

Institute for Clinical Evaluative Sciences
Annual Report



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 information privacy, security and technology and in knowledge translation. The diversity within these teams and their expertise at using ICES data 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). A satellite site is scheduled to open in June 2016 at McMaster University in Hamilton (ICES McMaster) and at Health Sciences North Research Institute, the Northern Ontario School of Medicine and Laurentian University in Sudbury (ICES North).

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Letter from the President and CEO

The last several years have seen ICES make substantial progress toward achieving its strategic goals and continuing to deliver on its mission. This past year was no exception. It was notable for the tremendous productivity of our staff and scientists, numerous high impact reports we produced for our stakeholders, increased access to ICES data for non-ICES researchers across Canada, and strengthened partnerships locally, nationally and internationally.

Among our many achievements in 2015/16:

Continued excellence in research. ICES scientists and staff published 414 peer-reviewed papers (a record for us and a 17% increase from the previous year), and delivered 541 presentations (39% of these to international audiences). Our scientists continued to have substantially higher than average CIHR grant success rates, and garnered 124 awards.

Expanded ICES data holdings. New partnerships resulted in ICES receiving several important data sets, including the Ontario Laboratories Information System and the Organ Donor Registry.

Numerous other partnerships were expanded and strengthened, for example with Immigration, Refugees and Citizenship Canada.

Increased access to data and analytic services.

Access to data for non-ICES researchers also grew, with 47 Applied Health Research Question (AHRQ) projects completed for health system knowledge users and more than 116 requests received by ICES Data and Analytic Services (DAS) from non-ICES scientists during the year. In addition, ICES DAS successfully completed two studies led by private sector researchers under a pilot project launched by our board and management team. Planning was completed for the June 2016 opening of ICES McMaster, our fifth satellite site, in Hamilton, Ontario.

Strengthened ICES collaborations and partnerships.

We continued to strengthen relationships with many partners, including the Ontario Ministry of Health and Long-Term Care, Cancer Care Ontario, Health Quality Ontario, Public Health Ontario and eHealth Ontario. We undertook a number of reports at the request of Indigenous communities and Indigenous leadership, including the Chiefs of Ontario and the Métis Nation of Ontario. We partnered with national and provincial organizations to develop the Pan-Canadian Real-world Health Data Network, a distributed data network that will enable multi-province research and health system evaluation.

We will continue to build on these accomplishments in the year ahead with the support of the ICES community of research, data and clinical experts, and the vision and support of our board of directors and our new chair, Dr. Catherine Zahn. As well, we gratefully acknowledge the long-standing support of the Ontario Ministry of Health and Long-Term Care for the work of ICES.

Next year marks ICES' 25th anniversary, and we are truly excited by the opportunity to build on our successes, to help strengthen and expand Ontario's data infrastructure, and to support research and evaluation in Ontario and beyond, while continuing to focus on providing the trusted evidence needed to make policy better, health care stronger and people healthier.



Dr. Michael Schull
President and CEO



Board of Directors

April 1, 2015 to March 31, 2016

CHAIR

Dr. Catherine Zahn
President and CEO, CAMH

DIRECTORS

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

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

Dr. Colleen M. Flood
Director, Centre for Health Law, Policy and Ethics, and Canada Research Chair in Health Law and Policy, University of Ottawa

Ms. Laura Formosa
Former President and CEO, Hydro One Inc.

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

Dr. Harriet MacMillan
Chedoke Health Chair in Child Psychiatry and Professor, Department of Psychiatry and Behavioural Neurosciences and Department of Pediatrics, McMaster University

Mr. Bruce MacLellan
Chairman and CEO, Environics Communications

Ms. Kathy Watts
Former VP Finance and CFO, Hamilton Health Sciences

2015/16 Year in Numbers

OUR PEOPLE



467↑
staff and scientists
(15% increase from 2015)

208↑
scientists
(6% increase from 2015)

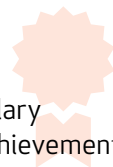
259↑
staff
(23% increase from 2015)



42%
of ICES scientists work
from satellite sites

536
graduate students
and post-graduate
trainees

69
new awards, including salary
support and scientific achievement,
received by ICES scientists



