Institute for Clinical Evaluative Sciences

ANNUAL REPORT 14/15

ICES

About the Institute for Clinical Evaluative Sciences

Population-based health research that makes a difference

The Institute for Clinical Evaluative Sciences (ICES) leads cutting-edge studies that evaluate health care delivery and outcomes. ICES researchers access a vast and secure array of Ontario's health-related data, including population-based health surveys, anonymous patient records, as well as clinical and administrative databases. ICES goes to great lengths to protect privacy and is recognized as an international leader in maintaining the privacy and security of health information.

WORLD-CLASS RESEARCH TEAMS

ICES is a community of research, data and clinical experts. Many ICES scientists are internationally recognized and a number of them are practicing clinicians who understand the everyday challenges of health care delivery. They lead multidisciplinary teams that include expert statisticians and epidemiologists, as well as specialists in knowledge translation and information security, privacy and information technology. The diversity within these teams and their expertise at using ICES' outstanding array of linked datasets is the foundation of the innovative approach to research at ICES.

IMPACT

ICES research results in an evidence base that is published as atlases, investigative reports and peer-reviewed papers, and is used to guide decision-making and inform changes in health care policy and delivery. Many ICES reports are undertaken to answer specific questions (known as Applied Health Research Questions) posed by health system stakeholders and policy-makers. ICES research and reports influence the design, implementation and evaluation of health policy and the delivery of health care. ICES studies and reports are highly regarded in Canada and abroad.

INDEPENDENCE

ICES is an independent not-for-profit corporation, and takes pride in its international reputation as a trusted, impartial and credible source of high quality health and health services research and evidence. ICES receives core funding from the Ontario Ministry of Health and Long-Term Care. ICES faculty and staff have highly successful track records competing for peer-reviewed grants from federal agencies, such as the Canadian Institutes of Health Research, and from provincial as well as international funding bodies.

A GROWING NETWORK ACROSS ONTARIO

ICES Central is located on the campus of Sunnybrook Health Sciences Centre in Toronto. It has physical satellite sites at Queen's University in Kingston (ICES Queen's), at the University of Ottawa (ICES uOttawa), at the University of Toronto (ICES UofT) and at Western University in London (ICES Western). Additional satellite sites are in development at McMaster University (ICES McMaster) and at Laurentian and Lakehead Universities (ICES North).

Table of contents

Letter from the senior leadership

Dr. Michael Schull, President and CEO

Dr. Michael Baker, Chair, Board of Directors

This past year ICES continued to deliver on its mission to turn data into trusted evidence in support of better health policy, a stronger health care system and healthier Ontarians. ICES scientists and staff published an average of one peer-reviewed paper per day over the course of the year, as well as 59 Applied Health Research Question (AHRQ) reports requested by the Ontario Ministry of Health and Long-Term Care (MOHLTC) and other health system knowledge users to help guide their delivery of health care.

Our goal is research excellence, and an independent analysis of publication impact conducted by the international bibliometric organization SCImago ranked ICES first for excellence, first for normalized impact and second for high quality publications among Canadian health research institutions for 2014.

Just as important is our impact on local knowledge users; over 90% of those responding to a survey on the quality of the ICES research they had requested reported our work to be of high or very high quality. Finally, there were several examples of ICES research having an important impact on health policy (see pp. 16–21).

Other ICES goals include expanding our data holdings and increasing access to data. We advanced the first goal through expanded data linkages and collaborations, including 26 new projects using data from Citizenship and Immigration Canada; a new data partnership in community mental health services for children and youth with Kinark Child and Family Services; and a 15% increase in participation of primary care physicians in linkage of electronic medical records. Access to data increased as well; in its first year of operation, the ICES Data and Analytic Services division evaluated 109 requests for data or analytic services from non-ICES researchers from across Canada, and is moving forward with 101 of them (**see p. 13**).

Knowledge translation is another important goal. This past year we co-hosted a well-attended Mental Health and Addictions Scorecard Evaluation Framework policy/research event. Contributing to the event's success were presentations by Nancy Kennedy (Assistant Deputy Minister, Health System Strategy and Policy, MOHLTC), Aryeh Gitterman (Assistant Deputy Minister, Policy Development and Program Design, Ministry of Children and Youth Services) and Susan Pigott (Chair, Provincial Mental Health and Addictions Leadership Advisory Council).

This year we also launched an initiative to strengthen health services research and knowledge translation across Canada. In collaboration with the Manitoba Centre for Health Policy, Population Data BC, CIHI, the Saskatchewan Health Quality Council, the Newfoundland Centre for Health Information, and SPOR SUPPORT Units in Alberta, Quebec and the Maritimes, ICES led the development of a proposal to create a Pan-Canadian Real-world Health Data Network (PRHDN) that would enable cross-jurisdiction comparisons and multi-province analyses and capitalize on Canada's growing health data infrastructure. We held a very successful workshop at the annual meeting of the Canadian Association of Health Services and Policy Research and have received substantial interest from across Canada, which we will build on in the coming year.

Ensuring privacy and security of data at ICES is paramount. This year we were pleased to receive a renewal of our designation as a prescribed entity under section 45 of the Personal Health Information Protection Act after a careful review of our policies and procedures by the Information and Privacy Commissioner of Ontario (**see p. 14**).

