

Excellence in Health Services Research

Annual Report 2011



ICES research stimulates improvements in health system performance and promotes better health for Ontarians

Population-based health research that makes a difference

Since 1992, ICES has been applying leading-edge scientific research and expertise to study and evaluate health care delivery and outcomes in Ontario. ICES researchers link data from many sources, including population-based health surveys, anonymous patient records, as well as clinical and administrative databases. ICES is the only research organization in Ontario that is privileged to hold and use such data. ICES goes to great lengths to protect the privacy interests of Ontarians and is recognized as an international leader in maintaining the security of health information.

Scientists and clinicians lead world-class research teams

ICES scientists are internationally recognized leaders; many are practicing clinicians who understand the everyday challenges of health care delivery. They lead multidisciplinary teams consisting of statisticians and epidemiologists, as well as specialists in knowledge translation, information security, privacy and technology. The diverse expertise presented within these specialized teams is the foundation of ICES' innovative approach to research.

Evidence-based research informs decisions

To obtain a comprehensive picture of health care issues, ICES researchers take a unique approach to studying the continuum of care. Their unbiased, evidence-based knowledge and recommendations, profiled in atlases, investigative reports and peer-reviewed journals, are used to guide decision-making and inform changes in health care delivery. Highly regarded in Canada and abroad, ICES research can be applied by clinicians, governments and health care planners.

Independence from various funding sources

ICES receives core funding from the Ontario Ministry of Health and Long-Term Care. ICES faculty and staff also compete for peer-reviewed grants from federal agencies, such as the Canadian Institutes of Health Research. Some receive project-specific grants from provincial and national organizations. However, ICES maintains an independent stance from these funding sources and takes pride in its international reputation as an objective and credible source of health and health services evaluation.

Growing partnerships with Canada's leading institutions

ICES is located on the campus of Sunnybrook Health Sciences Centre in Toronto, at Queen's University in Kingston (ICES@Queen's) and at the Ottawa Hospital Research Institute (ICES@uOttawa). New satellite sites at the University of Toronto (ICES@UofT) and The Lawson Health Research Institute in London, Ontario (ICES@Western) are scheduled to open in 2012. Additional sites across Ontario are being planned.

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MESSAGE FROM SENIOR LEADERSHIP

This past year at ICES has been one of substantial scientific achievement and productivity. We welcomed 28 new adjunct faculty members across Ontario, had over 300 publications in leading peer-reviewed scientific journals and initiated more than 200 new projects across our five programs of research: cancer, cardiovascular and diagnostic imaging, chronic disease and pharmacotherapy, health system planning and evaluation, and primary care and population health.

Highlights of our major achievements in 2010/11:

NEW OPPORTUNITIES FOR COLLABORATION: Since 2007, ICES has been establishing satellite sites at universities across Ontario in order to bring the potential of our data together with a broad range of disciplines, faculty members and students. This initiative has expanded the capacity of ICES to conduct research that contributes to the effectiveness, quality, equity and efficiency of health care and health services in Ontario by increasing the number of scientists and the breadth of scientific expertise. This year we have been working steadily towards the 2012 openings of expansion sites at the University of Toronto and the University of Western Ontario.

EXPANSION OF OUR DATA HOLDINGS: We have continued our efforts to improve the overall scope, quality and timeliness of our data holdings. This year, we negotiated 93 new data sharing agreements. For example, agreements were signed to transfer a copy of the Vital Statistics Registry to ICES and to receive expanded home care data sets from the Ontario Association of Community Care Access Centres.

IMPROVED KNOWLEDGE EXCHANGE CAPACITY: The Ontario Cancer Data Linkage Project (cd-link), a data release mechanism established in 2010, accepted 10 applications from external investigators to access ICES datasets relevant to cancer research. The success of this initiative will inform future plans to further expand the capacity for data sharing at ICES.

NEW PARTNERSHIPS: We have continued to build relationships with a number of new partners. Prominent among these is our work with the Chiefs of Ontario and the Métis Nation of Ontario, which has enabled us to report on the health of First Nations and Métis peoples in Ontario.

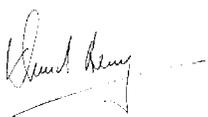
INCREASED COMMUNICATIONS: Throughout the year, ICES continued to increase its visibility through presentations at many conferences and events, as well as by hosting our 12th annual data symposium, which was attended by 270 delegates. In addition, ICES research attracted 2,114 unique media hits. Our hard-earned reputation with journalists will continue to be enhanced in 2011/12 as the communications team works with media to disseminate our research findings.

