

## At A Glance

June/July 2011

### Monthly highlights of ICES research findings for stakeholders

#### Lower risk of death in COPD patients taking long-acting beta agonists

Gershon A, Croxford R, To T, Stanbrook MB, Upshur R, Sanchez-Romeu P, Stukel T. Comparison of inhaled long-acting  $\beta$ -agonist and anticholinergic effectiveness in older patients with chronic obstructive pulmonary disease. *Ann Intern Med.* 2011; 154(9):583–92.

<b>Issue</b>	Medications are a mainstay of managing chronic obstructive pulmonary disease (COPD), a largely preventable respiratory condition which affects 12–20% of adults and is the fifth leading cause of death worldwide. Long-acting inhaled beta-agonists and anticholinergics are both used to treat COPD. Which medication is better for initial therapy?
<b>Study</b>	Compared all-cause mortality in 46,403 patients with COPD, aged 66 and older, who were newly prescribed either a beta-agonist or an anticholinergic in Ontario between July 2003 and March 2007.
<b>Key Findings</b>	Overall mortality was 38.2%. Compared to patients prescribed beta-agonists, those taking anticholinergics were 14% more likely to die, 13% more likely to be hospitalized for COPD and 9% more likely to visit the emergency department (ED) for COPD. They were also more likely to be hospitalized or visit the ED for conditions exacerbated by COPD, such as pneumonia or influenza.
<b>Implications</b>	Further research is needed to confirm these findings in younger patients and in randomized controlled trials and to examine the relative safety profiles of these medications.

#### End-of-life care for lung cancer patients differs in Ontario and the United States

Warren JL, Barbera L, Bremner KE, Yabroff KR, Hoch JS, Barrett MJ, Luo J, Krahn MD. End-of-life care for lung cancer patients in the United States and Ontario. *J Natl Cancer Inst.* 2011; 103(11):853–62.

<b>Issue</b>	Both Canada and the US offer government-financed health insurance for the elderly, but it is not clear how end-of-life care differs for cancer patients in the two systems.
<b>Study</b>	Used US Surveillance, Epidemiology and End Results (SEER)–Medicare data and the Ontario Cancer Registry to compare end-of-life care for patients aged 65 and older with non-small cell lung cancer who died between 1999 and 2003 in the US (n=13,533) and Ontario (n=8,100). Compared data on chemotherapy, ED use, hospitalizations and supportive care for short-term (<6 months) and longer-term ( $\geq$ 6 months) survivors.
<b>Key Findings</b>	Patients in both systems used health care services extensively, especially in the last month of life. Rates of chemotherapy were higher in the US than in Ontario for every month before death. In short-term survivors at 5 months before death, 33.2 US vs. 9.5 Ontario patients per 100 person-months (PMs) received chemotherapy. In longer-term survivors at 5 months before death, 24.4 US vs. 14.5 Ontario patients per 100 PMs received chemotherapy. During the last 30 days of life, more patients were hospitalized in Ontario compared to the US: 78.6 vs. 49.9 patients per 100 PMs for short-term survivors and 67.1 vs. 44.1 patients per 100 PMs for longer-term survivors.
<b>Implications</b>	The lack of a formal hospice program in Ontario may account for differences in hospital and emergency department use between the two systems; however, treatment differences may reflect differing attitudes between the US and Ontario regarding end-of-life care.

#### Less than half of patients with multiple sclerosis continually adhere to drug therapies

Wong J, Gomes T, Mamdani M, Manno M, O'Connor PW. Adherence to multiple sclerosis disease-modifying therapies in Ontario is low. *Can J Neurol Sci.* 2011; 8(3):429–33.

<b>Issue</b>	Disease-modifying drugs (DMDs) for the treatment of multiple sclerosis (MS) have been shown to slow disease progression if taken chronically. Large-scale studies on adherence to these drugs have not been conducted previously in Ontario.
<b>Study</b>	Identified 682 Ontario Drug Plan beneficiaries aged 15 or older who were newly treated with one of four DMDs between April 2006 and March 2008: intramuscular interferon beta-1a, subcutaneous interferon beta-1a, subcutaneous interferon beta-1b or glatiramer acetate.
<b>Key Findings</b>	Cumulative persistence rates for all four DMDs were similar over time, ranging from 73.6–79.1% at six months, 59.1–63.1% at one year and 41.5–47.4% at two years. After two years, the proportion of patients who had discontinued treatment, switched to another DMD or died was similar among the DMDs.
<b>Implications</b>	Low adherence to self-injected MS DMDs is consistent with other international reports and with reported low adherence rates for other chronic diseases. Future studies may shed light on adherence rates for oral DMDs.

