



DIRECTOR'S PERSPECTIVE

The growing Diabetes epidemic requires many different research approaches



As the epidemic of obesity, in particular childhood obesity, continues to spread, diabetes becomes a worrisome parallel problem.

Diabetes affects over 1.3 million Canadians over the age of 12. Even more disconcerting is that one third of those with the condition are unaware that they have it. Diabetes is also a growing problem in Canada's First Nations communities where its incidence rates are 4 to 6 times higher than among the Canadian population as a whole.

Each November, Diabetes Awareness Month and World Diabetes Day on November 14th give us the opportunity to reflect on the seriousness of this chronic disease. In the spirit of building awareness, this October issue uncovers research in this area, provides a snapshot of diabetes research funding at CIHR and INMD, and allows our partners to share their updates on related initiatives or activities.

As with obesity, diabetes is a complex problem with no single quick fix. This past year's controversy over the widely prescribed diabetes drug Avandia, highlights the need to identify new innovative solutions and effective intervention strategies to complement drug therapy in order to prevent or remedy this growing problem.

The recently reported diet plate tool to help control food portion size, developed by a team of American and Canadian researchers including Dr. Pedersen at the University of Calgary is a good example of how Canadian researchers are developing practical and effective solutions to losing weight and controlling type 2 diabetes. In this issue you can read about recent results from the DARE clinical trial, which confirm that combining resistance training and aerobic exercise significantly improve glycemic control for individuals with type 2 diabetes compared to either form of training alone. Also featured is the work of CIHR-funded researcher Dr. Pierre Haddad and his multidisciplinary team working in the Cree communities of Northern Quebec to study anti-diabetic traditional medicines and develop culturallyappropriate remedies and intervention strategies.

Research across all four of CIHR's research themes is important to preventing and treating the growing epidemic of type 2 diabetes. As our funding data illustrates, this research effort has grown since the establishment of CIHR in 2000, but the data also suggests that the growth in some areas like clinical research is lagging behind. In looking to the future, it is clear that INMD will need to do more to stimulate the investment of resources and efforts to tackle this growing health challenge.

I hope you enjoy this issue of INMD Update!

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OCTOBER 2007

PARTNERSHIP WITH RX&D HEALTH RESEARCH FOUNDATION

Working to improve our understanding of childhood obesity interventions

The problem of childhood obesity has drawn

considerable attention in media, academic and political circles. Recent reports from the World Health Organization, the International Task Force on Obesity, the Institute of Medicine, the Canadian Population Health Institute and the Standing Committee on Health in the Canadian House of crease the understanding of effective interventions in addressing childhood obesity. The Rx&D HRF has committed to co-fund relevant applications submitted to specific Canadian Institutes of Health Research (CIHR) funding opportunities.

"This partnership clearly supports the mission of the HRF, which seeks to address key health

Commons h a v e stressed the need for research



challenges of importance to Canadians," says Patrice Roy, PhD,

and action to redress this problem.

Although childhood obesity is a global challenge and may seem daunting to overcome, we can act within our own spheres of influence to reverse the tide. Reports from Statistics Canada state that 26% of Canadian children and adolescents aged 2 to 17 are either overweight or obese. Such alarming figures have prompted INMD to enter into an exciting joint research initiative with the Health Research Foundation of Canada's Research-Based Pharmaceutical Companies (Rx&D HRF).

Why encourage more research? Effective interventions can help with weight loss and healthy weight maintenance, but solid research and evaluation are critical to ensure we achieve the desired results – a healthy and vibrant society.

Entitled "INMD and Rx&D HRF Research Partnership in the Prevention and Treatment of Childhood Obesity," this initiative seeks to inMBA and Executive Director of the Rx&D HRF. "The Foundation strives to benefit the health of Canadians by supporting researchers and innovative projects in Canada's top academic centers," he adds.

This joint research initiative comes at a crucial moment as childhood obesity in Canada and around the world threatens to be a major public health problem in the new century. Given the urgency of the problem both partners look forward to strong applications that focus on translating research findings into improved policies and practices to prevent or address obesity in Canadian society.

For more information on this partnership and the research initiative, please visit the INMD website at www.cihr-irsc.gc.ca/e/34602.html.