We are fortunate to be guided by a Board of Directors with a strong commitment to the ICES vision. Of course, our recent successes and those yet to come would not be possible without the expertise, dedication and creativity of our staff. We are grateful for and appreciative of their hard work, innovations and contributions. We look forward to working together toward the continued pursuit of the ICES strategic vision to *Expand, Engage and Enrich*. We also gratefully acknowledge the MOHLTC for its continuing support of health services research.

As ICES approaches its 20th anniversary in 2012, we will continue to focus on being a dynamic organization that provides the essential evidence needed to shape Ontario's evolving health care system.

David Henry
President and CEO

Mark Rochon
Chair, Board of Directors



ICES STRATEGIC DIRECTION

EXPAND
access to data for research
across the province

ENGAGE
new stakeholders
and partners

ENRICH
capacity through
enhanced funding and
operational capacity

ICES BOARD OF DIRECTORS 2010-2011

Mr. Mark Rochon (Chair)

President and CEO, Toronto Rehabilitation Institute

Dr. Michael Baker

Chief of Medicine, University Health Network
University of Toronto

Mr. John Callaghan

Partner, Gowling Lafleur Henderson LLP

The Honourable Elinor Caplan

Former Ontario Minister of Health and Federal Minister of Citizenship and Immigration, and National Revenue

Mr. William Falk

Executive Fellow in Residence, Mowat Centre for Policy Innovation, School of Public Policy and Governance
University of Toronto

Dr. Colleen Flood

Canada Research Chair in Health Law and Policy, Associate Professor, Faculty of Law, University of Toronto

Mr. Murray Glendining

Executive Vice-President, Corporate Affairs
Hamilton Health Sciences

Dr. Carol Herbert

Former Dean, Faculty of Medicine and Dentistry
University of Western Ontario

Mr. Bruce MacLellan

President and CEO, Environics Communications

Mr. Perry M. Martin

Associate, Fasken Martineau LLP

Mr. Mark Rudowski

Director, Enterprise Risk and Compliance
George Weston Limited

Dr. Duncan Sinclair

Former Chair
Health Services Restructuring Commission of Ontario

Dr. Carolyn Tuohy

Professor Emeritus of Political Science and Senior Fellow
School of Public Policy and Governance
University of Toronto

NEW ICES FACULTY

This year, ICES welcomed 28 new adjunct faculty across our five main programs of research.

Cancer

- Lilian Gien, University of Toronto
- Stephen Hall, Queen's University

Cardiovascular and Diagnostic Imaging

- Ruth Hall, ICES
- Christopher Simpson, Queen's University

Chronic Disease and Pharmacotherapy

- Robert Campbell, Queen's University
- Irfan Dhalla, University of Toronto
- Denise Feig, University of Toronto

Health System Planning and Evaluation

- Eric Benchimol, University of Ottawa
- Susan Bondy, University of Toronto
- Larry Chambers, University of Ottawa
- Raisa Deber, University of Toronto
- Robert Fowler, University of Toronto
- Jeremy Grimshaw, University of Ottawa
- John Hirdes, University of Waterloo
- Jeff Poss, University of Waterloo
- Carlos Quiñonez, University of Toronto
- Elizabeth VandenKerkhof, Queen's University

Primary Care and Population Health

- Richard Birtwhistle, Queen's University
- Eric Crighton, University of Ottawa
- Carolyn Dewa, University of Toronto
- Jim Dunn, McMaster University
- Janet Durbin, University of Toronto
- Yona Lunskey, University of Toronto
- Flora Matheson, University of Toronto
- Rahim Moineddin, University of Toronto
- Helene Ouellette-Kuntz, Queen's University
- Sisira Sarma, Western University
- Kumanan Wilson, University of Ottawa

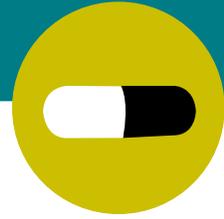
RESEARCH HIGHLIGHTS

Evidence Guiding Health Care

From a public perspective, little is more important than timely access to safe, high-quality health care services. This priority, coupled with the demand for expensive new drugs and diagnostic tests and the need for more and better services for an aging population, create many challenges for those responsible for Ontario's health system.