Canadian Institutes of Health Research:
32% operating grant success rate,
higher than the national average (18%)

RESEARCH CAPACITY



5
sites across
Ontario



7
research
programs

80
data holdings

287
data sharing agreements
and amendments executed

9
primary data collection studies
involving **146 hospitals**



460,781
electronic medical
records (EMRs) collected

282
participating EMR
physicians

39
participating
EMR clinics

KNOWLEDGE GENERATION



329
new projects
initiated

808 ↑
ongoing projects
(12% increase from 2015)


414 ↑
peer-reviewed publications
(17% increase since 2015)

56%
have at least one ICES staff
member as a co-author

8 
ICES
atlases
and reports

78
new Applied Health Research Question (AHRQ)*
requests from 50 unique knowledge users
— exceeds annual target of 25 set by MOHLTC

47
completed
AHRQ
requests

116 
requests to ICES Data & Analytic
Services (DAS) — nearly triple the
annual target of 40 set by MOHLTC


KNOWLEDGE TRANSLATION



25% ↑
increase in visits to the ICES website
(30% of visitors from outside of Canada)



67
news releases,
84% media uptake

225 
media hits per month
(2,697 total)

58%
of media coverage
was international



6,475 ↑ 
Twitter followers
(32% increase since 2015)

541
presentations by ICES scientists
(39% international)

*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.

Research with Impact

A selection of high-impact projects from 2015/16 that illustrate the combination of clinical insight and scientific rigour that drives ICES research.



Measuring incidence, overdiagnosis and management of thyroid cancer in Ontario



Better understanding the link between neighbourhood walkability and population-wide hypertension risk



Investigating barriers to health care for people with developmental disabilities



Demonstrating that ICES drug safety research has changed physician prescribing behaviour



Assessing need and feasibility of supervised drug consumption sites in Toronto and Ottawa

Measuring incidence, overdiagnosis and management of thyroid cancer in Ontario

ISSUE

The incidence of thyroid cancer in women is increasing at an epidemic rate in Ontario and worldwide, with evidence suggesting this is due to overdiagnosis and possibly overtreatment.



STUDY

Looked at records for all
12,959 adults diagnosed with thyroid cancer in Ontario from 1999 to 2008.


Calculated mean annual rate of diagnosis (cases/100,000), for each Local Health Integration Network (LHIN).

STAKEHOLDERS INVOLVED

- Cancer Care Ontario (CCO)
- South East LHIN

FINDINGS

112%
increase in new cases over 9 years
(1999: 893; 2008: 1,890)

80%
female 

Diagnosis rates vary among LHINs by as much as
4x (from 5.2 to 21.6; mean 11.5)

LHINs with high use of diagnostic ultrasound of neck, pelvis and abdomen

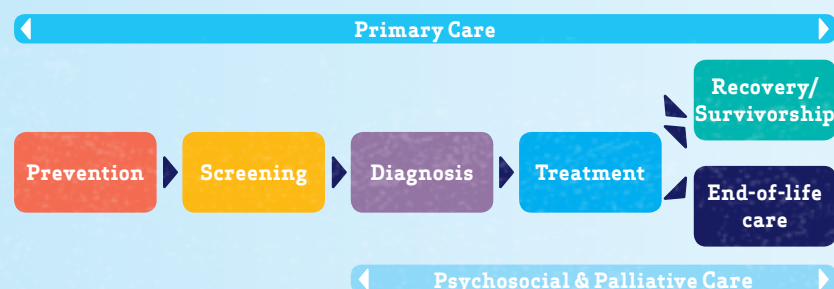
Higher diagnosis rates



LHINs with higher education rates and income

IMPACT

The cancer journey



Adapted from CCO, *The Cancer Journey*

CCO is using the data to create a disease management pathway for thyroid cancer.

LHINs are using comparative data to improve quality and resource allocation.

Health planners are using the data to understand practice patterns and identify regions where overdiagnosis may be taking place, in order to improve.

Wider system implications:

demonstrates how poor evidence and lack of policy on medical tests and treatments can distort physician behaviour, adversely affect patients and increase costs.



