian generally accepted auditing standards. Those standards require that I plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation.

In my opinion, these financial statements present fairly, in all material respects, the financial position of CIHR as at March 31, 2007 and the results of its operations and its cash flows for the year then ended in accordance with Canadian generally accepted accounting principles.

Nancy Y. Cheng, FCA
Assistant Auditor General
for the Auditor General of Canada

Ottawa, Canada
June 1, 2007

STATEMENT OF OPERATIONS
FOR THE YEAR ENDED MARCH 31

(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
EXPENSES (Note 4)		
Health research	511,042	475,620
Health researchers in innovative environments	284,348	275,206
Transforming health research into action	<u>62,421</u>	<u>61,674</u>
TOTAL EXPENSES	<u>857,811</u>	<u>812,500</u>
REVENUES (Note 5)		
Health research	6,319	6,264
Health researchers in innovative environments	3,516	3,624
Transforming health research into action	<u>772</u>	<u>812</u>
TOTAL REVENUES	<u>10,607</u>	<u>10,700</u>
NET COST OF OPERATIONS	<u>847,204</u>	<u>801,800</u>

The accompanying notes are an integral part of these financial statements.

STATEMENT OF FINANCIAL POSITION

AS AT MARCH 31

(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
ASSETS		
Financial Assets		
Due from the Consolidated Revenue Fund	15,751	18,640
Accounts receivable:		
Other Federal Government departments	678	367
External parties	395	353
Advances	196	191
Total financial assets	17,020	19,551
Non-financial assets		
Prepaid expenses	445	542
Tangible capital assets (Note 6)	3,904	4,049
Total non-financial assets	4,349	4,591
TOTAL ASSETS	21,369	24,142
LIABILITIES		
Accounts payable and accrued liabilities		
Other Federal Government departments	444	381
External parties	2,577	3,913
Vacation pay and compensatory leave	1,110	910
Deferred revenue (Note 7)	12,730	14,346
Employee severance benefits (Note 8)	5,248	4,633
TOTAL LIABILITIES	22,109	24,183
EQUITY OF CANADA	(740)	(41)
TOTAL LIABILITIES AND EQUITY OF CANADA	21,369	24,142

Contingent liabilities (Note 9)

Contractual obligations (Note 10)

The accompanying notes are an integral part of these financial statements.

Approved by Governing Council:



Dr. Alan Bernstein, O.C., FRSC
Chair

Approved by Management:



James Roberge, CMA
Chief Financial Officer

STATEMENT OF EQUITY
FOR THE YEAR ENDED MARCH 31

(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
EQUITY OF CANADA, BEGINNING OF YEAR	(41)	273
Net cost of operations	(847,204)	(801,800)
Net cash provided by Government	844,170	790,458
Change in due from the Consolidated Revenue Fund	(2,889)	6,223
Services provided without charge by other Government departments (Note 11)	<u>5,224</u>	<u>4,805</u>
EQUITY OF CANADA, END OF YEAR	<u>(740)</u>	<u>(41)</u>

The accompanying notes are an integral part of these financial statements.

STATEMENT OF CASH FLOW
FOR THE YEAR ENDED MARCH 31

(in thousands of dollars)

	<u>2007</u>	<u>2006</u>
OPERATING ACTIVITIES		
Net cost of operations	847,204	801,800
Non-cash items:		
Amortization of tangible capital assets	(1,498)	(1,376)
Services provided without charge by other Government departments	(5,224)	(4,805)
Gain on disposal of capital assets	4	-
	<u>(6,718)</u>	<u>(6,181)</u>
Variations in Statement of Financial Position:		
Increase (decrease) in accounts receivable and advances	358	(124)
(Decrease) increase in prepaid expenses	(97)	342
Decrease (increase) in liabilities	2,074	(6,856)
	<u>2,335</u>	<u>(6,638)</u>
Cash Used by Operating Activities	<u>842,821</u>	<u>788,981</u>
CAPITAL INVESTMENT ACTIVITIES		
Acquisitions of tangible capital assets	1,358	1,477
Proceeds on disposal of capital assets	(9)	-
Cash Used by Capital Investment Activities	<u>1,349</u>	<u>1,477</u>
FINANCING ACTIVITIES		
NET CASH PROVIDED BY GOVERNMENT OF CANADA	<u>844,170</u>	<u>790,458</u>