Managing these challenges with finite resources requires basing decisions on objectively derived evidence. Since its inception in 1992, ICES has made significant contributions, providing the necessary evidence to support decisions in areas of importance to the health care community and the public.

The following is a sample of publications from the past year that demonstrate how ICES supports policy development, planning and improved health care for Ontarians.



Drug Safety

Drug therapy is currently the fastest rising component of health care expenditures, a trend that is expected to persist given the regular introduction of innovative and costly medications and the expanding burden of chronic disease in the population. Monitoring clinical outcomes associated with drug therapies is crucial to ensuring patient safety and cost-effective decisions. ICES scientists have contributed to this process by providing decision-makers with research reports that describe the utilization and outcomes of various drug therapies.

Common blood thinner dangerous when combined with popular antibiotic. One such example is an ICES study which showed that the blood thinning drug warfarin can be dangerous when combined with cotrimoxazole, a popular antibiotic often used to treat urinary tract infection. The study of over 134,000 older Ontarians found that among those taking warfarin, use of cotrimoxazole was associated with an almost four-fold increase in the risk of upper gastrointestinal hemorrhage, considerably higher than the risk with other antibiotics. [Fischer et al. *Arch Intern Med.* 2010; 170(12):617–21.]

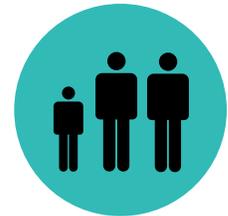
A common drug combination may be fatal for the elderly. In another study involving cotrimoxazole, ICES researchers investigated elderly patients who were taking the antibiotic (referred to in this study as trimethoprim-sulfamethoxazole) while being treated with ACE inhibitors or angiotensin receptor blockers. Compared to patients not taking cotrimoxazole, these patients were found to have a nearly seven-fold increased risk of hospitalization for hyperkalemia, a condition characterized by abnormally high levels of potassium in the blood that can lead to heart rhythm disturbances. [Antoniou et al. *Arch Intern Med.* 2010; 170(12):1045–9.]

Long-term use of osteoporosis drugs is linked to unusual fractures. Hip fractures caused by osteoporosis typically occur in the upper part of the thigh bone (femur) close to the hip joint and are an important cause of disability and death in the elderly. The risk of these fractures is effectively reduced by treatment with bisphosphonate drugs. ICES researchers analyzed fracture data on over 205,000 women taking bisphosphonates and found that less common fractures further down the femur occurred more than 2.5 times as often in women who had taken the drugs for

more than five years. Long-term use of these drugs should be reconsidered for women who are at low risk for osteoporosis. [Park-Wyllie et al. *JAMA.* 2011; 305(8):783–9.]

Proportion of Ontario seniors taking more than 10 medications triples in 10 years. This ICES study showed that prescription claims by Ontarians aged 65 and older increased by 214% between 1997 and 2008, with the average number of claims per person rising from 3.2 in 1997 to 9.5 in 2006. The proportion of seniors prescribed four to nine classes of drugs increased by 34%; those prescribed 10 or more classes increased by 188%. The steepest increases were for preventive therapies: medications for preventing osteoporosis increased by 2,347% and lipid-lowering agents used to prevent cardiovascular disease increased by 697%. These findings raise important questions about quality of care, patient safety and cost sustainability. [Bajcar et al. *BMC Fam Pract.* 2010; 11:75.]

Common prostate cancer treatment putting men at higher risk for fractures. ICES researchers studied over 19,000 older Ontario men with prostate cancer who had been treated with androgen deprivation therapy (ADT) continuously for at least six months and found that the drug was associated with a 65% relative increase in the risk of a fracture affecting the spine, hip or wrist and a 45% relative increase in the risk of a fracture elsewhere in the body. The study authors recommended that men starting ADT therapy supplement with calcium and vitamin D and have prescription therapies tailored to their risk for fracture and their bone density results. [Alibhai et al. *J Urology.* 2010; 184(3):918–24.]



Social Determinants of Health

The social determinants of health are the circumstances in which people are born, live, work and age. These circumstances can either increase or decrease the risk for diseases, such as cardiovascular disease and type 2 diabetes. In the past year, ICES researchers have examined the impact of age, income, education and ethnicity on the health of particular Ontario populations or communities.