ICES research was frequently in the news. Our studies were mentioned in 3,100 news items, and 84% of our news releases received media coverage. We also garnered a 46% increase in Twitter followers and a 20% increase in visitors to our redesigned website.

Finally, we experienced a 12% increase in grant funding and third-party revenues from 2013/14, including substantially higher-than-average CIHR operating grant success rates for ICES scientists in both open competitions and foundation grants. We also gratefully acknowledge the continued support of the MOHLTC.

ICES is very fortunate to be guided by a dedicated board of directors with a strong commitment to our mission, vision and values. This was Dr. Michael Baker's last year on the Board after six years, four of them as chair. ICES is extremely grateful for his leadership, engagement, ideas, guidance and commitment to the Institute over that time. The successes of this past year are a reflection of the work of all members of the ICES community.

Dr. Michael Schull
President and CEO

Dr. Michael Baker
Chair, Board of Directors

Our Mission, Vision & Values

ICES is a not-for-profit research institute encompassing a community of research, data and clinical experts and a secure and accessible array of Ontario's health-related data.

ICES MISSION

Our mission is research excellence resulting in trusted evidence that makes policy better, health care stronger and people healthier.

ICES VISION

Our vision is to be a world-leading institute where data and discovery improve health and health care.

ICES VALUES

- **Excellence**
- **Integrity**
- **Relevance**
- **Collaboration**
- **Respect**

Board of Directors

Board of Directors, April 1, 2014 to March 31, 2015

CHAIR

Dr. Michael Baker
Professor, Faculty of Medicine, University of Toronto

DIRECTORS

Mr. Matthew Anderson
President and CEO, William Osler Health System

Ms. Anne C. Corbett
Senior Partner, Borden Ladner Gervais LLP

Ms. Helen Cromarty
Special Advisor for First Nations Health

Mr. Donald Drummond
Matthews Fellow in Global Public Policy and Adjunct Professor, School of Policy Studies, Queen's University

Dr. Colleen M. Flood
Canada Research Chair in Health Law and Policy and Associate Professor, Faculty of Law, University of Toronto

Mr. Murray Glendining
President and CEO, London Health Sciences Centre

Mr. Bruce MacLellan
President and CEO, Environics Communications

Dr. Harriet MacMillan
David R. (Dan) Offord Chair in Child Studies and Professor, Departments of Psychiatry and Behavioural Neurosciences and of Pediatrics, McMaster University

Mr. Mark Rudowski
Chair, ICES Finance, Audit and Risk Committee

Dr. Catherine Zahn
President and CEO, CAMH

"Since joining the Board, I have learned that ICES is literally unique in the world. With our army of brilliant scientists, we are able to analyze data and extract valuable and unique observations that have direct impact on the health of our province and similar jurisdictions around the world. ICES has already had a major impact on patient safety by analyzing results of various policies, procedures and medication releases in Ontario."

Dr. Michael Baker

"While it is difficult to measure the impact of an organization, the increasing number of publications from ICES that prioritize gender-based analyses, coupled with the consideration of such findings by policy makers, speaks to the impact of ICES in this area."

Dr. Harriet MacMillan

"ICES has been at the forefront in linking administrative and clinical care databases in Ontario. The new Data and Analytic Services (DAS) division has the potential to spur innovation and empower individuals or organizations to find answers to health-related questions, thereby increasing the research body of knowledge." **Mr. Matthew Anderson**

"ICES is a Canadian gem with a reputation for excellence both within and outside of Canada, and is an outstanding example of what is possible with bright ideas, brilliant people and dedicated resources."

Dr. Colleen M. Flood

"The contribution of ICES to evidence-based decision-making will support the ability of those in a position to set policy to ensure that they are making decisions that provide the best value for money to ensure quality health care for Ontarians." **Ms. Anne C. Corbett**

"The ability of ICES to link health, education, social services, welfare and other data sets for all Ontarians is unique. We need to use this resource to improve the health of our province and make better informed policy and resource allocation decisions." **Mr. Murray Glendining**

"ICES has the ear of policy makers, government and health care leaders. The organization is a trusted guardian and shepherd of population-based health information with unlimited potential to guide the direction of health care." **Dr. Catherine Zahn**

2014/15 Year in Numbers

397
staff and scientists

OUR PEOPLE

187
scientists — 1.6% increase over 2014

210
staff — 5.5% increase over 2014

40%
of ICES scientists work from satellite sites

533
graduate students and post-graduate trainees

71
new salary support and scientific achievement awards received by ICES scientists

Canadian Institutes of Health Research (CIHR):

29%
operating grant success rate; higher than national average (19%).

23%
foundation grant success rate; twice the national average (11%).