NEW NETWORK STRIVES TO UNTANGLE COMPLEXITY OF CHILDHOOD OBESITY THROUGH MODELING

Childhood Obesity Modeling Network holds first face-to-face meeting

Mathematical models are routinely used in

environmental and demographic forecasting to guide public policy decisions and are increasingly used in other policy areas of human life and health. Over the past few years, groups of modelers have come together to improve our understanding of various issues and identify the impact of related intervention strategies. The Cancer Intervention and Surveillance Modeling Network (CISNET) is, for instance, a consortium of investigators using models to improve our understanding of the impact of cancer control interventions on population trends in cancer incidence and mortality.

Inspired by the CISNET experience, researchers at the Harvard School of Public Health, with support from INMD, the Robert Wood Johnson Foundation, the US Centers for Disease Control and the US National Institutes of Health formed the Childhood Obesity Modeling Network (COMNet). COMNet aims to improve and validate the use of mathematical models in order to project population outcomes and evaluate the effect of interventions and policies on the prevalence of childhood obesity.

Participants from Australia, Canada, England and the United States came together in Boston, Massachussetts on June 28 and 29, 2007 for the first in-person meeting of COMNet. The groups from Deakin University, Oxford University, Harvard University, University of Minnesota, the Pacific Institute for Research and Evaluation, Simon Fraser University and Statistics Canada presented the details of their modeling approaches. This not only enhanced model transparency across groups, but enabled a discussion and better understanding of the differences across model structures and assumptions. This exercise opened the door to discussions about policy implications and what COMNet could achieve as a group.

As the CISNET experience has shown and as COMNet hopes to demonstrate, one of the most important advantages of having a consortium of modelers all working on similar questions is the ability to employ a comparative modeling approach, where a common question is developed and addressed by all models in order to compare results across models. Such an approach not only lends credibility to the results or conclusions, but it also creates a platform which encourages participants to share ideas about underlying modeling assumptions, as well as to bring in experts in specific areas to guide the discussions.

COMNet is now organizing a second face-toface meeting in Toronto in January/February 2008. This follow-up meeting will focus on Quality-Adjusted Life Years (QALY) and Disability-Adjusted Life Years (DALY) calculations for estimating cost effectiveness.



The Childhood Obesity Modeling Network (COMNet) was inspired by a similar endeavour called the Cancer Intervention and Surveillance Modeling Network (CISNET).

INMD Update





Results from the DARE trial reveal that aerobic and resistance training each improve glycemic control in individuals with type 2 diabetes, but combining these two forms of exercise outweighs either type of exercise alone.

DARE TO COMBINE AEROBICS AND WEIGHTS

Physical activity is known to be important in the management of type 2 diabetes. Although previous studies have evaluated the effects of aerobic or resistance training alone on glycemic control in type 2 diabetes, none could assess their combined effects. In the DARE (Diabetes Aerobic and Resistance Exercise) randomized control trial, Dr. Ron Sigal from the University of Calgary, Dr. Glen Kenny from the University of Ottawa, and their colleagues at the Ottawa Health Research Institute set out to assess the impact of resistance training and aerobic exercise practiced alone or in combination. The DARE clinical trial randomized 251 adults aged 39 to 70 who exercised 3 times a week under supervised training at communitybased facilities over a 26 week period. The study revealed that aerobic training and resistance training each improved glycemic control, but combining these two forms of exercise outweighed either type of exercise alone. These effects were even more powerful for individuals who started with poor glycemic control. "Our research clearly shows that people with type 2 diabetes who wish to improve their metabolic control through physical activity should be encouraged to perform both aerobic and resistance training," says Dr. Sigal, Associate Professor of Medicine and Cardiac Science at the University of Calgary and Affiliate Investigator at the Ottawa Health Research Institute.

The detailed results of the DARE trial were published in the September 18, 2007 issue of the Annals of Internal Medicine (Volume 147, Number 6).

NUTRISTEPTM NOW PROVINCE-WIDE IN ONTARIO

The Ontario Public Health Association (OPHA)'s Nutrition Resource Centre has adopted a CIHR-developed tool to detect nutrition problems among preschoolers province-wide. The Nutrition Screening Tool for Every Preschooler (NutriSTEP[™]) is a screening questionnaire that was developed by CIHR-funded researchers Dr. Janis Randall Simpson and Dr. Heather Keller of the University of Guelph, with the help of Lee Rysdale and JoAnne Beyers, public health nutritionists with the Sudbury & District Health Unit. NutriSTEP[™] helps identify nutrition risks or problems among children aged three to five years. This scientifically valid and reliable screening will help improve nutrition and/or early identification of children that need intervention. It was designed for use by parents, caregivers or community professionals and takes no more than five minutes to complete. CIHR funded the validation study of NutriSTEP[™]. The program is being monitored by the Government of Ontario Ministry of Health Promotion and will be a requirement of the proposed Ontario Public Health Standards. For more information on NutriSTEP[™] go to www.sdhu.com/ content/resources/folder.asp? folder=8886&parent=15&lang=0 or visit the Nutrition Resource Centre Website at www.nutritionrc.ca.

