



# ACHORD

Alliance for Canadian Health  
Outcomes Research in Diabetes

## Active Dissemination for ACHORD Research

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One of the objectives for the ACHORD Group is to conduct research that has relevance from the perspective of health policy decision makers. One gauge of our success in this objective is the number of presentations and conversations with health policy audiences. Another is the degree to which aspects of our research is actively implemented by health systems or health policy makers. The first can be a simple quantitative assessment of those presentations and talks. The second is more difficult to assess, will require more work and effort, but, in many ways, will be much more rewarding.

ACHORD has worked hard to achieve success on both of those measures. For example, this month, Dr. Johnson has given two talks to different government audiences on his research on epidemiologic and economic trends for diabetes in Canada. On January 19 Dr. Johnson was in Regina, speaking to staff at Saskatchewan Health about his research on the trends of diabetes health care utilization and costs in Saskatchewan over the past decade. Dr. Johnson has conducted a

series of studies using administrative data from Saskatchewan Health, so this was a way to bring that research evidence back to the source. The following week, Dr. Johnson was in Toronto, invited by the Canadian Diabetes Association to present research on the cost of diabetes complications at the CDA's *Policy Summit on Serious Complications of Diabetes in Ontario*. In the audience for the CDA Policy Summit were officials from Ministers of Health, Aboriginal Affairs, Children's Services, Members of the Social Policy Standing Committee, as well as public policy makers from relevant non-governmental organizations.

Interactions such as these provide a wonderful forum to share our research, but also get feedback on what messages are most important, as well as directions for future research of the ACHORD Group. Active dissemination and interaction with health policy audiences help to ensure the ACHORD research program achieves its policy relevance objective.

## ACHORD: Seen and Heard

### Recent Publications

Simpson SH, Majumdar SR, Tsuyuki RT, Eurich DT, Johnson JA. Dose-response relationship between sulfonylureas and mortality in type 2 diabetes: a population-based cohort study. *CMAJ* 2006;174:169-174.

Bowker SL, Majumdar SR, Veugelers P, Johnson JA. Increased cancer-related mortality for patients with type 2 diabetes who use sulfonylureas or insulin. *Diabetes Care* 2006;29:254-258.

### Recent Presentations

Diabetes in Saskatchewan: Epidemiological and cost trends and projections. Saskatchewan Health, Regina, SK, January 19, 2006.

The Cost of Diabetes in Ontario. Policy Summit: Serious Complications of Diabetes in Ontario, Toronto, ON, January 26, 2006.

Preparing your CIHR Operating Grant (Health Services Research) Building Research Capacity Workshop Series: Applying for CIHR Grants Workshop, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, AB, January 31, 2006.



Jeffrey A. Johnson

## Report from the Chair

Happy New Year! It is already a few weeks into January, so it is easy to forget we have just started a new calendar. 2006 will be a busy but exciting year for the ACHORD Group. Much of the excitement will be around the newly established Alberta Diabetes Surveillance System. We are holding the inaugural ADSS Steering Committee meeting in Edmonton at the end of January and shortly afterward will establish several working groups, whose job it will be to create the chapters of the Alberta Diabetes Atlas. More information on the ADSS can be found on our website.

One of the difficulties in running a research training program is that we often have to say goodbye to people who we have worked with for a number of years. Dr. Sheri Pohar has accepted a new position with CCOHTA Regional Office in Edmonton starting next month. Sheri

completed her PhD under my supervision and has worked as a Research Associate with ACHORD for the past year, being a very valuable contributor to our program. Sheri will be missed at ACHORD, but I wish her the best of luck in her new position.

We are also busy planning for several upcoming meetings, including the annual ACHORD Banff Retreat in March. I am also working with Dr Egon Jonsson, the new CEO for the Institute of Health Economics, to plan an IHE Consensus Conference for November of this year. The IHE Consensus Conference series will discuss evidence on important health policy issues, and to create consensus statements which can be considered by health systems when making tough decisions. Watch for more information on the IHE Consensus Conference on diabetes in the coming months.

## Project Highlights:

### Epidemiologic and economic trends of diabetes in Saskatchewan, 1991-2001

Research Team: Jeffrey Johnson, Sheri Pohar, Sumit Majumdar, Philip Jacobs, Mary Rose Stang, Winanne Downey, William Osei

Over the past year, we have been working to develop a better understanding of the epidemiologic and economic trends for diabetes. To do this, we obtained a data set from Saskatchewan Health, containing information on health care resource use for all individuals identified as having diabetes, based on the National Diabetes Surveillance System (NDSS) algorithm, for the period 1991 to 2001. Included in this information were hospital discharges, visits to physicians, day surgeries, dialysis and prescription drug dispensations. In addition, for every person identified as having diabetes, we obtained the same information for two individuals randomly selected from the population not identified as having diabetes.

Using this data, we see the growing prevalence of diabetes in Saskatchewan, rising by 78% from 1991 to 2001. We saw that people with diabetes have health care costs approximately 2 to 3 times higher than those without diabetes. Interestingly, we observed a reduction in the health care expenditures per person with diabetes over the time period, but an increase in total expenditures for people with diabetes, which is driven by the rapid increase in the prevalence of

the condition. It is also important to note that the mortality rate for people with diabetes has been increasing in recent years, although it is still up to 2 times higher than non-diabetic individuals.