Financial barriers may increase emergency room visits for children with asthma. A joint study by researchers at ICES and The Hospital for Sick Children revealed that financial barriers—in the form of sharing asthma medication costs between insurers and families—were contributing to poor asthma control in children. Among drug plan holders, for every 1% increase in family income spent out-of-pocket on asthma medications, there was a 14% increase in the number of severe asthma attacks resulting in an emergency department visit or hospitalization. [Ungar et al. *Ann Allergy Asthma Immunol.* 2011; 106(1):17–23.]

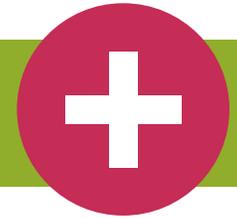
Universal access to health care does not fully eliminate disparities. In a study of 14,900 Ontario respondents to the 1996 and 1997 National Population Health Surveys, ICES researchers found that 10 years later those with the lowest levels of income and education used more health care resources; were more likely to have cancer, high blood pressure or diabetes, smoke daily and live inactive lifestyles; and had more visits to primary care physicians. These findings suggest there is a need to introduce large-scale preventive strategies early in patients' lives to help change unhealthy behaviours. [Alter et al. *Health Affairs.* 2011; 30(2):274–83.]

Recent immigrants at higher risk of developing diabetes. In the largest migrant study of its kind undertaken in Canada, researchers at ICES and St. Michael's Hospital found that immigrants from South Asia had almost double the risk of developing diabetes than the general Ontario population and their increased risk started at an earlier age (35 to 49 years)—a full decade earlier than the general population. By 2005, nearly 100,000 people who immigrated to Canada between 1985 and 2000 had been diagnosed with diabetes. [Creatore et al. *CMAJ.* 2010; 182(8):781–9.]

Low-income Ontarians receiving risky doses of painkillers. Socially disadvantaged Ontarians are being prescribed opioids—powerful painkillers like morphine, codeine and oxycodone—on an ongoing basis and at doses that far exceed the amounts set out by Canadian clinical guidelines. This was one finding of an ICES study that examined opioid prescriptions paid by Ontario's public drug plan from 2003 to 2008. The study also found that by 2008, 180,974 social assistance beneficiaries were receiving nearly 1.5 million opioid prescriptions annually. Further, among those receiving high daily doses of opioids, all-cause mortality rates were up to 10 times higher than in the general population. [Gomes et al. *Open Med.* 2011; 5(1):e13–22.]

Costly medications may play a role in low-income children with bowel disease requiring surgery. Research conducted jointly by investigators at The Hospital for Sick Children and ICES found that children with inflammatory bowel disease from low-income neighbourhoods were 17% more likely to be hospitalized and 80% more likely to undergo surgery for Crohn's disease than those from high-income neighbourhoods. This difference may be due to the difficulty of children from low-income families in accessing newer, more expensive medications, such as immunomodulators and biologics. [Benchimol et al. *J Pediatr.* 2011; 158(6):960–7.]

Heart disease rates vary markedly among ethnic groups. ICES researchers in partnership with the Heart and Stroke Foundation of Ontario compared eight risk factors for cardiovascular disease (including smoking, obesity, diabetes, hypertension, stress, physical activity, fruit and vegetable consumption, and alcohol consumption) in Canada's four largest ethnic groups between 1996 and 2007. They found that members of the Chinese community had the best cardiovascular risk profile with only 4.3% reporting two or more major risk factors, compared to 7.9% for South Asians, 10.1% for Caucasians and 11.1% for Blacks. Compared to Caucasians, the prevalence of hypertension was 44% higher in the black community and 24% higher among South Asians. Awareness of these differences may help in identifying priorities in developing cardiovascular disease prevention programs for specific ethnic groups. [Chiu et al. *CMAJ.* 2010; 182(8):e301–8.]



Health System Performance

Older, low-income and immigrant women less likely to get Pap tests. The Pap test has proven to be an effective screening tool for cervical cancer, yet according to research from ICES and St. Michael's Hospital, nearly 40% of women living in Ontario's metropolitan areas are not being tested, despite having access to a universal health care system. Low-income women aged 50 and older who were recent OHIP registrants (i.e., immigrants) had a screening rate of only 31% compared to 70% of women with none of these characteristics. Targeting interventions with particular focus on the immigrant composition of various health regions may be essential to closing the screening gap. [Lofters et al. *Med Care*. 2010; 48(7):611–8.]