5
sites across Ontario

7
research programs

RESEARCH CAPACITY

78
data holdings available for use (9 new in 2014)

180
data sharing agreements executed

120
local, provincial, national and international collaborations

10
primary data collection studies involving 236 institutions

485,134
electronic medical records (EMRs) collected (15% increase over 2014)

360
participating EMR physicians (15% increase over 2014)

42
participating EMR clinics (11% increase over 2014)

348
new projects initiated
(10% increase over 2014)

KNOWLEDGE GENERATION

724
active projects

354
peer-reviewed publications

32
non-peer-reviewed publications and reports

10%
ranked in top 10% internationally for publication impact*

59
Applied Health Research Question (AHRQ)** requests (37% increase over 2014) — exceeds annual target of 40 set by MOHLTC

102
requests to ICES' new Data & Analytic Services (DAS) division — exceeds annual target of 40 set by MOHLTC

4,918
Twitter followers
(46% increase from 2014)

KNOWLEDGE TRANSLATION

20%
increase in visits to the redesigned ICES website

55
news releases issued, with 84% media uptake

53%
of media coverage was international

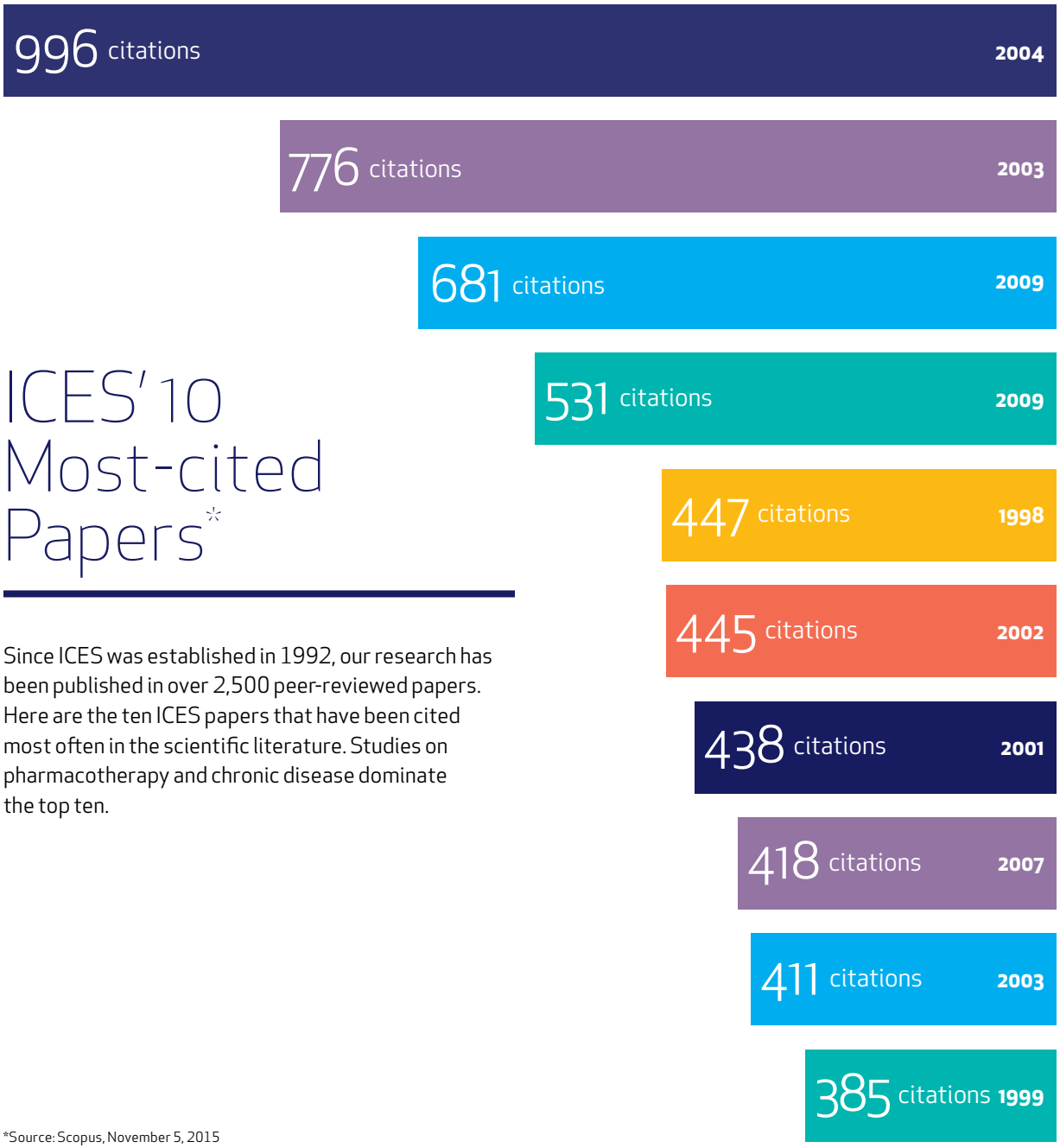
570
presentations by ICES scientists (42% international)

3,096
media hits

*SCImago Institutions Rankings based on Scopus data.
**An AHRQ is a question posed by a health system policy maker or provider — a knowledge user — in order to obtain research evidence to inform planning, policy and program development that will benefit the entire Ontario health system.

ICES' 10 Most-cited Papers*

Since ICES was established in 1992, our research has been published in over 2,500 peer-reviewed papers. Here are the ten ICES papers that have been cited most often in the scientific literature. Studies on pharmacotherapy and chronic disease dominate the top ten.



