



RESEARCH NEWS

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The increasing rate of type 2 diabetes in children

By Frank Nolan, Research Promotion Officer

In Canada, more than 90 per cent of people with diabetes have the type 2 form of the disease, which occurs when the pancreas does not produce enough insulin, or when the body is not able to use the insulin that is produced. While not immediately life-threatening, type 2 diabetes can lead to serious complications involving the eyes, kidneys, lower extremities and heart.

Formerly known as "adult-onset" diabetes, it used to be an exclusively adult disease that usually occurred later in life, often as a result of obesity and a sedentary lifestyle. That changed in the early 1980s.

In 1983, Heather Dean, pediatrics and child health, saw her first case of childhood type 2 diabetes in a young girl from northern Manitoba.

"I was trained as a pediatrician, and back then we only ever saw type 1 diabetes, which we used to call juvenile-onset diabetes," Dean said. "This particular girl was morbidly obese, she had very high blood sugar, and she clearly had type 2 diabetes."

Over the next two years, Dean saw several more children from northern Manitoba who had developed type 2 diabetes, so she began talking to her colleagues around North America.

"There were pediatricians in the southern United States who were seeing the same new condition: morbidly obese Mexican American and African American children who were developing what looked like type 2 diabetes," she said. "So there was a group of us who began talking to each other, and sharing our work around the world."

The group had a hard time convincing the clinical world that what they were seeing was type 2 diabetes in children. The prevailing wisdom said that a child, regardless of obesity, had a young pancreas that would be able to produce enough insulin. These children, it was believed, might have a higher risk of developing type 2 diabetes later in life, but not at 10 or 12 years old.

"We were the first group to say this was a real problem. As it turns out, our predictions were correct. By the late 1980s, our clinic was seeing about two cases of childhood type 2 diabetes each year. That changed to about 10 a year in the 1990s, and now we see about 40 a year."

The cause of this dramatic increase in childhood type 2 diabetes, Dean said, is the obesity epidemic that has developed over the last two decades. Compounding the problem is the fact that the risk for type 2 diabetes can be passed down from mother to child.

"We find that when a fetus is exposed to diabetes during gestation, the pancreas becomes stressed, and those children tend to develop diabetes earlier," Dean said. "When these children have children of their own, the problem magnifies. It's a vicious cycle of an infant of a diabetic mother becoming an adolescent with diabetes, then all of her children becoming infants of a diabetic mother, and so it accelerates."

Children with type 2 diabetes can be given supplemental insulin or medication that helps the pancreas produce more insulin on its own. The most effective way to manage the disease, however,



Photo by: Frank Nolan

On February 22, Heather Dean, pediatrics and child health, will give a public lecture on type 2 diabetes and children.

is to encourage these children and their families to make basic lifestyle changes. Losing excess weight, eating a more balanced diet and becoming more active are the best ways to combat the disease and prevent serious complications from developing.

"We've really worked hard in the community to help people understand what's happening and what they can do," Dean said. "Many of these children are now being diagnosed by their mothers, since the mothers have diabetes, and they use their own blood sugar monitors to

test their children. The community is becoming much more informed about this disease. People know what they should be doing, but sometimes it's very hard to change old behaviours."

On February 22, Heather Dean will give a public lecture about type 2 diabetes and children as part of the **Get to Know Research at Your University** speaker series. The presentation begins at 7:00 pm in the Smartpark boardroom at 135 Innovation Drive. Admission is free, and everyone is invited to attend.

Looking at laws that hold corporations accountable

By Frank Nolan, Research Promotion Officer

Convicting an individual of a crime like fraud or negligence causing death can be a fairly straightforward process. Holding a corporation accountable for the same crime, however, is much more difficult.

"It's very hard to hold a corporation liable for a crime that requires you to prove intent," said Darcy MacPherson, Law. "For example, how does the corporation, which is a separate legal person, form the intent to commit fraud?"

MacPherson, an expert in corporate criminal liability, is researching recent changes to Canadian law designed to make it easier to hold organizations accountable for criminal offences. Whereas previous law had held corporations liable for the actions of directors or executives, Bill C-45, passed in 2003, also holds them accountable

for the actions of people lower down in the organization.

"Bill C-45 was largely a result of the 1992 Westray mine disaster," MacPherson said. "In that case, the executives didn't really know what was going on, but the people underground knew. There were several mid-level operational managers who could have reported problems, but didn't. Under the prior law, mid-level managers were too low in the hierarchy for the corporation to be held liable; now the corporation can be convicted for their actions."

Under the new legislation, MacPherson said, prosecutors can also combine the criminal actions of several people to make a case against the corporation itself.

"Under Bill C-45, you can put the negligence of different individuals

together and say that, collectively, it is the company's negligence," he said. "You can then decide if it meets the standard for *criminal* negligence. Previously, a single person had to make all the relevant decisions for the corporation to be held responsible."

Some of MacPherson's analysis was recently published in the *Manitoba Law Journal*, and he contributed a chapter to the *Research Handbook on Corporate Legal Responsibility*, published in December, 2005, in England.

MacPherson said there is a lot of research yet to be done on Bill C-45, including its implications for different kinds of organizations, and a critical analysis of things like the new sentencing guidelines.

"Overall, I would say the new legislation is an improvement over



Photo by: Frank Nolan

Darcy MacPherson, Faculty of Law, is researching recent changes to Canadian corporate criminal law.

the previous law. It lets people know that corporations are not above you or me in having to obey the law. It's really another disincentive against bad corporate behaviour."

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Research News is published by
the Office of the
Vice-President (Research)
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