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Canada's Report Card on Physical Activity for Children and Youth

For the third straight year, Canada received a failing grade of "D" in Canada's Report Card on Physical Activity for Children and Youth, conducted by Active Healthy Kids Canada. The 2007 Report Card is the third annual overview of key indicators in relation to the physical activity levels of Canada's children and youth. It examines indicators that involve assessment of actual physical activity levels, and the health and well-being issues associated with those physical activity levels. It also examines the role of societal influences that can facilitate or inhibit physical activity. In response to the failing grade, the 2007 Report Card provides key recommendations to improve the grade both in the short-term and the long-term. For a copy of the Report Card or for more information, visit **www.activehealhykids.ca** or contact 1-888-446-7342.

News on the Canadian Diabetes Strategy

Since 1999, the Government of Canada has supported the Canadian Diabetes Strategy (CDS), which aims to help curb the growing prevalence and resulting complications of the disease. The CDS currently focuses on preventing diabetes among high risk groups, supporting approaches for the early detection of type 2 diabetes, and the management of type 1 and type 2 diabetes. To this end, the renewed CDS supports surveillance, knowledge development and exchange, community-based programming and national coordination in the areas of diabetes prevention and control.

Broader chronic disease efforts complement the CDS, including the launch of the Non-Communicable Diseases Surveillance Infobase, which profiles the epidemiology of major non-communicable diseases in Canada; and the development of the Canadian Best Practices Portal for Health Promotion and Chronic Disease Prevention, which facilitates knowledge exchange among decision-makers in research, policy development and practice.

Both of these new tools can be accessed online at: www.cvdinfobase.ca/surveillance and www.cbpp-pcpe.phac-aspc.gc.ca

CDA/ CSEM Professional Conference

The Canadian Diabetes Association and Canadian Society of Endocrinology and Metabolism Professional Conference and Annual Meetings bring together educators, clinicians, and scientists to share expertise, ideas and experiences in diabetes and other endocrine disorders. The conference runs from Wednesday, October 24th to Saturday, October 27th, 2007 at the Vancouver Exhibition and Convention Centre in Vancouver, British Columbia. Program highlights include nationally and internationally renowned speakers addressing current diagnosis and treatment issues, interactive workshops, oral abstract sessions, poster sessions, a trade show and sponsored social activities. Join your colleagues to celebrate achievement, learn, share and commit your energies to the fight against diabetes and other endocrine disorders. For more information please visit www.diabetes.ca/conference.

Update on the Aboriginal Diabetes Initiative

The Aboriginal Diabetes Initiative (ADI) was a component of the Canadian Diabetes Strategy from 1999 to 2004; with enhanced funding in 2005 it became a separate initiative. Delivered by the First Nations and Inuit Health Branch (FNIHB), Health Canada, the goal of the ADI is to reduce type 2 diabetes in Aboriginals. FNIHB partnered with the Canadian Institutes of Health Research (CIHR) on a 2005 Request for Applications (RFA) process for research on surveillance of diabetes, and is funding two projects, in Alberta and Nova Scotia, on the prevalence and incidence of diabetes in an Aboriginal context, FNIHB partnered on a CIHR RFA process on intervention research and will be seeking proposals on effective interventions in Aboriginal settings to affect change and the adop-

Public Health Agency of Canada

Agence de la santé publique du Canada





SNAPSHOTS OF INMD DIABETES FUNDING

Part 2 of our multi-part look at INMD funding patterns



This graph illustrates the funding patterns for research related to either type 1 or type 2 diabetes and research applicable to both. Type 1 diabetes research funding has remained relatively steady since 2001 while type 2 diabetes research funding has increased. Since 2004, yearly funding for overall diabetes research surpassed the \$30M mark reaching \$32.8M in 2006-07.





This graph highlights the relative change in funding dollars as compared to 2000-01. Diabetes funding rates have consistently been higher than the average budget increase for CIHR as a whole.

This graph depicts the breakdown of CIHR dollars spent on diabetes research since 2000-01. Research theme classifications were specified by the grant recipients. Of particular interest:

- Biomedical research has consistently received the highest level of funding
- Population Health has shown continual growth over the years and now accounts for more funding than Clinical Research
- Although Health Services and Systems research lags behind the other research pillars, Diabetes Health Services and Systems research has been funded at a much higher rate than every other INMD research domain (e.g. 2X Kidney research and 7X Obesity).