Rates of hyperkalemia after publication of the Randomized Aldactone Evaluation Study. Juurlink DN, Mamdani MM, Lee DS, Kopp A, Austin PC, Laupacis A, Redelmeier DA. *New England Journal of Medicine*. **Read**

Predicting mortality among patients hospitalized for heart failure: derivation and validation of a clinical model. Lee DS, Austin PC, Rouleau JL, Liu PP, Naimark D, Tu JV. *JAMA*. **Read**

Association of colonoscopy and death from colorectal cancer. Baxter NN, Goldwasser MA, Paszat LF, Saskin R, Urbach DR, Rabeneck L. *Annals of Internal Medicine*. **Read**

A population-based study of the drug interaction between proton pump inhibitors and clopidogrel. Juurlink DN, Gomes T, Ko DT, Szmitko PE, Austin PC, Tu JV, Henry DA, Kopp A, Mamdani MM. *CMAJ*. **Read**

The treatment of unrelated disorders in patients with chronic medical diseases. Redelmeier DA, Tan SH, Booth GL. *New England Journal of Medicine*. **Read**

Diabetes in Ontario: determination of prevalence and incidence using a validated administrative data algorithm. Hux JE, Ivis F, Flintoft V, Bica A. *Diabetes Care*. **Read**

Mortality among patients admitted to hospitals on weekends as compared with weekdays. Bell CM, Redelmeier DA. *New England Journal of Medicine*. **Read**

Relationship between adherence to evidence-based pharmacotherapy and long-term mortality after acute myocardial infarction. Rasmussen JN, Chong A, Alter DA. *JAMA*. **Read**

Drug-drug interactions among elderly patients hospitalized for drug toxicity. Juurlink DN, Mamdani M, Kopp A, Laupacis A, Redelmeier DA. *JAMA*. **Read**

Effects of socioeconomic status on access to invasive cardiac procedures and on mortality after acute myocardial infarction. Alter DA, Naylor CD, Austin P, Tu JV. *New England Journal of Medicine*. **Read**

*Source: Scopus, November 5, 2015

Advances in First Nations and Métis health research


Jennifer Walker

"We're moving forward on significant research projects using these robust, linked data sets, and always prioritizing Indigenous knowledge, research ethics and governance in our partnerships with First Nations and Métis organizations."

ICES is privileged to hold robust health data for First Nations and Métis communities in Ontario. The available data and governance agreements enable First Nations and Métis organizations and communities to conduct high-quality health research in collaboration with ICES. We ensure that the work that we do is relevant to community priorities by responding to community requests for data, working in partnership to build evidence-based health research capacity at all stages, from initial planning to knowledge sharing.

With the Métis Nation of Ontario, ICES holds data for 14,000 Métis citizens that have been matched to the ICES data repository, creating the largest linkable sample of Métis in Ontario. In the past year, ICES also worked with the Chiefs of Ontario to match their registry to health data, making it possible to research the health of the over 200,000 First Nations people in Ontario, the largest data set of this kind in Canada.

HIGHLIGHTS OF 2014/15

Word is getting out among First Nations organizations and communities about ICES' extensive data holdings and services, and we've received increasing numbers of ARHQ requests from these partners. This year alone, we collaborated with communities to look at a variety of health challenges, including diabetes, asthma, COPD, cardiovascular disease and arthritis. It's exciting to work with individual communities to support their needs as they build their own knowledge and capacity in advancing the health of their citizens.

ON THE HORIZON

While ICES will continue to serve the community-driven AHRQ requests for data, our scientists have also received funding for two significant research projects that will closely involve the First Nations people in Ontario, with representatives from First Nations organizations and communities as collaborators. One project, funded by the Ontario SPOR SUPPORT Unit (OSSU), will examine diabetes trends; the second, funded by the Canadian Institutes of Health Research, will investigate aging, multimorbidity and frailty. So we're moving forward on significant research projects using these robust, linked data sets, and always prioritizing Indigenous knowledge, research ethics and governance in our partnerships with First Nations and Métis organizations.

– Jennifer Walker, Scientist

Innovative methodology for high-quality analyses


Peter Austin

"We will continue to see the impact of ICES in the field of propensity score methodology, since it is integral to much of our health research."

Over the course of more than two decades, ICES scientists have developed strong methodological approaches that produce high-quality analyses of our robust health data holdings. ICES scientists are world recognized for their skills, and our research capacity includes a broad range of technical and methodological advances.

ICES' methodological knowledge, expertise and best practices are helping to advance patient health outcomes by ensuring the high quality of our health research. Additionally, our scientists' refinement of methodological practices is helping to cultivate the next generation of researchers, both in Ontario and around the world.

HIGHLIGHTS OF 2014/15

Methodology advances incrementally, building upon and refining foundational knowledge over many years. However, each year we see evidence of ICES' strong international impact. For example, a set of seven ICES papers on propensity score methods that were published between 2006 and 2013 are each currently ranked among the top 50 most-cited papers published in the statistical literature in their year. Taken together, these papers speak to a body of methodological research produced by ICES that other researchers worldwide have grown to appreciate and are applying in their own work. It is gratifying to see our work being steadily written into the wider canon.

ON THE HORIZON

We will see propensity score methods being used with new types of data and to address increasingly complex questions. And as time goes on, there will be an increasing interest in machine learning methods for classification and prediction when using complex data, and the use of evolving methods for pattern recognition — this is the stuff of big data, and it's an exciting future.

– Peter Austin, Senior Scientist

Leveraging and expanding access to our data


Refik Saskin

"In response to the growing demand, we continue to hire analysts to expand our capacity and cadre of talent. Looking to the future, we have begun to explore the possibility of extending our services outside of Canada."

Launched in March 2014, our Data and Analytic Services division (ICES DAS) seeks to improve access to Ontario's health administrative data and increase research capacity across Ontario and Canada.

