

At A Glance

September 2012

Monthly highlights of ICES research findings for stakeholders

Work environment with no job control may put women at risk of diabetes

Smith PM, Glazier RH, Lu H, Mustard CA. The psychosocial work environment and incident diabetes in Ontario, Canada. *Occup Med.* 2012; 62(6):413–9.

- Issue** As the prevalence of diabetes increases in Canada, it is important to identify modifiable factors that might increase or decrease the risk of developing this chronic illness. Is there a relationship between psychosocial work conditions and risk of diabetes?
- Study** Identified 7,443 Ontario respondents of the 2000/01 Canadian Community Health Survey aged 35 to 60 who were actively employed (worked more than 10 hours a week for more than 20 weeks in the last year) and had no previous diagnosis for diabetes. Linked their physician services and hospital admission records over a nine-year period.
- Key Findings** Women with low job control (i.e., little ability to use their skills and little authority to make decisions) were twice as likely to develop diabetes as women with high job control. No relationship was found between psychosocial work environment and diabetes risk among men. High levels of social support were also found to be associated with increased diabetes risk among women but not among men.
- Implications** Job control could be an important modifiable risk factor for diabetes among female workers. Additional research is required to understand how social support may protect against the development of diabetes in women.

Incidence of heart failure declining among Ontario seniors but prognosis remains poor

Yeung DF, Boom NK, Guo H, Lee DS, Schultz SE, Tu JV. Trends in the incidence and outcomes of heart failure in Ontario, Canada: 1997 to 2007. *CMAJ.* 2012 Aug 20 [Epub ahead of print].

- Issue** Heart failure is a major cause of admission to hospital and is associated with a poor long-term prognosis. Has there been progress in reducing the burden of heart failure among Ontarians?
- Study** Examined hospital admission data and Ontario Health Insurance Plan (OHIP) physician claims for ambulatory data to identify a cohort of 419,551 incident cases of heart failure between April 1997 and March 2008. Based on patient location at the time of diagnosis, all individuals were classified as either inpatients or outpatients and their subsequent outcomes were tracked over time.
- Key Findings** Age- and sex-standardized incidence of heart failure decreased by 32.7% during the study period. A comparable decrease occurred in both the inpatient and outpatient groups, but inpatients had more health issues overall. One-year mortality rates also declined in both groups, but results were not statistically significant. Sex-standardized heart failure incidence increased with age but decreased over time, with the greatest decline in patients over age 85.
- Implications** Significant decline in rates of heart failure may be due to increased preventive efforts to reduce smoking rates and better control blood pressure and blood cholesterol. However, the prognosis for patients with heart failure remains poor and is associated with high mortality. The decrease in heart failure incidence may level off as the population ages and risk factors, such as diabetes and obesity, become more prevalent.

Cost of adverse drug reactions among elderly Ontarians exceeds \$13 million annually

Wu C, Bell CM, Wodchis WP. Incidence and economic burden of adverse drug reactions among elderly patients in Ontario emergency departments: a retrospective study. *Drug Saf.* 2012; 35(9):769-81.

- Issue** Due to a rapid rise in the availability and use of prescription drugs, the incidence of adverse drug reactions (ADRs) is increasing, particularly among seniors. What is the incidence rate and overall cost of emergency department (ED) visits related to ADRs?
- Study** Used International Classification of Disease (ICD) codes to identify ADR-related ED visits for all adults aged 66 and older between April 2003 and March 2008 and estimated the resulting costs.
- Key Findings** The total annual cost of treating ADRs in the elderly was found to be \$13.6 million in Ontario, or an estimated \$35.7 million in Canada. Severe ADRs were associated with recent hospitalization, multiple drugs, multiple pharmacies and residing in a long-term care (LTC) home. The researchers believe their results underestimate the incidence and economic costs of ADRs.
- Implications** ADRs threaten patient safety and result in a large economic burden. Additional research is required to better understand how to protect the health of patients taking multiple drugs, particularly LTC residents.

Ontario hospitals reduce *C. difficile* infection rate after public reporting introduced

Daneman N, Stukel TA, Ma X, Vermeulen M, Guttman A. Reduction in *Clostridium difficile* infection rates after mandatory hospital public reporting: findings from a longitudinal cohort study in Canada. *PLoS Med.* 2012; 9(7):e10001268.

Issue	<i>Clostridium difficile</i> (<i>C. difficile</i>) is the most frequent cause of infectious diarrhea in Canadian hospitals and long-term care (LTC) facilities. The elderly, those with other illnesses, and those taking antibiotics or cancer chemotherapy are at greatest risk for <i>C. difficile</i> infection. Was mandatory public reporting of <i>C. difficile</i> infection, introduced on September 1, 2008 in Ontario, associated with a decrease in rates of hospital infection?
Study	Identified all patients older than one year who were admitted to 180 acute care hospitals in Ontario between April 2002 and March 2010. Calculated hospital- and age-specific monthly rates of <i>C. difficile</i> per 10,000 patient-days prior to and after public reporting was introduced.
Key Findings	Rates of <i>C. difficile</i> increased from 7.01 per 10,000 patient-days in 2002 to 10.79 in 2007. Rates did not differ by sex and were much higher in older age groups, large community hospitals and during the winter (respiratory virus) season. In the first year after public reporting, infection rates decreased to 8.92 cases per 10,000 patient-days. The 26.7% decrease in <i>C. difficile</i> cases was associated with a projected 1,970 cases averted per year. Rates of other community-acquired gastrointestinal infections and urinary tract infections were unchanged in that time period.
Implications	<i>C. difficile</i> infection poses an immense burden in Ontario. Mandatory public reporting may give <i>C. difficile</i> greater prominence on hospital quality improvement agendas and motivate hospitals to adhere more closely to best practices for prevention, such as patient isolation and environmental cleaning.

Common antibiotics pose a rare risk of severe liver injury in older patients

Paterson JM, Mamdani MM, Manno M, Juurlink DN; for the Canadian Drug Safety and Effectiveness Research Network. Fluoroquinolone therapy and idiosyncratic acute liver injury: a population-based study. *CMAJ.* 2012 Aug 13 [Epub ahead of print].

Issue	Fluoroquinolones are among the most widely prescribed antibiotics in North America, often used to treat respiratory tract infections. Varied and unpredictable adverse drug reactions have led to ongoing scrutiny of their use. Recent regulatory warnings have identified one antibiotic in this class, moxifloxacin, as presenting a high risk for liver toxicity. What is the risk of acute liver injury associated with the use of moxifloxacin relative to other antibiotics?
Study	Identified Ontarians aged 66 and older with no history of liver disease who were admitted to hospital between April 2002 and March 2011 for acute liver injury within 30 days of receiving a prescription for one of five antibiotics: moxifloxacin, levofloxacin, ciprofloxacin, cefuroxime axetil or clarithromycin. For each case, selected up to 10 age- and sex-matched controls who had received a study antibiotic but were not hospitalized for acute liver injury, for a total of 1,409 controls.
Key Findings	A total of 144 patients were admitted to hospital with acute liver injury, and 88 of these patients (61%) died while in hospital. Use of moxifloxacin was associated with a more than two-fold increase in risk of acute liver injury relative to the use of clarithromycin. The risk with levofloxacin was lower but still significant. Ciprofloxacin and cefuroxime axetil were not associated with an increased risk.
Implications	While prescription and over-the-counter drugs are generally safe, adverse reactions can occur with any medication. When side effects are rare, such as in the case of drug-induced liver injury, evidence may not appear during pre-market testing. Post-market studies are important to quantify these rare risks for patients and doctors.

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.