

The CIHR Institute

The CIHR Institute of Human Development, Child and Youth Health, under the leadership of Scientific Director Dr. Michael Kramer, is helping to “build the life foundation” through multidisciplinary research in areas of strategic importance in reproductive and child health. So far, the Institute has initiated requests for applications (RFAs) in the following areas: pre- and post-implantation health; fetal growth and pre-term birth; healthy developmental trajectories of children and youth; and ethics research relating to longitudinal studies of pregnant women and children. In addition, it has partnered with other Institutes and agencies to support RFAs on child obesity, maternal and child health disparities, palliative care, tobacco use and addiction and the genetics of autism.

The Institute of Human Development, Child and Youth Health works in close partnership with many different organizations whose commitment to ensuring the best start for children in life includes an understanding of the importance of research. Among them are the Sick Kids Foundation, the National Institute of Child Health and Human Development (USA), the Canadian Language and Literacy Research Network and the National Alliance for Autism Research (USA).

About the Canadian Institutes of Health Research

The Canadian Institutes of Health Research is the Government of Canada's agency for health research. Its objective 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. Composed of 13 Institutes, CIHR provides leadership and support to close to 10,000 researchers and trainees in every province of Canada. For more information visit www.cihr-irsc.gc.ca

The Canadian Institutes of Health Research (CIHR) is the Government of Canada's agency for health research. Through CIHR, the Government of Canada invested approximately \$49.8 million in 2004-05 in research on child health across Canada.

The facts

- Canada's infant mortality rate – the number of deaths in children under one year of age per 1,000 live births – in 2001 was 5.2. As of 1996, with the exception of Japan, Canada had the most dramatic decline in infant mortality rates in the previous 35 years – from 27.3 deaths in 1960 to 5.6 in 1996. Nonetheless, several countries, including Japan, Finland and Sweden, have lower infant mortality rates.
- Cancer, although rare, is the most common potentially fatal illness among Canadian children and the second leading cause of death among children aged 1-14 (injury is the leading cause of death). Three-quarters of children with cancer are cured, up significantly from 5% 40 years ago. Leukemia and brain tumours are the most frequently diagnosed cancers in children.
- Attention deficit hyperactivity disorder (ADHD) is the most common childhood behavioural disorder, occurring in 3-5% of school-aged children. Boys are four times more likely to be diagnosed with ADHD than girls.
- Autism and pervasive developmental disorders (PDD) affect an estimated 2-5 people per 10,000. Some studies suggest rates may be as high as 20 people per 10,000.
- Asthma is the most common respiratory disease in children. It is responsible for more than one-quarter of all school absences.
- In 2004 18% of children aged 2-17 were overweight and 8% were obese – accounting for more than one-quarter of all children.
- Poverty is a major determinant of children's health. Almost all facets of health are worse among impoverished children than among children from more affluent families.

Research finding solutions to child health

- A startlingly high number of Quebec preteens and teens have elevated blood pressure, suggesting they are well on their way to hypertension and heart disease in adulthood. The chief culprit is childhood obesity, says CIHR-funded researcher Dr. Gilles Paradis of McGill University, who believes that similar studies in other parts of Canada would show the same results. He calls childhood obesity “the major public health issue of this new decade”.
- Children are at their most violent around two years of age, according to research carried out by CIHR-supported researcher Dr. Richard Tremblay of the Université de Montréal. He and his team have found significant links between aggressive behaviour and having a sibling, a mother with a history of behavioural problems, parents who separate before a child is born, and a mother who smoked while pregnant. His research points to the need to intervene in the early years to prevent later aggressive behaviour.
- Dr. Clyde Hertzman, a CIHR-supported researcher from the University of British Columbia, was one of the first researchers to outline how social and psychological factors in children's lives affect their health as adults. He is now examining how business downsizing and community restructuring affected the health of 21,000 children of BC sawmill workers born between 1952 and 1988.