As part of the Ontario SPOR SUPPORT Unit (OSSU), ICES DAS provides researchers with secure access to research-ready, linked health administrative data and analytic tools through a secure virtual desktop.

As of March 31, 2015, DAS data sets included:

- Continuing Care Reporting System
- Hospital Discharge Abstract Database
- ICES-derived cohorts
- National Ambulatory Care Reporting System
- Ontario Cancer Registry
- Ontario Drug Benefit Claims
- Ontario Health Insurance Plan Claims Database
- Population and demographic data
- Registered Persons Database

HIGHLIGHTS OF 2014/15

One of the first DAS projects assessed the complications of surgery before and after the introduction of surgical checklists for pediatric patients. This work, which built on existing ICES research among adults, has led to several abstracts and papers that are under peer review. The sheer volume of requests for DAS in its first year has been staggering, and confirms the niche DAS fills for the research community. What's more, we're already seeing repeat requests, indicating solid researcher satisfaction with our services.

ON THE HORIZON

In response to the growing demand, we continue to hire analysts to expand our capacity and cadre of talent. Looking to the future, we have begun to explore the possibility of extending our services outside of Canada. This will require some groundwork in renegotiating data sharing agreements with our partner agencies, but will provide us with exciting international opportunities. We're also looking at enhancing our portfolio of data sets to provide policymakers and health care practitioners with a wider array of evidence to improve patient health.

– Refik Saskin, Staff Scientist

Privacy is central to everything we do at ICES

Laura Davison

"We will continue to ensure that privacy is fully embedded in the ICES research culture and design, as we continue to expand and build our data sets and partnerships. This work never stops and is fundamental to everything we do at ICES."

ICES has a special designation under Section 45 of Ontario's Personal Health Information Protection Act, as one of only four 'Prescribed Entities' in the province. This designation is granted by the Information and Privacy Commissioner of Ontario (IPC) and allows ICES to collect and use personal health information of Ontario patients for the purpose of health services research. Based on a thorough review of ICES privacy practices, the designation is subject to ongoing IPC oversight and renewal every three years.

ICES deploys a variety of measures to protect the information entrusted to us. Physical security measures, technological safeguards such as encryption, and a robust framework of policies and procedures work together to protect the Ontario patient data that is stored and used at ICES.

HIGHLIGHTS OF 2014/15

At the end of October, the IPC finalized and approved the renewal of ICES' designation as a prescribed entity, after an extensive review. The ICES report informing this decision has been underway since the IPC introduced new requirements in 2010, and so receiving this approval was the culmination of extensive work at ICES and with our partners over the past several years. Ensuring that we have the full confidence of the IPC in doing our work is essential to protecting our status as a prescribed entity, without which we simply could not conduct our work.

ON THE HORIZON

We will continue to ensure that privacy is fully embedded in the ICES research culture and design, as we continue to expand and build our data sets and partnerships. This work never stops and is fundamental to everything we do at ICES. It's our passionate belief that privacy is not a barrier to facilitating great research but, in fact, makes it possible. Without public trust in our privacy measures at ICES, as overseen by the IPC, we would not have the privilege of accessing the rich and robust patient data that enables us to produce the trusted data-driven evidence that makes policy better, health care stronger and people healthier.

– Laura Davison, Chief Privacy Officer

Expanding data partnerships for innovative research


Karey Iron

"We are continuing to focus on new ways in which encrypted data between organizations can be securely linked for research purposes."

ICES is continually expanding the collection of new data that can be added to our already large data repository. This growth is driven by the expanding interests of our scientists who combine data sets to extend their innovative academic scope further into new areas of investigation.

Entrusted with guiding this data expansion is the ICES Data Partnerships and Development (DPD) team, which supports the ICES strategic plan by fostering and managing partnerships for the collection, use and disclosure of data through collaborative data sharing initiatives and agreements.

HIGHLIGHTS OF 2014/15

This year our team executed over 180 data sharing agreements, and at any given time we've been facilitating approximately 70 project-specific data sharing agreements and more than 30 complex multi-project data sets through collaborations with data partners. Most of these data sets originate in the Ontario health sector, but we are increasingly in discussion with non-health data partners who recognize the opportunities in linking ICES health data with theirs for expanded research opportunities. Over the year, our team also continued to manage data collection for the Health Outcomes for Better Information and Care (HOBIC) system, which contains functional status measures for over 500,000 patients from several health care settings since 2008.

ON THE HORIZON

We are also exploring new ways in which encrypted data between organizations can be securely combined for research purposes. These novel types of data linkages are particularly useful when linking data of disparate scope and breadth, or when the data sets lack common linkage points. This year DPD continued standardizing our internal processes and procedures, in partnership with our ICES colleagues and external stakeholders. We recently created a centralized tracking system for our work flows that allows us to monitor collaborations and negotiations with our partners more readily. We look forward to this new system being increasingly used to manage the flow of data at ICES, as our data holdings continue to expand.

– Karey Iron, Director, Data Partnerships and Development

RESEARCH WITH IMPACT

A sample of high-impact projects from 2014/15 illustrates the combination of clinical insight and scientific excellence that is fundamental to the impact and relevance of ICES research

Measuring the impact of health behaviours on future hospital use and health care costs

Documenting the risk of acute kidney injury with use of atypical antipsychotic medications

Recommending new colorectal cancer screening practices

Tackling the gap in mental health research for Ontario's children and youth

Highlighting the impact and importance of the Ontario Grade 8 HPV Vaccination Program

ICES study measures the impact of health behaviours on future hospital use and health care costs

ISSUE

Improving health behaviours improves life expectancy and lowers health care costs. How do unhealthy behaviours impact hospital use and health care costs?