Behaviour disorders increase accident risk for teenaged boys. ICES researchers found that a diagnosis of attention deficit hyperactivity disorder and other disruptive behaviour disorders increases the chance of a car accident by 37% among Ontario males aged 16 to 19 (similar to the relative risk among individuals treated for epilepsy). The risk also extends to teenagers involved as pedestrians in motor vehicle crashes. Programs addressing such disorders should be considered to prevent injuries. [Redelmeier et al. *PLoS Med*. 2010; 7(11):e1000369.]

Over the past few years, Ontarians have become increasingly concerned about the health system's ability to meet their needs. ICES released several studies this year that analyzed timely access to key health services, including primary care, specialist care and some critical treatment and diagnostic services.

Most Ontarians have geographical access to primary and urgent care. In a province as big as Ontario with many rural and northern communities, access to health care is likely to be uneven. ICES investigators found that 99.6% of residents had geographical access to a primary care provider within 30 minutes by car. Highly specialized hospitals were less accessible but were still located within a 60-minute drive for 72.2% of Ontarians living in communities of fewer than 30,000 residents. Researchers acknowledged that realized access may be much lower, given that many family physicians are not accepting new patients, after-hours care is limited in many areas, and emergency department wait times can be very long. [Glazier et al. *Geographic Access to Primary Care and Hospital Services for Rural and Northern Communities*. ICES; 2011.]

Heart attack patients with depression less likely to receive priority ED care. ICES researchers found that 10% of heart attack patients seen in Ontario emergency departments had a history of depression recorded in their medical chart. Of these, 39% were assigned a low priority triage score in the ED compared to 33% of other heart attack patients. The low score resulted in significant delays in diagnostic testing and definitive care. The researchers suggested that mistriage of depressed patients may be based on assumptions that their symptoms are anxiety related rather than due to an actual heart attack. Most ED staff are unaware of data that suggests a link between depression and coronary artery disease. [Atzema et al. *CMAJ*. 2011; 183(6):663–9.]

Not having a primary care doctor puts Ontario children at risk. Numerous studies have shown the value of primary care in improving health outcomes. ICES researchers have found that children who live in areas with few primary care doctors or pediatricians visit emergency departments almost twice as often and are hospitalized more than children who live in areas with adequate primary care. Efforts to improve access to care need to include policies to address not only the supply but also the distribution of available health care providers across Ontario. [Guttmann et al. *Pediatrics*. 2010; 125(6):1119–26.]

RESEARCH HIGHLIGHTS

Longer wait times for long-term care, but faster placement for seniors most in need. In partnership with the Ontario Home Care Research Network, ICES was commissioned by the provincial government to provide an independent examination of Ontario seniors and their use of health care services. Investigators found that wait times for Ontario's long-term care facilities increased dramatically over the last decade, reaching a median of 103 days in 2009. However, seniors in crisis or waiting in hospitals had shorter wait times for long-term care placement than other applicants. The number of elderly inpatients designated as 'alternate level of care' (i.e., no longer requiring acute care) and who had applied for long-term care placement almost doubled between 2005 and 2008. There are large differences across Ontario in how quickly seniors requiring home care services receive the standardized in-home assessment: the proportion who were assessed within 14 days ranged from 25% to 70% across the 14 Local Health Integration Networks. [Bronskill et al. *Aging in Ontario: An ICES Chartbook of Health Service Use by Older Adults*. ICES; 2010.]

Despite aging population, fewer Ontarians being admitted to hospital with stroke. In 2003, the Ontario government committed to a \$30 million annual investment to make best practice stroke care available to all residents. In 2010, ICES researchers, drawing on data from the Registry of the Canadian Stroke Network, looked at provincial trends in stroke care between 2003 and 2008. They found a 23% decrease in hospital admissions for stroke, a 6% decrease in in-hospital mortality rates due to stroke, and an almost three-fold reduction in median wait time for carotid intervention (from 41 days to 15). However, more than half of inpatient stroke care was delivered in hospitals with limited specialized care, and there was substantial variation in stroke practice and outcomes across Ontario's 14 Local Health Integration Networks. [Hall et al. *Ontario Stroke Evaluation 2010: Technical Report*. ICES: 2010.]