Better understanding the link between neighbourhood walkability and population-wide hypertension risk

ISSUE

Previous studies on neighbourhood walkability and health have been smaller and unable to adjust for important individual characteristics that may affect analyses.



STUDY

Used records from Statistics Canada's Canadian Community Health Surveys to identify and compare

1,057

people

who moved from low to high walkable areas



with

1,057

people

who moved from one low walkable area to another.



Propensity matching methodology assured that both groups were balanced in **age, income, marital status and body mass index.**

STAKEHOLDERS INVOLVED

- American Heart Association
- Heart and Stroke Foundation of Canada
- Public Health Agency of Canada

FINDINGS



Respondents who moved to a more walkable area had a **54% lower risk of hypertension** than people who moved between two low walkable areas.

Broke new ground in devising a statistical method for propensity-score matched analysis using complex survey data.

IMPACT



Presented at the **American Heart Association Scientific Sessions** and was selected for an AHA Press Conference.



Lead author Maria Chiu won the prestigious **AHA Elizabeth Barrett-Connor Young Investigator Research Award** for this work.



The new methodology led to a **peer-reviewed paper** in *Statistical Methods in Medical Research*.



Findings were disseminated to a **wide international audience** via TV, radio, print, online and social media outlets.

Chiu M, Rezai MR, MacLagan LC, Austin PC, Shah BR, Redelmeier DA, Tu JV. Moving to a highly walkable neighborhood and incidence of hypertension: a propensity-score matched cohort study. *Environmental Health Perspectives*. 2016; 124(6):754-60. ([Abstract](#))

Investigating barriers to health care for people with developmental disabilities

ISSUE

People with developmental disabilities are a highly vulnerable, difficult-to-reach population. They frequently face more health problems and have more difficulties accessing health care than other adults. They have also been challenging to identify for research purposes.



STUDY

ICES is a partner agency in the Health Care Access Research and Developmental Disabilities (H-CARDD) program, which was created to research and address disparities in health status and health care access faced by individuals with developmental disabilities in Ontario.

The H-CARDD study population is the largest of its kind internationally.



STAKEHOLDERS INVOLVED

- H-CARDD research collaborators
- Ministry of Health and Long-Term Care
- Ministry of Community and Social Services
- Autism Ontario
- Community Living Ontario
- Evidence Exchange Network for Mental Health and Addictions

ICES RESEARCH PRODUCTS

ICES partnered with the H-CARDD group to produce the *Atlas on the Primary Care of Adults with Developmental Disabilities in Ontario* (2013), a foundation for much of the H-CARDD work.



IMPACT



The relationship between ICES and H-CARDD has led to the **integration of research findings into emerging frameworks and policy directions**, as well as informing future performance measurement.



Several resources have been developed, including **toolkits, clinical supports and videos, to improve primary and emergency care**. These resources have been evaluated and are being shared across the province.



Several **peer-reviewed papers have been published** about the health needs of people with developmental disabilities on topics such as diabetes, preventive care, emergency care, frailty and pregnancy.



In February 2016, a meeting to discuss recent findings was held with **100 attendees from five ministries, the LHINs and Health Quality Ontario**.

Demonstrating that ICES drug safety research has changed physician prescribing behaviour

ISSUE

The blood thinner clopidogrel is widely used for the treatment of ischemic heart disease and stroke. Proton pump inhibitors (PPIs) are often co-prescribed to offset the risks from gastric bleeding associated with the use of blood thinners. In the late 2000s, concerns were raised of an increased risk of recurrent heart attacks in patients co-prescribed a PPI and clopidogrel.

STUDY



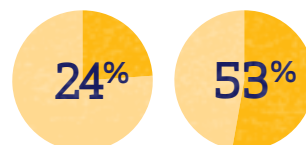
2009: A highly-publicized ICES population-wide study showed that patients who took clopidogrel following a heart attack were at significant **risk of a recurrent heart attack** if they were also taking certain PPIs. Unlike other studies, the ICES paper determined that one PPI, pantoprazole, was not tied to this higher risk.