MODERN SCIENCE GIVES WINGS TO TRADITIONAL KNOWLEDGE

Promising findings from the CIHR Team in Aboriginal Anti-diabetic Medicines

In ten years, the Cree Nations of Northern Quebec have witnessed a 150% increase in type 2 diabetes (T2D) for people over 20 years of age. They also have the second highest rates of gestational diabetes reported worldwide for aboriginal groups. Even more worrisome, existing dietary intervention strategies and education programs are not working.

Dr. Pierre Haddad, a seasoned pharmacologist at the University of Montreal, says current community programs are not culturally appropriate. To tackle T2D in Cree communities, "we need to develop novel approaches to manage and treat diabetes that are in harmony with Aboriginal People's culture and lifestyle," he explains.

Plants found in the Boreal forests of Quebec have centuryold roots in Cree culture, but since T2D is relatively recent to these communities, they do not have a long tradition of medicine specific to this disease and are still experimenting with medicinal plants. "Outsiders, says Dr. Haddad, may view this

traditional knowledge as trial and error, but it is a form of science that is just as evolved as modern science; we just do not understand the language." Determined to see if modern science could partner with traditional knowledge to improve culturally-relevant diabetes care, Dr. Haddad set out to confirm how efficient and safe medicinal remedies are.

He and five other specialists received funding from the Canadian Institutes of Health Research (CIHR) in 2003 for a pilot project to identify and pharmacologically validate Cree medicinal plants based on their anti-diabetic potential. By 2006, his funding was extended for another five years to support a team of 17 researchers including among others phytochemists, plant taxonomists, chronic disease medical advisors, public health and social service professionals, and Cree healers.

The team initially interviewed 34 Elders and Healers from 23 households to record the most frequently used traditional remedies to treat 15 symptoms most com-



monly associated with T2D such as back and/or kidney pain, increased thirst, or blurred vision. The Cree Elders showed indepth knowledge of traditional remedies to treat the symptoms, particularly the two most closely related to T2D – slow healing infections and foot sores. They mentioned a total of 18 plant species for the entire range of symptoms.

To choose the best plants for further testing, the team ranked them using an algorithm that included the frequency of citations by different Elders, the number of symptoms for which the plant was cited, and the relative importance of each symptom based on its correlation to diabetes. In one follow-up study, the extracts of the eight most promising plants from the ranking were tested on living cells grown in the laboratory and revealed that all of them helped glucose to enter muscle or fat cells, and therefore may help to lower blood glucose levels. Once these results are confirmed in animal and clinical studies the team hopes to introduce standard-

> ized preparations of antidiabetic natural products for use in diabetes intervention programs in Cree communities.

> "Our goal is to help them get a better product by combining the strengths of modern biomedicine and traditional knowledge," says Dr. Haddad. To do this, the team is currently identifying which compounds are helpful in treating diabetes and how much plant material is needed for safe and effective treatments. It will then evaluate side-effects related to dosage and long-term use. "The idea is not to make drugs but to validate the use of traditional plants using modern science to help the Cree make preparations that have a constant efficacy," explains Dr. Haddad.

He believes the project has connected scientists to Elders and enabled each to exchange their expertise. As with all relationships, there have been growing pains, but a common quest to overcome T2D among the Cree and a conscious effort to build and maintain trust played a key role in building momentum for this project. The end result: modern science is helping traditional knowledge reaffirm itself and put traditional medicine in its right place within T2D intervention and treatment programs.

CIHR-funded researcher Dr. Pierre Haddad is a Professor of Pharmacology at the Université de Montréal and a National Research Scholar of the Fonds de la recherche en santé du Québec.

INMD Update

FUNDING OPPORTUNITIES		
Operating Grant: Intervention Research (Healthy Living and Chronic Disease Prevention) www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=153	Letter of Intent: Full:	VARIABLE VARIABLE
Priority Announcement: Master's Award (Specific Research Areas)	Letter of Intent:	NA
www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=277	Full:	2008-02-01
Health Professional Student (2007-2008)	Letter of Intent:	NA
www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=220	Full:	2008-02-01
Summer Program in Japan	Letter of Intent:	NA
www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=209	Full:	2007-11-01
Operating Grant: Genetics (Ethics, Law, and Society) (2007-2008)	Letter of Intent:	2008-02-01
www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=226	Full:	2008-03-03
Randomized Controlled Trials: Mentoring (2007-2008)	Letter of Intent:	2008-01-01
www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=222	Full:	2008-02-02
Undergraduate: MD/PhD Students (2007-2008)	Letter of Intent:	NA
www.researchnet-recherchenet.ca/rnr16/viewOpportunityDetails.do?prog=152	Full:	2008-11-01

Regularly visit the CIHR website at www.cihr.ca/e/779.html for a complete and updated list of RFAs, priority announcements and other funding opportunities.