## Improving system efficiency by implementing stroke best practices

Hall R, Khan F, O'Callaghan C, Meyer S, Fang J, Hodwitz K, Bayley M. *Ontario Stroke Evaluation Report 2011: Improving System Efficiency by Implementing Stroke Best Practices*. Toronto: Institute for Clinical Evaluative Sciences: 2011.

<b>Issue</b>	Best practices are well established for stroke prevention and care, both in Canada and internationally. What progress has been made in implementing best practices to optimize outcomes for Ontario stroke patients?
<b>Study</b>	Reviewed stroke and transient ischemic attack (TIA) across the care continuum, including stroke prevention, emergency department (ED) care, acute inpatient care, inpatient rehabilitation and home care services, in Ontario from 2003/04 to 2009/10. Presented 20 key indicators of stroke care across the province's 14 Local Health Integration Networks (LHINs) in the form of report cards.
<b>Key Findings</b>	<ul style="list-style-type: none"> <li>• In 2008/09, almost 90% of patients received neuroimaging within 24 hours of arrival at hospital.</li> <li>• Only one in three stroke victims arrived at hospital in time to be considered for therapy, such as stroke thrombolysis, that would dramatically improve outcomes.</li> <li>• There was wide variation across LHINs in access to inpatient rehabilitation, and patients requiring community-based rehabilitation received inadequate service levels.</li> <li>• Among the 14 LHINs, 11 had one to four indicators exhibiting exemplary performance.</li> <li>• Despite Ontario's aging population, there was a decrease in the rate of ED visits and in hospital stays for stroke or TIA between 2003/04 and 2009/10.</li> <li>• Specialized stroke centres were much more likely to provide stroke care best practices, including: access to stroke thrombolysis, admission to stroke units, and discharge to inpatient rehabilitation.</li> <li>• Despite a two-day reduction in wait time for inpatient rehabilitation in 2009/10 compared to 2003/04, access to inpatient rehabilitation decreased for severely disabled stroke patients .</li> </ul>
<b>Implications</b>	The Ontario Stroke System has continued to make significant gains in the implementation of many stroke best practices; however there has been minimal change in the public's responsiveness to the onset of the signs and symptoms of stroke, clinical management of atrial fibrillation, and availability of community-based services.

## Myocardial perfusion imaging predicts cardiovascular outcomes

Lee DS, Verocai F, Husain M, Al Khdaif D, Wang X, Freeman M, Iwanochko RM. Cardiovascular outcomes are predicted by exercise-stress myocardial perfusion imaging: impact on death, myocardial infarction, and coronary revascularization procedures. *Am Heart J*. 2011; 161(5):900–7.

<b>Issue</b>	Exercise stress testing is used to detect coronary artery disease. Adding myocardial perfusion imaging (MPI) makes it a lengthier, more costly diagnostic test. Does MPI enhance the prognostic value of stress testing?
<b>Study</b>	Examined 9,605 patients aged 18 years or older who underwent exercise-stress MPI from January 2003 to March 2007 at one Ontario hospital and determined the impact of summed stress score (SSS) and percent left ventricular (LV) ischemia on a) death or myocardial infarction (MI), and b) a composite measure of death, MI or late coronary revascularization (occurring more than 90 days following MPI).
<b>Key Findings</b>	During 35,007 person-years of follow-up, there were 290 deaths, 175 MIs and 525 coronary revascularization procedures. Of those who attained an exercise workload of $\geq 10$ metabolic equivalents, major stress perfusion defects ( $SSS \geq 7$ ) were present in 4.2% overall and in 3.7% without ST-segment shifts, whereas large ischemic defects ( $\geq 10\%$ LV ischemia) were present in 1% overall and 0.7% without ST-segment shifts. For those with 1–4%, 5–9% and $\geq 10\%$ LV ischemia, the risk of death, MI or revascularization was 1.5-, 2.4- and 4.9-fold higher, respectively, than in those with no ischemia. Summed stress scores $\geq 7$ were associated with a 57% increased risk of death or MI, compared to those with no stress perfusion defects.
<b>Implications</b>	MPI provides additional prognostic information beyond traditional exercise stress testing in some patients. Since it entails radiation exposure, MPI should be performed after considering the absolute benefit of study findings and the role of the additional information provided in changing patient management.

*ICES is an independent, non-profit organization that conducts research on a broad range of topical issues to enhance the effectiveness of health care for Ontarians. Internationally recognized for its innovative use of population-based health information, ICES research provides evidence to support health policy development and changes to the organization and delivery of health care services.*