The accompanying notes are an integral part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS

FOR THE YEAR ENDED MARCH 31, 2007

1. Authority and Objectives

The Canadian Institutes of Health Research (CIHR) was established in June 2000 under the *Canadian Institutes of Health Research Act*, replacing the former Medical Research Council of Canada. It is listed in Schedule II to the *Financial Administration Act* as a departmental corporation.

CIHR's objective is to excel, according to international standards of scientific excellence, in the creation of new knowledge, and its translation into improved health, more effective health services and products, and a strengthened Canadian health care system. CIHR achieves these objectives through three strategic outcomes. The first strategic outcome is outstanding research, achieved by funding excellent and ethical health research across all disciplines that are relevant to health. The second strategic outcome is outstanding researchers in innovative environments, achieved by providing funding to develop and sustain health researchers in vibrant, innovative and stable research environments. The third strategic outcome is transforming health research into action, achieved by CIHR's knowledge translation activities and funding aimed to accelerate the transformation of research results into health benefits for Canadians and an improved health care system as well as helping to move new research breakthroughs toward potential commercial applications.

CIHR is led by a President who is the Chairperson of a Governing Council of not more than nineteen other members appointed by the Governor in Council. The Governing Council sets overall strategic direction, goals and policies and oversees programming, resource allocation, ethics, finances, planning and accountability.

CIHR has thirteen Institutes that focus on identifying the research needs and priorities for specific health areas, or for specific populations, then developing strategic initiatives to address those needs. Each Institute is led by a Scientific Director who is guided by an Institute Advisory Board, which strives to include representation of the public, researcher communities, research funders, health professionals, health policy specialists and other users of research results.

CIHR's grants, awards, and operating expenditures are funded by budgetary lapsing authorities. Employee benefits are funded by statutory authorities.

2. Significant Accounting Policies

These financial statements have been prepared in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector. The most significant accounting policies are as follows:

(a) Parliamentary appropriations – CIHR is financed by the Government of Canada through Parliamentary appropriations. Appropriations provided to CIHR do not parallel financial reporting according to generally accepted accounting principles since appropriations are primarily based on

cash flow requirements. Consequently, items recognized in the statement of operations and the statement of financial position are not necessarily the same as those provided through appropriations from Parliament. Note 3 provides a high-level reconciliation between the bases of reporting.

(b) Net cash provided by government – CIHR operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by CIHR is deposited to the CRF and all cash disbursements made by CIHR are paid from the CRF. The net cash provided by Government is the difference between all cash receipts and all cash disbursements including transactions between departments of the Federal Government.

(c) Due from the Consolidated Revenue Fund represents the amount of cash that CIHR is entitled to draw from the Consolidated Revenue Fund without further appropriations, in order to discharge its liabilities.

(d) Revenues

- Funds received from external parties for specified purposes are recorded upon receipt as deferred revenues. These revenues are recognized in the period in which the related expenses are incurred.
- Other revenues are accounted for in the period in which the underlying transaction or event occurred that gave rise to the revenues.

(e) Expenses – Expenses are recorded on the accrual basis:

- Grants and awards are recognized when the entitlement has been established, the recipient has met the eligibility criteria, and program authority exists.
- Vacation pay and compensatory leave are expensed as the benefits accrue to employees under their respective terms of employment.
- Services provided without charge by other government departments are recorded as operating expenses at their estimated cost.

(f) Refunds of previous years' expenses – These amounts include the return of grants and awards funds to CIHR in the current fiscal year for expenses incurred in previous fiscal years due to cancellations; refunds of previous years' expenses related to goods or services; and adjustments of previous years' accounts payable. These refunds and adjustments are recorded as expenses in the financial statements but are recorded as revenue on an appropriation basis and therefore are excluded when determining current year appropriations used.