Heart failure patients better off if they see their family doctor and a specialist. One in three Ontarians who visit an emergency department with heart failure symptoms are discharged to home, and the care that they receive after discharge varies widely. ICES researchers found that one in five heart failure patients did not visit any physician within one month of ED discharge, despite the seriousness of their condition. Patients who were evaluated by both a cardiology specialist and a family physician within 30 days after ED discharge had the lowest rates of death, repeat ED visits or hospitalizations compared to those who were seen by either type

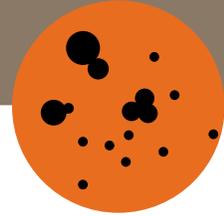
of doctor alone. Early collaborative heart failure care was associated with increased use of drug therapies and diagnostic tests and with better outcomes compared to primary care alone. [Lee et al. *Circulation*. 2010; 122(18): 1806–14.]

More than one in four Ontario babies delivered by caesarean section. The POWER (Project for an Ontario Women's Health Evidence-based Report) Study is the first in the province to provide an overview of women's health in relation to income, education, ethnicity and geography. The investigative team studying reproductive and gynaecological health found that:

- Overall, 28% of all Ontario hospital deliveries were C-sections. Among women who had a C-section, 84% of subsequent deliveries were C-sections.
- Nearly three-quarters of women who had a vaginal delivery were discharged within 48 hours, and almost 90% of women who had a C-section were discharged within 96 hours.
- C-section rates varied by Local Health Integration Network, ranging from 24% of deliveries in the South West LHIN to 31% of deliveries in the North Simcoe Muskoka LHIN.

These findings present an opportunity to reduce the observed regional variation in C-section rates. [Dunn et al. *Reproductive and gynaecological health*. In: *Project for an Ontario Women's Health Evidence-Based Report*, Volume 2. ICES; 2010.]

Most rheumatoid arthritis patients in Ontario not receiving required specialty care. Another POWER Study team investigating musculoskeletal conditions estimated that 55,000 women and 22,000 men in Ontario have been diagnosed with rheumatoid arthritis, an autoimmune disease that causes painful joint inflammation. Nearly 60% of Ontarian residents with this debilitating disease were not seen by a specialist within a year of diagnosis. This is significant because early treatment is critical to preventing the long-term disability caused by the disease. [Hawker et al. *Musculoskeletal conditions*. In: *Project for an Ontario Women's Health Evidence-Based Report*, Volume 2. ICES and St. Michael's Hospital; 2010.]



Disease Burden

Disease burden is the impact of a health problem in an area as measured by financial cost, mortality, morbidity or other indicators. ICES continues to take a leadership role in defining the burden of chronic and infectious diseases and tracking these important epidemics.

Diabetes cases in Canada to increase by almost two million by 2017. In a report supported by the Ontario Agency for Health Protection and Promotion, the Ottawa Hospital Research Institute, the Population Health Improvement Research Network and Statistics Canada, ICES researchers demonstrated how innovative population-based approaches to estimating future disease burdens can help policy makers improve the success of prevention strategies by targeting segments of the population who are most at risk. Using a multivariate predictive risk tool, researchers predicted how many Canadians would develop type 2 diabetes between 2007 and 2017 (nine out of every 100), estimated diabetes risk for 121 health regions in Canada, and examined the potential number of new diabetes cases that would be prevented in Ontario under different provincial strategies. [Manuel et al. *How Many Canadians Will Be Diagnosed with Diabetes Between 2007 and 2017?* ICES; 2010.]

Nearly 5,000 Ontarians die from infectious diseases every year. ICES investigators in partnership with the Ontario Agency for Health Protection and Promotion undertook a comprehensive review of 51 infectious diseases to determine their impact on Ontarians. The study found that infectious diseases accounted for 68,213 years of life lost due to premature mortality and 14,668 year-equivalents of reduced functioning. A large proportion of the burden of illness could be attributed to a small number of pathogens and syndromes for which targeted interventions, such as vaccines, and non-specific interventions, such as hand-washing and condom use, already exist. Nearly half of the total burden of infectious diseases could be attributed to five pathogens: hepatitis C, *S. pneumoniae*, human papillomavirus, hepatitis B and *E. coli*. [Kwong et al. *Ontario Burden of Infectious Disease Study*. ICES and OAHPP; 2010.]

People with asthma use more health care to treat other diseases. Asthma is not only a disease of the lungs, it affects the whole body. According to an ICES study, compared to those without asthma, people with asthma see their doctors 72% more often and are admitted to hospital 66% more often for other health problems. These include other respiratory diseases, depression, obesity and bone and joint injuries. Further, asthma and its co-morbidities were responsible for 6% of the 2.2 million hospitalizations in Ontario in 2005, 9% of the 4.7 million emergency department visits, and 6% of the 131.3 million outpatient visits that year. The researchers called on health care providers to consider asthma comorbidities in the management of their asthma patients. [Gershon et al. *Thorax*. 2010; 65(7):612–8.]