STUDY

Studied the health status of

80,000

Ontario adults between 2001 and 2005.

Calculated five-year hospital care use attributable to:

- smoking
- poor diet
- unhealthy alcohol consumption
- physical inactivity

FINDINGS

The four unhealthy behaviours accounted for:

32% of hospital use (2001–2012)

942,000 bed-days costing $1.8 billion (2011)

The most impact on hospital use:

smoking **17%**

physical inactivity **12%**

A **54-year-old** Ontarian with the unhealthiest behaviours for all four risks had the same hospital use as a **75-year-old** with none.

People with the unhealthiest behaviour for all four risks required **280%** more bed-days (**42 more days**) than people with the healthiest behaviours.

IMPACT

This is the first time these behaviours have been assessed as a group.

An online calculator was developed to help Ontarians estimate their life expectancy and the amount of time they can expect to spend in hospital due to their lifestyle.

Hosted by BIG LIFE

131,000 entries on first day

Visited by more than **400,000** **users** from **200 countries** since launch, with more than **600,000** **calculations** completed.

Widespread uptake of the calculator has led to enhanced patient/consumer awareness and knowledge about the impacts that lifestyle and behaviour have on health.

Manuel DG, Perez R, Bennett C, Rosella L, Choi B. *900,000 Days in Hospital: The Annual Impact of Smoking, Alcohol, Diet and Physical Activity on Hospital Use in Ontario.* Toronto, ON: Institute for Clinical Evaluative Sciences; 2014.

ICES study finds risk of acute kidney injury increases with use of atypical antipsychotic medications

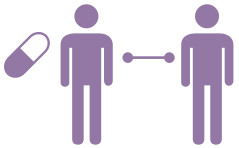
ICES Western

ISSUE

Millions of older adults worldwide are prescribed atypical antipsychotics every year to manage the behavioural symptoms of dementia. What is the risk for acute kidney injury and other adverse outcomes from these drugs?

STUDY

Studied 98,000 Ontario adults aged 65 and older prescribed an atypical antipsychotic between 2003 and 2012.



Each person was matched to another older adult who did not receive the drug.

Measured hospitalizations for acute kidney injury and other outcomes within 90 days of prescription.

FINDINGS

Atypical antipsychotic drug use is associated with increased risk of hospitalization for:

- **acute kidney injury**
- **hypotension**
- **pneumonia**
- **acute myocardial infarction**

IMPACT

The US Food and Drug Administration requested additional analyses from the **ICES Kidney, Dialysis and Transplantation Research Program**; the team was able to respond quickly and the requested data are being used to inform an update of FDA recommendations.

Health Canada has made changes to its labelling as a result of this study.

Hwang YJ, Dixon SN, Reiss JP, Wald R, Parikh CR, Gandhi S, Shariff SZ, Pannu N, Nash DM, Rehman F, Garg AX. Atypical antipsychotic drugs and the risk for acute kidney injury and other adverse outcomes in older adults: a population-based cohort study. *Ann Intern Med.* 2014; 161(4):242-8.

ICES study offers new recommendation for colorectal cancer screening practices

ICES Central

ISSUE

Regular screening using the guaiac fecal occult blood test (gFOBT) reduces mortality from colorectal cancer (CRC). While a simple written invitation may make people more likely to participate in screening, additional methods of encouraging participants to get screened may further increase uptake.

STUDY

Identified people previously invited for CRC screening via mail who had not responded.

One group received a second mailed invitation only, and one group received a second mailed invitation along with a gFOBT (stool test) kit.

Measured gFOBT screening within

6 months

of the second mailing in both groups.

FINDINGS

Participants who received a gFOBT kit with their second invitation were **twice** as likely to complete CRC screening as those who received a second written invitation alone.

IMPACT

The **ColonCancerCheck** program is considering mailing gFOBT kits along with the invitation to be screened for colorectal cancer to Ontarians at average risk (those aged 50 to 74 with no family history of CRC in a first-degree relative).

If implemented, it is anticipated that there will be an increase in colorectal cancer screening among the target population across Ontario.

Tinmouth J, Patel J, Austin PC, Baxter NN, Brouwers MC, Earle C, Levitt C, Lu Y, Mackinnon M, Paszat L, Rabeneck L. Increasing participation in colorectal cancer screening: results from a cluster randomized trial of directly mailed gFOBT kits to previous nonresponders. *Int J Cancer*. 2015; 136(6):E697-703.

ICES study tackles the gap in mental health research for Ontario's children and youth

ISSUE

- Up to 70% of mental health problems begin in childhood and adolescence.
- As many as one in five Ontarians aged 4-16 experience some form of mental health problem at any given time.
- Fewer than one in six children and youth receive the treatment they require.
- Despite the magnitude of the problem, a large gap exists in mental health research on children and youth.

STUDY

ICES developed a **mental health scorecard** to provide a snapshot of:

- the characteristics of children and youth at risk
- how mental health and addictions care is delivered to this population
- how the situation has changed over time

FINDINGS

Burden of mental health problems (e.g., **suicide, self-harm, schizophrenia**) and admissions to hospital for a variety of mental health problems are **higher in lowest income neighbourhoods**.