(g) Employee future benefits

- i. Pension benefits: Eligible employees participate in the Public Service Pension Plan, a multiemployer plan administered by the Government of Canada. CIHR's contributions to the Plan are charged to expenses in the year incurred and represent the total obligation of CIHR to the Plan. Current legislation does not require CIHR to make contributions for any actuarial deficiencies of the Plan.

- ii. Severance benefits: Employees are entitled to severance benefits under labour contracts or conditions of employment. These benefits are accrued as employees render the services necessary to earn them. The obligation relating to the benefits earned by employees is calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole.

(h) Accounts receivable – These are stated at amounts expected to be ultimately realized. A provision for doubtful accounts is made for any amounts where recovery is considered uncertain.

(i) Contingent liabilities – Contingent liabilities are potential liabilities which may become actual liabilities when one or more future events occur or fail to occur. To the extent that the future event is likely to occur or fail to occur, and a reasonable estimate of the loss can be made, an estimated liability is accrued and an expense is recorded. If the likelihood is not determinable or an amount cannot be reasonably estimated, the contingency is disclosed in the notes to the financial statements.

(j) Tangible capital assets – All tangible capital assets having an individual initial cost of \$5,000 or more are recorded at their acquisition cost. Amortization of tangible capital assets is done on a straight-line basis over the estimated useful life of the capital asset as follows:

Asset class	Amortization period
Informatics hardware	3-5 years
Informatics software	3 years
Office equipment	10 years
Motor vehicles	5 years

Amounts included in work-in-progress are uncompleted capital projects which are transferred to informatics software upon completion, and are then amortized according to CIHR's policy.

(k) Measurement uncertainty – The preparation of these financial statements in accordance with Treasury Board accounting policies and year-end instructions issued by the Office of the Comptroller General, which are consistent with Canadian generally accepted accounting principles for the public sector, requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are contingent liabilities, the liability for vacation pay and compensatory leave, employee severance benefits and the useful life of tangible capital assets. Actual results could differ significantly from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Parliamentary Appropriations

CIHR receives most of its funding through annual parliamentary appropriations. Items recognized in the statement of operations and the statement of financial position in one year may be funded through parliamentary appropriations in prior, current or future years. Accordingly, CIHR has different net results of operations for the year on a government funding basis than on an accrual accounting basis. The differences are reconciled in the following tables:

(a) Reconciliation of net cost of operations to current year appropriations used

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Net cost of operations	847,204	801,800
Adjustments for items affecting net cost of operations but not affecting appropriations:		
Add (Less):		
Services provided without charge	(5,224)	(4,805)
Gain on disposal of capital assets	4	-
Refunds of previous years' expenses	2,432	4,132
Employee severance benefits	(615)	(807)
Amortization of tangible capital assets	(1,498)	(1,376)
Vacation pay and compensatory leave	(200)	174
Other adjustments	<u>(94)</u>	<u>(61)</u>
	(5,195)	(2,743)
Adjustments for items not affecting net cost of operations but affecting appropriations		
Add (Less):		
Acquisitions of tangible capital assets	1,358	1,477
Prepaid expenses	<u>(97)</u>	<u>342</u>
Current year appropriations used	<u>843,270</u>	<u>800,876</u>

(b) Appropriations provided and used

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Parliamentary appropriations provided:		
Vote 15 – Operating expenditures	43,021	39,902
Less:		
Lapsed appropriation	<u>(3,657)</u>	<u>(1,393)</u>
	<u>39,364</u>	<u>38,509</u>
Vote 20 – Grants	816,183	768,980
Less:		
Lapsed appropriation	<u>(16,536)</u>	<u>(10,832)</u>
	<u>799,647</u>	<u>758,148</u>
Statutory contributions to employee benefit plans	<u>4,259</u>	<u>4,219</u>
Current year appropriations used	<u>843,270</u>	<u>800,876</u>