2015: Assessed the impact of the 2009 publication on physician prescribing behaviour, in particular, on **whether there was a shift in how many patients were prescribed pantoprazole (rather than another PPI) while taking clopidogrel.**



FINDINGS

Before the 2009 study, pantoprazole represented only **24%** of all PPI prescriptions dispensed to patients receiving clopidogrel. Only nine months after the study, the proportion of pantoprazole use had rapidly expanded to **53%**.



The 2015 study demonstrated that other 2009 studies and an FDA warning about clopidogrel and PPI risk did not differentiate between PPI formulations, so this **shift could only be attributed to the extensive media attention surrounding the ICES study.**

IMPACT



Confirmed the power of ICES' large linked **data holdings to investigate system-wide temporal trends.**



Provided more clarity about the differentiated **risks of PPI formulations** for patients receiving clopidogrel.



Demonstrated that news campaigns can **influence physician prescribing behaviour.**

Juurlink DN, Gomes T, Ko DT, Szmitko PE, Austin PC, Tu JV, Henry DA, Kopp A, Mamdani MM. A population-based study of the drug interaction between proton pump inhibitors and clopidogrel. *CMAJ*. 2009; 180(7):713-8. ([Abstract](#))
Juurlink DN, Gomes T, Paterson JM, Hellings C, Mamdani MM. Trends in the coprescription of proton pump inhibitors with clopidogrel: an ecological analysis. *CMAJ Open*. 2015; 3(4):E428-31. ([Abstract](#))

Assessing need and feasibility of supervised drug consumption sites in Toronto and Ottawa

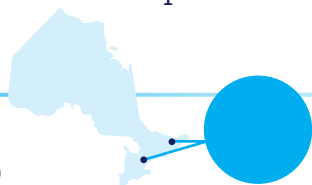
ISSUE

Supervised consumption sites are legally sanctioned spaces where people can inject illegal drugs, typically heroin or cocaine, under the supervision of trained health staff and without fear of prosecution. The sites are associated with fewer overdoses, safer needle use, more drug treatment referrals and better public order. However, implementation remains controversial.



STUDY

ICES was a research partner in the 2012 Toronto and Ottawa Supervised Consumption Assessment (TOSCA) study, which used multiple research methods to produce a report that recommended opening safe injection sites in Toronto and Ottawa, home to **roughly 50%** of all people who inject drugs in Ontario.



ICES conducted a 2015 follow-up study, published in the journal *Addiction*, which determined that establishing **up to three supervised injection facilities in Toronto and up to two in Ottawa** would be cost-effective.



STAKEHOLDERS INVOLVED

- Toronto Public Health
- Ottawa Public Health
- Ministry of Health and Long-Term Care
- Several community health agencies in Toronto and Ottawa
- Communities of people who use drugs

IMPACT



Briefings about the 2012 report were held with public health agencies, police officials, senior civil servants, municipal government officials and community groups.



The **report received national and international attention**, including extensive coverage by major Canadian and international news outlets and an invited commentary in *The Lancet*.



Conducted public opinion polling and qualitative research to determine that Ontarians' support for supervised injection services has increased, with 90% of respondents indicating support if evidence shows that these sites improve the health of people who use drugs and reduces neighbourhood problems.



Based on the TOSCA report, **Toronto's Chief Medical Officer recommended that Toronto create three safe injection sites**. Toronto City Council voted overwhelmingly to support this plan, and Ottawa's Board of Health is moving forward with a modified plan.

Financial Report

Statement of Financial Position

As at March 31, 2016

(in thousands of dollars)