INTRODUCING THE NEW CIHR FUNDING OPPORTU-NITIES DATABASE

Over the last two years, CIHR has made a number of developments to standardize and improve the functionality around presenting CIHR's funding opportunities to the research community. In response to requests to offer more searching and browsing capabilities, Dr. Pierre Chartrant, VP of Research, is pleased to announce the launch of the CIHR Funding Opportunities Database www.cihr-irsc.gc.ca/e/780.html

Attention Operating Grants, New Investigators, and Doctoral Research Awards Program Applicants!

Applicants to the Operating Grants, New Investigators and Doctoral Research Awards programs are required to use ResearchNet to electronically submit their applications. The system is available for applicants to complete their information for the Fall 2007 competitions.

For more details regarding the changes for applicants to these three awards programs, please visit the CIHR website at www.cihr-irsc.gc.ca/e/34030.html.

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UPCOMING EVENTS			
11 th Annual CDA/CSEM Professional Conference and Annual Meetings Vancouver, BC www.diabetes.ca/Section_Professionals/profconference.asp	0ct. 24 – 27, 2007		
Agri-Food Innovation Forum Ottawa, ON www.biotech.ca	Oct. 29 — 30, 2007		
International Conference on Complex Systems Boston, Massachusetts, USA www.necsi.org/events/iccs7	Oct. 28 — Nov. 2, 2007		
Equitable Access: Research Challenges for Health in Developing Countries Beijing, China www.globalforumhealth.org	Oct. 29 — Nov. 2, 2007		
Making Choices: Consumers and Their Impacts on Canada's Agriculture and Food Edmonton, AB www.aic.ca/conferences/upcoming.cfm	Nov. 5 – 6, 2007		
McGill Health Challenge Montreal, PQ www.mcgill.ca/healthchallenge	Nov. 7 – 9, 2007		
First Canadian Roundtable on Public Health Ethics Montreal, PQ www.ethics-ethique.ca	Nov. 8 – 9, 2007		
9th International Symposium — Gastrointestinal Tract, Obesity, and Diabetes Quebec City, PQ chaireob.prospection.qc.ca/eng/research_education/symposium.php	Nov. 15, 2007		
10th International Symposium — Childhood Obesity: Biological/ Environmental Determinants and Preventative Strategies Quebec City, PQ chaireob.prospection.qc.ca/eng/research_education/symposium.php	Nov. 16, 2007		
11es Journées Annuelles de Santé Publique : Laisser des Empreintes Durables Montreal, PQ www.inspq.qc.ca/jasp	Nov. 20 – 23, 2007		
4 th Annual Canadian Association for the Study of the Liver (CASL) Winter Meeting Montreal, PQ www.hepatology.ca/cm/FileLib/PostcardAnnouncement.pdf	Feb. 29 — Mar. 3, 2008		
2 nd World Congress on Controversies in Diabetes, Obesity, and Hypertension Barcelona, Spain www.codhy.com	Oct. 30 — Nov. 2, 2008		
International Congress of Endocrinology Rio de Janeiro, Brazil www.ice2008rio.com/index.html	Nov. 8 — 12, 2008		
For a complete list of upcoming events, please visit the INMD website at www.cihr.ca/e/13532.html			

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www.cihr-irsc.gc.ca/e/12043.html

INMD EVALUATION OF THE OBESITY STRATEGIC INITIATIVE

INMD would like to thank all the researchers who took the time to respond to our web-based survey. The Institute and the CIHR Evaluation portfolio developed this important evaluation tool as part of a broader project measuring the impact we have had on the obesity research environment. The survey was designed to measure research contributions and successes within this strategic area to help us improve future funding initiatives. We are currently in the process of collecting your responses and analyzing the data. We hope to share our findings with you in the new year. We thank you once again for participating.



INMD welcomes researchers, partners and other stakeholders to share news stories that relate to areas of our mandate.

If you have interesting research results or developments, are organizing a conference or workshop, or wish to report on a past event, we would like to feature it in our newsletter or other communication materials.

Share your news with:

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