Increasing burden of disease for some problems, such as a four-fold increase in the prevalence of **neonatal abstinence syndrome** — a withdrawal syndrome in the babies of mothers who are using opioids or being treated for opioid dependence with methadone — over 10 years.

Worse mental health outcomes in **Northern Ontario**, including rates of suicide **six times higher** in the North West Local Health Integration Network than in the other 13 LHINs.

Increasing emergency department visits and hospitalizations for **anxiety disorders** from 2006/07 to 2011/12.

Inequities in use of **care by psychiatrists**, with children and youth from **high-income neighbourhoods** using these services most often.

IMPACT

The **first comprehensive Canadian report** describing the burden of mental health and addictions and service utilization in children and youth.

An ongoing commitment to longitudinal child and youth performance measurement and initiation of the adult strategy performance measurement framework through collaboration between the **ICES Mental Health and Addictions Research Program** and the **MOHLTC**.

The development of a **data integration plan** that is a shared, strategically important initiative between the MOHLTC and ICES with early success in bringing in new population-based sources of data.

MHASEF Research Team. *The Mental Health of Children and Youth in Ontario: A Baseline Scorecard.* Toronto, ON: Institute for Clinical Evaluative Sciences; 2015.

ICES study highlights the impact and importance of the Ontario Grade 8 HPV Vaccination Program

ICES Queen's

ISSUE

The human papillomavirus (HPV) vaccine protects against four types of HPV shown to cause cervical cancer and anogenital warts. The vaccine is offered free through school-based programs to teenaged girls across Canada. Despite this protection, use of the vaccine has been lower than needed in a number of regions. The low rates are partly attributed to fears that vaccination may increase risky sexual behaviour among adolescents.

STUDY

Followed
260,493
girls, half of whom were eligible for Ontario's publicly funded Grade 8 HPV Vaccination Program in its first two years (2007/08 and 2008/09).

Followed both groups for **4 years**.

FINDINGS

Among the **2,436 cases** of cervical dysplasia documented,
44%
fewer cases
occurred in eligible girls who received the vaccine.

One case of cervical dysplasia was prevented for every
175
eligible girls vaccinated.

There was **no significant increase in the risk of pregnancy or sexually transmitted infections** among girls given the HPV vaccine.

Concerns over increased promiscuity following HPV vaccination are **unwarranted** and should not deter from vaccinating at a young age.

IMPACT

The **Ontario Grade 8 HPV Vaccine Cohort Study** represents the first time that Ontario's immunization records were centralized and record-linked, and led to the publication of five papers in 2014/15.

This study demonstrated the importance and success of the **Ontario government's HPV immunization program** including:

- nearly 90% of girls received all **three doses** of the vaccine and the vast majority of doses were received on time
- a statistically significant increase in the proportion of girls vaccinated was related to the MOHLTC's initial decision to extend the program to Grade 9.

Although these findings are too recent to have had a direct impact, there is reason to believe they will result in increased uptake of the HPV vaccine in Ontario.

Smith LM, Strumpf EC, Kaufman JS, Lofters A, Schwandt M, Lévesque LE. The early benefits of human papillomavirus vaccination on cervical dysplasia and anogenital warts. *Pediatrics*. 2015;135(5):e1131-40.
Smith LM, Kaufman JS, Strumpf EC, Lévesque LE. Effect of human papillomavirus (HPV) vaccination on clinical indicators of sexual behaviour among adolescent girls: the Ontario Grade 8 HPV Vaccine Cohort Study. *CMAJ*. 2015; 187(2):E74-81.

FINANCIAL REPORT

Independent Auditor's Report

TO THE BOARD OF DIRECTORS OF THE INSTITUTE FOR CLINICAL EVALUATIVE SCIENCES

We have audited the accompanying financial statements of the Institute for Clinical Evaluative Sciences, which comprise the statement of financial position as at March 31, 2015 and the statements of operations and changes in net assets and cash flows for the year then ended.

MANAGEMENT'S RESPONSIBILITY FOR THE FINANCIAL STATEMENTS

Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian accounting standards for not-for-profit organizations, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

AUDITOR'S RESPONSIBILITY

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

OPINION

In our opinion, the financial statements present fairly, in all material respects, the financial position of Institute for Clinical Evaluative Sciences as at March 31, 2015 and the results of its operations and its cash flows for the year then ended in accordance with Canadian accounting standards for not-for-profit organizations.

PricewaterhouseCoopers LLP

PRICEWATERHOUSECOOPERS LLP
Chartered Professional Accountants,
Licensed Public Accountants