	GENERAL FUND		RESTRICTED FUND		TOTAL	
	2016	2015	2016	2015	2016	2015
	\$	\$	\$	\$	\$	\$
ASSETS						
Current assets						
Cash	2,252	1,963	8,069	8,624	10,321	10,587
Accounts receivable	2,227	2,249	243	279	2,470	2,528
Prepaid expenses	561	495	26	13	587	508
	5,040	4,707	8,338	8,916	13,378	13,623
Tangible capital assets	723	763	—	—	723	763
	5,763	5,470	8,338	8,916	14,101	14,386
LIABILITIES						
Current liabilities						
Accounts payable and accrued liabilities	2,466	2,092	393	36	2,859	2,128
Due to Ministry of Health and Long-Term Care	—	—	728	1,251	728	1,251
Deposit in trust	1,342	653	—	—	1,342	653
Due to Sunnybrook Health Sciences Centre	149	686	—	—	149	686
	3,957	3,431	1,121	1,287	5,078	4,718
Post-employment benefits other than pensions	947	883	—	—	947	883
Deferred capital grant	723	763	—	—	723	763
Deferred operating grants	136	128	7,217	7,629	7,353	7,757
	5,763	5,205	8,338	8,916	14,101	14,121
NET ASSETS						
General fund	—	265	—	—	—	265
	5,763	5,470	8,338	8,916	14,101	14,386

Statement of Operations and Changes in Net Assets

For the year ended March 31, 2016

(in thousands of dollars)

	GENERAL FUND		RESTRICTED FUND		TOTAL	
	2016	2015	2016	2015	2016	2015
	\$	\$	\$	\$	\$	\$
REVENUE						
Grants — Ministry of Health and Long-Term Care	7,934	7,682	—	—	7,934	7,682
Interest income	48	63	—	—	48	63
Other revenue	7,127	7,371	—	—	7,127	7,371
Amortization of deferred capital grant	319	353	—	—	319	353
Amortization of deferred operating grants	339	—	8,313	8,698	8,652	8,698
	15,767	15,469	8,313	8,698	24,080	24,167
EXPENDITURES						
Employee costs	13,149	11,796	7,200	6,752	20,349	18,548
Contracted services	522	670	28	1	550	671
Information, technology and security	462	423	716	1,225	1,178	1,648
Office and general	709	638	108	165	817	803
Amortization of tangible capital assets	319	353	—	—	319	353
Professional	338	596	261	555	599	1,151
Premises	565	897	—	—	565	897
	16,064	15,373	8,313	8,698	24,377	24,071
EXCESS (DEFICIENCY) OF EXPENDITURES OVER REVENUES FOR THE YEAR	(297)	96	—	—	(297)	96
NET ASSETS — BEGINNING OF YEAR	265	252	—	—	265	252
REMEASUREMENTS OF DEFINED BENEFIT PLANS	32	(83)	—	—	32	(83)
NET ASSETS — END OF YEAR	—	265	—	—	—	265

Statement of Cash Flows

For the year ended March 31, 2016

(in thousands of dollars)

	GENERAL FUND		RESTRICTED FUND		TOTAL	
	2016	2015	2016	2015	2016	2015
	\$	\$	\$	\$	\$	\$
CASH PROVIDED BY (USED IN)						
OPERATING ACTIVITIES						
Excess (deficiency) of expenditures over revenues for the year	(297)	96	—	—	(297)	96
Items not affecting cash						
Post-employment benefits other than pensions	96	84	—	—	96	84
Amortization of deferred capital grant	(319)	(353)	—	—	(319)	(353)
Amortization of deferred operating grants	(339)	-	(8,313)	(8,698)	(8,652)	(8,698)
Transfer from deferred operating grant	347	128	848	268	(501)	396
Amortization of tangible capital assets	319	353	—	—	319	353
Changes in non-cash working capital	482	305	(144)	2,912	338	3,217
	289	613	(9,305)	(5,518)	(9,016)	(4,905)
INVESTING ACTIVITIES						
Transfer to deferred capital grant	279	168	—	—	279	168
Purchase of tangible capital assets	(279)	(168)	—	—	(279)	(168)
	—	—	—	—	—	—
FINANCING ACTIVITIES						
Deferred operating grants received plus interest and other income	—	—	9,459	7,447	9,459	7,447
Deferred operating grants to Ministry of Health and Long-Term Care	—	—	(709)	(356)	(709)	(356)
	—	—	8,750	7,091	8,750	7,091
INCREASE (DECREASE) IN CASH DURING THE YEAR	289	613	(555)	1,573	(266)	2,186
CASH — BEGINNING OF YEAR	1,963	1,350	8,624	7,051	10,587	8,401
CASH — END OF YEAR	2,252	1,963	8,069	8,624	10,321	10,587

Contact Us

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