(c) Reconciliation of net cash provided by Government to Parliamentary appropriations used

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Net cash provided by Government	844,170	790,458
Refunds of previous years' expenses	2,432	4,132
Cash proceeds on disposal of capital assets	9	-
Change in net position in the Consolidated Revenue Fund		
Variation in accounts receivable and advances	(358)	124
Variation in accounts payable and accrued liabilities	(1,273)	976
Variation in deferred revenue	(1,616)	5,247
Other adjustments	<u>(94)</u>	<u>(61)</u>
	<u>(3,341)</u>	<u>6,286</u>
Current year appropriations used	<u>843,270</u>	<u>800,876</u>

4. Expenses

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Grants and awards		
Open competitions	487,917	478,109
Strategic initiatives	195,762	171,878
Institute support grants	13,000	13,000
Knowledge translation	3,864	5,458
Canada research chairs	82,205	72,900
Networks of centres of excellence	<u>27,500</u>	<u>27,500</u>
Total grants and awards	810,248	768,845
Less: Refunds of previous years' grants and awards	<u>(1,972)</u>	<u>(3,777)</u>
	<u>808,276</u>	<u>765,068</u>
Operations and administration		
Salaries and employee benefits	31,683	29,594
Professional and special services	4,845	6,184
Travel	3,425	3,957
Accommodation	3,314	2,865
Furniture, equipment and software	1,998	1,185
Amortization of tangible capital assets	1,498	1,376
Communication	1,450	1,308
Other	<u>1,322</u>	<u>963</u>
Total operations and administration	<u>49,535</u>	<u>47,432</u>
Total expenses	<u>857,811</u>	<u>812,500</u>

5. Revenues

The following are the revenues recognized for the year:

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Donations for health research	9,362	9,499
Cost sharing agreements with other Government departments	1,240	1,198
Gain on disposal of capital assets	4	-
Endowments for health research	1	2
Other	-	1
Total revenues	<u>10,607</u>	<u>10,700</u>

6. Tangible Capital Assets

(in thousands of dollars)

Capital asset class	Cost				Accumulated amortization				2007 Net Book Value	2006 Net Book Value
	Opening balance	Acquisitions	Transfers, disposals and write-offs	Closing balance	Opening balance	Amortization	Transfers, disposals and write-offs	Closing balance		
Informatics hardware	1,817	111	-	1,928	1,270	276	-	1,546	382	547
Informatics software	6,574	1,206	-	7,780	3,347	1,184	-	4,531	3,249	3,227
Office equipment	345	-	-	345	89	34	-	123	222	256
Vehicles	23	32	(23)	32	18	4	(18)	4	28	5
Work-in-progress	14	9	-	23	-	-	-	-	23	14
Total	8,773	1,358	(23)	10,108	4,724	1,498	(18)	6,204	3,904	4,049

Amortization expense (in thousands) for the year ended March 31, 2007 is \$1,498 (2006 - \$1,376).

7. Deferred Revenue

Monies received as donations from various organizations and individuals for health research as well as interest on endowments are recorded as deferred revenue until such time that they are disbursed in accordance with agreements between the contributor and CIHR or in accordance with the terms of the endowments.

The transactions relating to these accounts are as follows:

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Donations for health research		
Balance, beginning of the year	14,344	9,097
<i>Add:</i>		
Donations received	7,191	14,449
Interest earned	553	297
<i>Less:</i>		
Grants expensed	9,362	9,499
Balance, end of the year	<u>12,726</u>	<u>14,344</u>
Interest on endowments for health research		
Balance, beginning of the year	2	2
<i>Add:</i>		
Interest earned	3	2
<i>Less:</i>		
Miscellaneous expenses	1	2
Balance, end of the year	<u>4</u>	<u>2</u>
Total deferred revenue	<u><u>12,730</u></u>	<u><u>14,346</u></u>

8. Employee Benefits

Employees of CIHR are entitled to specific benefits on or after termination or retirement, as provided for under various collective agreements or conditions of employment.