- More than 7% of Canadian infants are born preterm, often resulting in newborn death or disabilities that cost the Canadian health care system tens of millions of dollars each year. Drs. Stephen Lye and John Challis of the University of Toronto have discovered a protein that is found at low levels during pregnancy, but rises to high levels just before labour begins. The discovery of a mechanism that triggers labour and delivery could lead to ways to reduce the protein's level until a fetus is more mature.
- A mother-to-be who smokes increases the risk of death for her fetus or newborn by up to 30 or 40%, according to Dalhousie University's Dr. K.S. Joseph, winner of the 2003 CIHR/Peter Lougheed New Investigator Award.
- Infants under a year old are able to receive heart transplants from donors with different blood types – a procedure that would kill older recipients. The reason, according to research by CIHR-supported researcher Dr. Lori West of Toronto's Hospital for Sick Children, is that they haven't yet developed the antibodies that cause them to reject other blood types. This knowledge could make the wait shorter for infants on waiting lists for heart transplants – and perhaps even save their lives.
- Testing a newborn's stool to determine whether his or her mother drank heavily during pregnancy has revealed that more than 3% of Canadian children are born with some form of fetal alcohol syndrome (FAS). The test, developed by Dr. Gideon Koren and his team at Toronto's Hospital for Sick Children, will promote early diagnosis and intervention to help children who are exposed as fetuses to maternal alcohol consumption.

In the pipeline ... Looking indoors for answers to asthma

Asthma rates among children are skyrocketing, leaving health researchers, health practitioners and parents wondering why this is the case. Many suspect genes, many suspect the environment – and the most likely answer lies in a complex interaction between the two. But how this happens – and why it's happening more and more – remains a mystery.

The Institute of Human Development, Child and Youth Health wants to uncover at least part of the answer. Through its initiative on Indoor Air Exposure, Genes and Gene-Environment Interactions in the Etiology of Asthma and Allergy in Early Childhood, it will support a cohort study of large numbers of children that will begin early in pregnancy, if not before. The study will examine the impact of indoor air quality in homes and day care facilities, other environmental exposures such as diet, infection and outdoor air pollutants, and their interaction with genetic susceptibility and protective factors. The study, which involves numerous partners inside and outside CIHR, could lead to the development of new prevention methods and new guidelines for housing construction and heating and ventilation systems in houses and day care facilities.

The researchers ... Dr. Peter Rosenbaum: Answering questions for concerned parents

Dr. Peter Rosenbaum is often asked by parents of children with cerebral palsy whether their children will ever walk.

Frustrated by his inability to answer them, he and his colleagues developed the Gross Motor Function Classification System (GMFCS). This five-level motor function research program, which assesses the likelihood that children with cerebral palsy will walk, is used by therapists and doctors in more than 20 countries around the world.

Dr. Rosenbaum holds a Canada Research Chair in Childhood Disability and is Professor of Pediatrics at McMaster University and Associate member of the Department of Clinical Epidemiology and Biostatistics. He co-founded the CanChild Centre for Childhood Disability. CanChild focuses on children and youth with physical, developmental, and/or communicative needs who require rehabilitation services, as well as their families. It brings a wide variety of research perspectives to bear on childhood disability – everyone from occupational therapists to developmental psychologists to orthopedic surgeons.

"These people understand the nature of children," he says.

Consistent funding from CIHR and other sources has helped CanChild establish a multidisciplinary team that takes a leading role in identifying emerging issues for research, practice, policy and education. The team also focuses on transferring the knowledge that they create into effective action at the clinical and health systems level, and provides education materials for consumers, service providers, policy makers and students.

From its base at McMaster, CanChild is building a network of like-minded researchers across Canada (McGill University and the Universities of Alberta and British Columbia) and internationally (the Netherlands, England, Australia and Slovenia). This network allows researchers to build on each others' work to improve the health and well-being of children with disabilities and their families, help shape public policy to better serve these children and families and train the next generation of childhood disability researchers.