ICES DATA AND DATA PARTNERSHIPS

ICES' vast central data repository includes more than 20 years of historic record-level, de-identified and linkable health services data. The data contain information about most publicly funded interactions with the health system, such as physician claims, Ontario Drug Benefit claims, hospital discharges, home care visits and long-term care stays. The data can be used to provide information about trends in health care use and population health, as well as an understanding of the future needs of the health system.

Designated as one of four prescribed entities in Ontario under the *Personal Health Information Privacy Act* of 2004 (PHIPA), ICES has the authority to collect and use these data without patient consent for the purposes of statistical analysis, including the evaluation of aspects of Ontario's health system. It is through the expert linking of these de-identified data sets across health sectors that ICES is able to do its work.

Over the years, ICES has developed many partnerships that focus on the sharing and use of data. Data sharing agreements—which outline the authorities for data sharing, the purpose of the partnership, how the data will be used, who will access the data and how the data will be transferred and integrated—are signed for all new data sets that ICES integrates.

In 2010/11, ICES entered into over 90 data sharing agreements with various organizations across the province. These include clinical registries and other data collected by Ontario researchers and health care organizations. Many of these partnerships are formed for particular projects, and several will greatly expand the breadth and scope of the questions that ICES is able to answer about the health care and health of Ontarians. *These include:*

VITAL STATISTICS DEATH REGISTER DATA

Identifies cause and place of death for Ontario residents from 1991 onward. Data sharing partner: Registrar General of Ontario.

HOME CARE DATA DERIVED FROM THE RESIDENT ASSESSMENT INSTRUMENT FOR HOME CARE

Identifies the functional status of clients receiving publicly funded home care services following discharge from acute care hospitals. Data sharing partner: Ontario Association of Community Care Access Centres.

CITIZENSHIP AND IMMIGRATION CANADA DATA

Provides demographic information for all immigrants who have applied to land in Ontario from 1985 onward. Federal data sharing partner: Citizenship and Immigration Canada.

MINISTRY OF COMMUNITY AND SOCIAL SERVICES (MCSS)

This important data sharing agreement highlights the partnerships between government ministries for project questions that link health and social services. In this project, the social support eligibility information shared by MCSS is being linked to health data at ICES to examine health services access issues by people with developmental disabilities.

MÉTIS NATION OF ONTARIO CITIZENSHIP REGISTRY DATA

Identifies all persons who have citizenship with the Métis Nation of Ontario (MNO), the representative governing body for Métis people in Ontario. The linkage of the MNO Citizenship Registry to ICES databases allows for the analysis of Métis-specific health services use and health outcomes in Ontario. Data sharing partner: Métis Nation of Ontario.

REPORT OF THE INDEPENDENT AUDITOR ON THE SUMMARY FINANCIAL STATEMENTS

To the Board of Directors of the Institute for Clinical Evaluative Sciences

The accompanying summary financial statements, which comprise the summary statement of financial position as at March 31, 2011 and the summary statements of operations and cash flows for the year then ended, are derived from the audited financial statements of the Institute for Clinical Evaluative Sciences for the year ended March 31, 2011. We expressed an unmodified audit opinion on those financial statements in our report dated June 22, 2011.

The summary financial statements do not contain all the disclosures required by Canadian generally accepted accounting principles. Reading the summary financial statements, therefore, is not a substitute for reading the audited financial statements of the Institute for Clinical Evaluative Sciences.

MANAGEMENT'S RESPONSIBILITY

Management is responsible for the preparation of a summary of the audited financial statements.

AUDITOR'S RESPONSIBILITY

Our responsibility is to express an opinion on the summary financial statements based on our procedures, which were conducted in accordance with Canadian Auditing Standard (CAS) 810, "Engagements to Report on Summary Financial Statements."

OPINION

In our opinion, the summary financial statements derived from the audited financial statements of the Institute for Clinical Evaluative Sciences for the year ended March 31, 2011 are a fair summary of those financial statements.

