



CIHR IRSC
2005-2006

Child Health

The CIHR Institute

From fertility and healthy pregnancy to improving outcomes for adolescents, CIHR's Institute of Human Development, Child and Youth Health is building the life foundation for tomorrow's adults, helping to ensure that all children have the best possible start in life and achieve their potential for optimal growth and development.

About CIHR

The Canadian Institutes of Health Research (CIHR) is the Government of Canada's agency for health research. CIHR's mission is to create new scientific knowledge and to catalyze its translation into improved health, more effective health services and products, and a strengthened Canadian healthcare system. Composed of 13 Institutes, CIHR provides leadership and support to more than 10,000 health researchers and trainees across Canada.

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 \$58.5 million in 2005-06 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 to 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 to 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 to 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 to 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.
- Babies and their mothers account for about 10% of all spending for inpatient care in Canadian hospitals.

Research Finding Solutions for Children's Health

- Amnioinfusion – the infusion of saline into the uterus – does not reduce the risk of meconium aspiration syndrome (MAS), according to a CIHR-funded international randomized trial led by Dr. William Fraser at the Université de Montréal. MAS, while rare, is a severe neonatal lung infection that occurs when a newborn inhales a mixture of meconium and amniotic fluid during labour and delivery. Meconium is the material that fills the fetal intestinal tract during pregnancy. When inhaled, it can cause a partial or complete blockage of the baby's airway when it exhales, making it hard to breathe. Amnioinfusion has been used for the past 15 years to reduce the risk of MAS by diluting the meconium; Dr. Fraser's research has demonstrated that it is ineffective for this purpose.
- Many of the conditions that affect children are difficult to diagnose early. CIHR-funded researchers are changing that. A simple test developed by Dr. James Reynolds of Queen's University measures eye movements to identify children with Fetal Alcohol Spectrum Disorder (FASD), for which there are currently no objective diagnostic tools. At Dalhousie University, a team headed by CIHR-funded researcher Dr. Susan Bryson has developed the Autism Observation Scale for Infants (AOSI), which pinpoints specific behavioural signs in infants as young as six months to a year that can predict whether a child will develop autism; existing diagnostic tools have been designed for children 18 months and older. Both of these tests could lead to earlier treatments for these debilitating conditions.

- 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.
- Fewer than half of Canadian children are active enough for basic healthy development according to a national report card issued by the Active Health Kids Canada, the development of which was supported by CIHR. Boys were found to be more physically active than girls, and activity level increased from east to west across the country. Meanwhile, CIHR-funded researchers Drs. Bonnie Leadbeater and Mikael Jansson of the University of Victoria have found that nearly 40% of adolescents surveyed suffered an injury in the previous year serious enough to limit their daily activity. Now the research team is investigating whether such injuries discourage young people from playing the games they love and help to turn them into couch potatoes.
- Against all expectations, the majority of extremely low birth weight infants born in the late 1970s and early 1980s are little different than their normal birth weight counterparts when it comes to education, employment and independence as young adults, according to a CIHR-funded study by Dr. Saroj Saigal of McMaster University. Their achievement came as a surprise to researchers, as fully one-quarter of them have disabilities. The first generation of infants to survive being born at extremely low weights (1.1 to 2.2 lbs. at birth) is just now coming to young adulthood.

In the Pipeline... Hope – The Complex Journey of Parents of Children with Cancer

Despite tremendous improvements in outcomes for children with cancer, a significant proportion of these children will not live into adulthood – and their parents will live with their deaths for the rest of their own lives. Dr. Beverley Antle of the Hospital for Sick Children, University of Toronto, wants to improve the quality of care that both children and their parents receive at the end of the children’s lives. She is focusing on the hope parents feel and the impact this has on their choices on behalf of their children, as well as how that hope changes over the course of their child’s treatment and decline. Her research will open new windows on the factors and events that influence what parents hope for when their child’s health declines and curative treatment is no longer possible. The knowledge will help to improve the quality of care offered to children with cancer and their parents.

The Researchers... Dr. Sunita Vohra – Giving Doctors More Tools

Dr. Sunita Vohra has a vision. It involves changing conventional wisdom that new medicines and therapies start at the lab bench and end at the patients’ bedside.

“What if things went the other way, starting from the bedside and ending at the bench?” asks Dr. Vohra, professor of pediatrics at the University of Alberta and director of the Complementary and Alternative Research and Education Program (CARE) at the Stollery Children’s Hospital.

She notes that natural remedies and therapies already have a place at the bedside. Outside of North America, 80% of the world’s population uses alternative medicines and practices. In the pediatrics practice, 70% of patients seen at children’s hospitals across Canada are using such treatments.

The opportunity for researchers is to collect information about these therapies and design experiments that they will test to see which ones have the most benefits for different conditions.

“There is a tremendous amount of activity taking place, a kind of vast natural experiment occurring that demands that we take a closer look to see what is being used, what is working and why. There is a huge potential for new drugs and for expanding our understanding of diseases and health,” Dr. Vohra notes.

As director of the CARE program, Dr. Vohra is trying to do precisely that. Stollery is the only children’s hospital in Canada to have introduced additional clinical services in these complementary and alternative medicines. As an example, the use of acupuncture is being explored to minimize nausea and vomiting related to chemotherapy.

“The fact is that, as a doctor, you have to be educated and prepared for questions from parents about these treatments,” Dr. Vohra stresses. “This involves changing the definition of ‘mainstream’ evidence-based medicine. The exciting thing is: What are the next new hypotheses about disease we’re going to generate when we change this perspective?”