We are now looking in greater detail at differences in the patterns of health care utilization for people with diabetes living in rural areas compared to those living in small or larger urban centers, and for registered Indians compared to the general population. We are also working to develop a picture of the natural history of diabetes by focusing on the group of people identified with diabetes in 1992, and following their progress, in terms of health care utilization and costs, over the first decade of living with diabetes.

A complete report of the general epidemiologic and economic trends is available through the Institute of Health Economics Working Paper series (Working Paper #05-06). This project was funded primarily by our ACHORD New Emerging Team grant, with additional funding support from Aventis Canada and Pfizer Canada.

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***Diabetes increases health care costs two to three fold per person.***

***Total health care costs for diabetes are rising rapidly following the growth in prevalence of type 2 diabetes.***

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## Recent Literature: Simpson SH, Majumdar SR, Tsuyuki RT, Eurich DT, Johnson JA. Dose-response relation between sulfonylurea drugs and mortality in type 2 diabetes mellitus: a population-based cohort study. *CMAJ* 2006;174:169-74

### What was the study about?

Our group has previously reported that metformin-based therapies were associated with a lower risk of all-cause mortality and cardiovascular morbidity and mortality when compared with sulfonylurea monotherapy. Comments in response to these papers echoed our own concerns: where the observed differences due to a protective effect of metformin or a potentially toxic effect of sulfonylureas? To approach this clinical dilemma, we used the Bradford-Hill criteria to evaluate causality from epidemiological data, with a specific interest in examining the potential existence of a dose-response gradient. Our hypothesis was that the risk of mortality would change with the level of exposure to a potentially toxic agent. We used two methods to measure exposure to sulfonylureas and metformin: 1) an estimate of drug therapy adherence; and, 2) the average daily dose.

### What were the results of the study?

Each major drug group (first-generation sulfonylureas, glyburide, and metformin) was evaluated independently to avoid confounding by pharmacologic effects. We identified 120 subjects using first-generation sulfonylureas exclusively, 4,138 using glyburide and 1,537 using metformin. In all analyses, higher levels

of exposure to both first-generation sulfonylureas (tolbutamide and chlorpropamide) and glyburide were associated with an increased risk of mortality. Higher levels of metformin use were not associated with an increased risk of mortality. The associations remained statistically significant after controlling for demographic and clinical information identified in the administrative databases of Saskatchewan Health.

### What are the implications of the study?

A question posed in the lay press and by patients in response to this study has been: "Should I stop using glyburide?" This study identified subjects newly started oral antidiabetic drugs. Therefore, these findings are most applicable when the patient and clinician are considering initial oral drug therapy for type 2 diabetes. The landmark study in type 2 diabetes management, the UKPDS with our recent observations, provides substantial evidence for the safety and efficacy of metformin as an initial drug of choice, especially in obese patients. Thiazolidinediones, newer sulfonylureas and non-sulfonylurea secretagogues, and insulin should be considered when alternative agents are required to maintain good glycemic control.

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***Older sulfonylureas for treatment of type 2 diabetes are associated with increased mortality when used as first line therapy***

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## ACHORD Collaborations: Scot H. Simpson, PharmD, MSc.

When Scot joined the Faculty of Pharmacy & Pharmaceutical Sciences in September 2004, he maintained his affiliation with ACHORD as a collaborator. He continues to be actively involved in several ACHORD projects, including analysis of the administrative databases from Saskatchewan Health. One of Scot's major research projects, the Vascular Intervention Program, is currently being implemented into family physician clinics within the Southside Edmonton Primary Care Network. This was a project Scot began developing during his tenure as an ACHORD Research Associate. This past summer, Scot received a New Investigator salary award through the Canadian Institutes of Health Research based on the project.

Scot's teaching responsibilities include coordination of a second year pharmacy course that provides a basic introduction to pharmacoepidemiology and pharmacy practice research. These principles are integral to many of the ACHORD activities and therefore several recent projects serve as examples for discussion in the lectures.

In addition to his interests in pharmacoepidemiology and pharmacy practice research, Scot continues to pursue an interest in medication adherence. The paper described above is an ongoing line of research to explore the relationship between patients' drug use decisions and health outcomes.



Scot H. Simpson

## ACHORD Chair

**Dr. Jeffrey Johnson**  
University of Alberta  
Institute of Health Economics

## Staff & Research Trainees

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Ms. Lauren Brown  
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## Why this Newsletter?

The purpose of the ACHORD Newsletter is to keep you updated on the activities of the ACHORD group and to provide reviews of recent, relevant diabetes literature. The newsletter is published three times a year.

If you have any questions about the newsletter, please call Jeffrey Johnson or any of the ACHORD staff at the Institute of Health Economics at (780) 448-4881.

You can expect to see the following in every issue:

- *Report from the Chair*
- *ACHORD Project Highlights*
- *ACHORD Seen and Heard*
- *Review of Recent Literature*

## ACHORD Events

ACHORD Retreat, The Banff Centre,  
Banff, Alberta, March 23-24, 2006