PricewaterhouseCoopers LLP

Chartered Accountants, Licensed Public Accountants
March 15, 2012
Toronto, Ontario

STATEMENT OF FINANCIAL POSITION

As at March 31, 2011
(in thousands of dollars)

	General Fund		Restricted Fund		Total	
	2011	2010	2011	2010	2011	2010
	\$	\$	\$	\$	\$	\$
Assets						
Current assets						
Cash	233	655	8,198	9,234	8,431	9,889
Accounts receivable	1,820	953	118	–	1,938	953
Due from Ministry of Health and Long-Term Care	–	–	1,408	–	1,408	–
Prepaid expenses	184	141	19	72	203	213
	2,237	1,749	9,743	9,306	11,980	11,055
Capital and intangible assets	722	977	–	–	722	977
	2,959	2,726	9,743	9,306	12,702	12,032
Liabilities and Deferred Amounts						
Current Liabilities						
Accounts payable and accrued liabilities	1,921	1,619	–	–	1,921	1,619
Due to Ministry of Health and Long-Term Care	–	–	829	1,084	829	1,084
Due to Sunnybrook Health Sciences Centre	198	36	–	–	198	36
	2,119	1,655	829	1,084	2,948	2,739
Post-employment benefits other than pensions	118	94	–	–	118	94
Deferred capital grant	722	977	–	–	722	977
Deferred expense grants	–	–	8,914	8,222	8,914	8,222
	2,959	2,726	9,743	9,306	12,702	12,032

STATEMENT OF OPERATIONS

For the year ended March 31, 2011
(in thousands of dollars)

	General Fund		Restricted Fund		Total	
	2011	2010	2011	2010	2011	2010
	\$	\$	\$	\$	\$	\$
Revenue						
Grants – operating	5,643	6,024	–	–	5,643	6,024
Interest income	6	5	–	–	6	5
Other revenue	5,460	4,417	–	–	5,460	4,417
Amortization of deferred capital grant	305	295	–	–	305	295
Amortization of deferred expense grants	–	–	5,731	8,792	5,731	8,792
	11,414	10,741	5,731	8,792	17,145	19,533
Expenditures						
Employee costs	9,787	9,945	3,364	3,440	13,151	13,385
Contracted services	199	277	1,701	4,208	1,900	4,485
Information, technology and security	605	519	186	105	791	624
Office and general	425	416	66	190	491	606
Amortization of capital and intangible assets	305	295	–	–	305	295
Professional	232	215	414	849	646	1,064
Premises	432	426	–	–	432	426
	11,985	12,093	5,731	8,792	17,716	20,885
Deficiency of revenue over expenditures for the year	(571)	(1,352)	–	–	(571)	(1,352)
Transfer from Indirect Cost Fund	571	1,352	–	–	571	1,352
Excess of revenue over expenditures for the year	–	–	–	–	–	–

STATEMENT OF CASH FLOWS

For the year ended March 31, 2011
(in thousands of dollars)

	General Fund		Restricted Fund		Total	
	2011	2010	2011	2010	2011	2010
	\$	\$	\$	\$	\$	\$
Cash provided by (used in)						
Operating activities						
Items not affecting cash						
Increase in post-employment benefits other than pensions	24	21	–	–	24	21
Amortization of deferred capital grant	(305)	(295)	–	–	(305)	(295)
Amortization of deferred expense grants	–	–	(5,731)	(8,792)	(5,731)	(8,792)
Transfer from deferred expense grant	–	–	(68)	(3,366)	(68)	(3,366)
Amortization of capital and intangible assets	305	295	–	–	305	295
Change in non-cash working capital	(446)	(55)	(1,728)	1,149	(2,174)	1,094
	(422)	(34)	(7,527)	(11,009)	(7,949)	(11,043)
Investing activities						
Transfer from operating grant to deferred capital grant	50	146	–	–	50	146
Transfer from OICR grant to deferred capital grant	–	24	–	–	–	24
Purchase of capital and intangible assets	(50)	(170)	–	–	(50)	(170)
	–	–	–	–	–	–
Financing activities						
Deferred grants received plus interest income	–	–	6,491	9,184	6,491	9,184
Decrease in cash during the year	(422)	(34)	(1,036)	(1,825)	(1,458)	(1,859)
Cash – Beginning of year	655	689	9,234	11,059	9,889	11,748
Cash – End of year	233	655	8,198	9,234	8,431	9,889

Institute for Clinical Evaluative Sciences
G1 06, 2075 Bayview Avenue
Toronto, Ontario M4N 3M5

Phone: 416-480-4055
Fax: 416-480-6048
Email: info@ices.on.ca

www.ices.on.ca