(a) Pension benefits – CIHR’s employees participate in the Public Service Pension Plan, which is sponsored and administered by the Government of Canada. Pension benefits accrue up to a maximum period of 35 years at a rate of 2 percent per year of pensionable service, multiplied by the average of the best five consecutive years of earnings. The benefits are integrated with the Canada/Quebec Pension Plans benefits and they are indexed to inflation. Both the employees and CIHR contribute to the cost of the Plan. CIHR’s responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the Plan’s sponsor.

The 2006-07 expense represents approximately 2.3 times (2.6 in 2005-06) the contributions by employees.

CIHR’s and employees’ contributions to the Public Service Pension Plan for the year were as follows:

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
CIHR’s contributions	3,139	3,121
Employees’ contributions	1,378	1,203

(b) Severance benefits – CIHR provides severance benefits to its employees based on eligibility, years of service and final salary. These severance benefits are not pre-funded. Benefits will be paid from future appropriations. Information about the severance benefits, measured as at March 31, is as follows:

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Accrued benefit obligation, beginning of year	4,633	3,826
Expense for the year	898	1,024
Benefits paid during the year	(283)	(217)
Accrued benefit obligation, end of year	<u>5,248</u>	<u>4,633</u>

9. Contingent Liabilities

A legal suit for employment equity was initiated by the Public Service Alliance of Canada against Her Majesty the Queen naming certain separate employer organizations of the Government of Canada, including the Canadian Institutes of Health Research (CIHR), as defendants. The amount of this claim, as it relates to CIHR, is estimated to be \$747,000. In management's opinion, the outcome of this litigation is not presently determinable and no estimated liability has been accrued or expense recorded in the financial statements.

10. Contractual Obligations

CIHR is committed to disburse grants and awards in future years subject to the appropriation of funds by Parliament. In addition, the nature of CIHR's operating activities result in some multi-year contracts whereby CIHR will be committed to make some future payments when the goods or services are rendered. Future year contractual obligations are as follows.

(in thousands of dollars)	2008	2009	2010	2011	2012 and thereafter	Total
Grants and awards	730,371	520,055	324,947	192,438	94,468	1,862,279
Operating	1,989	167	75	-	-	2,231
Total	732,360	520,222	325,022	192,438	94,468	1,864,510

11. Related Party Transactions

CIHR is related in terms of common ownership to all Government of Canada departments, agencies, and Crown Corporations. CIHR enters into transactions with these entities in the normal course of business and on normal trade terms.

During the year, CIHR received services which were obtained without charge from other Government departments as presented in part (a):

(a) Services provided without charge

	<u>2007</u>	<u>2006</u>
	<i>(in thousands of dollars)</i>	
Accommodation provided by Public Works and Government Services Canada	3,314	2,865
Employer's contribution to the health and dental insurance plans provided by Treasury Board Secretariat	1,772	1,864
Audit services provided by the Office of the Auditor General of Canada	<u>138</u>	<u>76</u>
Total services provided without charge by other Government departments	<u>5,224</u>	<u>4,805</u>

(b) Administration of programs on behalf of other government departments

CIHR administers funds received from other federal departments and agencies to issue grants, awards and related payments on their behalf. During the year, CIHR administered \$1,239,838 (\$1,198,175 in 2006) in funds for grants and awards. These amounts are reflected in CIHR's Statement of Operations as both revenues and expenses.

(c) Administration of CIHR funds by other government departments

Other federal departments and agencies administer funds on behalf of CIHR to issue grants, awards and related payments. During the year, other federal departments and agencies administered \$87,331,623 (\$76,965,301 in 2006) in funds for grants and awards. These amounts are reflected in CIHR's Statement of Operations as expenses.

12. Financial Instruments

The fair values of financial assets and liabilities approximate the carrying amounts of these instruments due to the short period to maturity.