Statement of Financial Position

As at March 31, 2015

(in thousands of dollars)	GENERAL FUND		RESTRICTED FUND		TOTAL	
	2015	2014	2015	2014	2015	2014
	$	$	$	$	$	$
ASSETS						
Current assets						
Cash	1,963	1,350	8,624	7,051	10,587	8,401
Accounts receivable	2,249	1,848	279	3,293	2,528	5,141
Due from Sunnybrook Health Sciences Centre	—	—	—	—	—	—
Prepaid expenses	495	382	13	28	508	410
	4,707	3,580	8,916	10,372	13,623	13,952
Tangible capital assets	763	948	—	—	763	948
	5,470	**4,528**	**8,916**	**10,372**	**14,386**	**14,900**
LIABILITIES						
Current liabilities						
Accounts payable and accrued liabilities	2,092	2,300	36	248	2,128	2,548
Due to Ministry of Health and Long-Term Care	—	—	1,251	1,156	1,251	1,156
Deposit in trust	653	—	—	—	653	—
Due to Sunnybrook Health Sciences Centre	686	312	—	—	686	312
	3,431	**2,612**	**1,287**	**1,404**	**4,718**	**4,016**
Post-employment benefits other than pensions	883	716	—	—	883	716
Deferred capital grant	763	948	—	—	763	948
Deferred operating grants	128	—	7,629	8,968	7,757	8,968
	5,205	**4,276**	**8,916**	**10,372**	**14,121**	**14,648**
NET ASSETS						
General fund	265	252	—	—	265	252
	5,470	**4,528**	**8,916**	**10,372**	**14,386**	**14,900**

Statement of Operations and Changes in Net Assets

For the year ended March 31, 2015

(in thousands of dollars)	GENERAL FUND		RESTRICTED FUND		TOTAL	
	2015	2014	2015	2014	2015	2014
	$	$	$	$	$	$
REVENUE						
Grants — Ministry of Health and Long-Term Care	7,682	7,287	—	—	7,682	7,287
Interest income	63	18	—	—	63	18
Other revenue	7,371	7,817	—	—	7,371	7,817
Amortization of deferred capital grant	353	356	—	—	353	356
Amortization of deferred operating grants	—	—	8,698	7,380	8,698	7,380
	15,469	**15,478**	**8,698**	**7,380**	**24,167**	**22,858**
EXPENDITURES						
Employee costs	11,796	12,050	6,752	5,799	18,548	17,849
Contracted services	670	468	1	364	671	832
Information, technology and security	423	289	1,225	615	1,648	904
Office and general	638	628	165	70	803	698
Amortization of tangible capital assets	353	356	—	—	353	356
Professional	596	441	555	532	1,151	973
Premises	897	740	—	—	897	740
	15,373	**14,972**	**8,698**	**7,380**	**24,071**	**22,352**
EXCESS OF REVENUE OVER EXPENDITURES FOR THE YEAR	96	506	—	—	96	506
NET ASSETS — BEGINNING OF YEAR	252	—	—	—	252	—
REMEASUREMENTS OF DEFINED BENEFIT PLANS	(83)	(254)	—	—	(83)	(254)
NET ASSETS — END OF YEAR	**265**	**252**	**—**	**—**	**265**	**252**

Statement of Cash Flows

For the year ended March 31, 2015

(in thousands of dollars)	GENERAL FUND		RESTRICTED FUND		TOTAL	
	2015	2014	2015	2014	2015	2014
	$	$	$	$	$	$
CASH PROVIDED BY (USED IN)						
OPERATING ACTIVITIES						
Excess of revenue over expenditures for the year	96	506	—	—	96	506
Items not affecting cash						
Post-employment benefits other than pensions	84	47	—	—	84	47
Amortization of deferred capital grant	(353)	(356)	—	—	(353)	(356)
Amortization of deferred operating grants	—	—	(8,698)	(7,380)	(8,698)	(7,380)
Transfer from deferred operating grant	128	(23)	268	3,338	396	3,821
Amortization of tangible capital assets	353	356	—	—	353	356
Changes in non-cash working capital	305	83	2,912	(2,983)	3,217	(2,900)
	613	**613**	**(5,518)**	**(7,025)**	**(4,905)**	**(6,412)**
INVESTING ACTIVITIES						
Transfer to deferred capital grant	168	186	—	—	168	186
Purchase of tangible capital assets	(168)	(186)	—	—	(168)	(186)
	—	**—**	**—**	**—**	**—**	**—**
FINANCING ACTIVITIES						
Deferred operating grants received plus interest and other income	—	—	7,447	6,602	7,447	6,602
Deferred operating grants to Ministry of Health and Long-Term Care	—	—	(356)	(614)	(356)	(614)
	—	**—**	**7,091**	**5,988**	**7,091**	**5,988**
INCREASE (DECREASE) IN CASH DURING THE YEAR	613	613	1,573	(1,037)	2,186	(424)
CASH — BEGINNING OF YEAR	1,350	737	7,051	8,088	8,401	8,825
CASH — END OF YEAR	**1,963**	**1,350**	**8,624**	**7,051**	**10,587**	**8,401**

Contact Us

Institute for Clinical Evaluative Sciences
www.ices.on.ca
communications@ices.on.ca

ICES Central

2075 Bayview Avenue, G1 06, Toronto, Ontario M4N 3M5
Phone: 416-480-4055

ICES Queen's

Abramsky Hall, Room 208, 21 Arch Street , Kingston, Ontario K7L 3N6
Phone: 613-533-6936

ICES Western

London Health Sciences Centre, 800 Commissioners Road East, Room ELL-108, London, Ontario N6A 5W9
Phone: 519-685-8500 ext. 77852

ICES uOttawa

Ottawa Hospital, Civic Campus, 1053 Carling Avenue, Box 684, Administrative Services Building, 1st Floor, Ottawa, Ontario K1Y 4E9
Phone: 613-798-5555 ext. 1859

ICES UofT

155 College Street, Suite 424, Toronto, Ontario M5T 3M6
Phone: 416-978-5203