Enhancing the effectiveness of health care for Ontarians through research

ICES Institute for Clinical Evaluative Sciences

At A Glance

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Monthly highlights of ICES research findings for stakeholders

Canadian spending on heart drugs doubles to more than $5 billion a year

Jackevicius C, Cox J, Carreon D, Tu J, Rinfret S, So D, Johansen H, Kalavrouziotis D, Demers V, Humphries K, Louise P, for the Canadian Cardiovascular Outcomes Research Team. Long-term trends in use of and expenditures for cardiovascular medications in Canada. *CMAJ.* 2009; 181(1-2): e19-e28.

Issue

Medication expenditures have become the fastest growing sector of cost within the Canadian health care system. Evaluation of the use of cardiovascular medications is important to determine the magnitude of the growth, identify which medications dominate the landscape and detect interprovincial differences in utilization.

Study

Analyzed volume and expenditure data related to prescriptions for cardiovascular medications from February 1996 to December 2006 from a database of more than 5,000 Canadian pharmacies.

Key Findings

The study found that:

- Costs for cardiac medications increased by more than 200%, exceeding $5 billion per year in 2006.
- Increasing age, risk factors (such as hypertension and diabetes) and inflation accounted for about two-thirds of the increase in costs.
- Use of new, relatively expensive medication classes, such as statins, ACE inhibitors, and angiotensin receptor blockers, accounted for almost one-third of the cost increase.
- Interprovincial differences in total expenditures portrayed a descending gradient from east to west with the largest differences in prescribing being attributed to the newer drug classes.
- If the use of cardiac medications continues to increase at the same rate, costs could reach $10.6 billion by 2020.

Implications

The rapid escalation of costs for cardiovascular drugs threatens the sustainability of public drug insurance programs. Greater emphasis on the use of cost-effective medications is essential to limit further increases. Factors influencing interprovincial differences warrant further study.

Ontario women live longer but are sicker: Project for an Ontario Women's Health Evidence-based Report (POWER) study

Bierman A, Ahmad F, Angus J, Glazier R, Vahabi M, Damba C, Dusek J, Shiller S, Li Y, Ross S, Shapiro G, Manuel D. Burden of illness. In: Bierman A (editor). *Project for an Ontario Women's Health Evidence-based Report, Volume 1*. Toronto: St. Michael's Hospital; 2009.

Issue

There is a need for comprehensive information on the burden of illness (overall health and well-being) experienced by Ontarians and how it varies depending on sex, socioeconomic status and geographical area of residence.

Study

Analyzed demographic, socioeconomic and health-related data drawn from routinely collected administrative healthcare databases, population health surveys and vital statistics datasets.

Key Findings

The study found sizeable health inequities in Ontario associated with sex, income and education, including the following:

- 39% of low-income women had two or more chronic conditions compared to 28% of women in the highest income group and 21% of higher income men.
- 28% of women with less than a high school education reported smoking compared to 8% of women with a university degree.
- 26% of women and 41% of men in the lowest income range died before age 75 compared to 19% of women and 28% of men in the highest income range.
- 35% of low-income women aged 65 and older reported their activities were limited by pain compared to 18% of higher income women in this age group.

Implications

While inequities in health between men and women are well documented, this study's findings strongly suggest that inequities between different groups of women are often larger. Socioeconomic factors including income, education, housing and environment, as well as health behaviours, must be addressed to eliminate these gaps and improve population health. The findings identify opportunities for improvement, provide objective evidence to inform priority setting and establish a baseline from which to measure progress in women's health in Ontario.

Household income influences risk of death in infants with complex medical conditions

Wang C, Guttmann A, To T, Dick P. Neighbourhood income and health outcomes in infants: How do those with complex chronic conditions fare? *Arch Pediatr Adolesc Med.* 2009; 163(7): 608–615.

Issue In a universal health insurance system, what is the association between socioeconomic status (SES) and health outcomes among infants with complex chronic conditions (CCCs), such as congenital malformations, organ disease or metabolic disorders?

Study Assigned 512,768 infants born in Ontario hospitals from April 1996 to March 2000 to a CCC or non-CCC group based on diagnoses documented at newborn discharge. Mortality and hospital admissions in the first year after discharge were correlated with the average family income level of each infant's neighbourhood at birth.

Key Findings While 2.3% of infants had at least one CCC at birth, this group accounted for 37.8% of deaths and 11.0% of hospitalizations during the first year. Infants with CCCs living in the lowest-income neighbourhoods had a 1.26-fold higher mortality risk and a 1.24-fold higher hospitalization rate compared with those living in the highest-income neighbourhoods.

Implications Universal access to health care does not protect medically vulnerable infants born in the poorest areas of Ontario from the effects of SES. Determining the reasons for these income disparities will help to target the design and implementation of more effective health care programs and policies.

Physician visits made by asthma sufferers exposed to air pollution linked to income level

Burra T, Moineddin R, Agha M, Glazier R. Social disadvantage, air pollution, and asthma physician visits in Toronto, Canada. *Environ Res*. 2009; 109(5): 567–574.

Issue What is the relationship between exposure to air pollution and physician visits by asthma sufferers of varying socioeconomic status in Toronto?

Study Analyzed medical insurance claims for children aged 1–17 and adults aged 18–64 treated for asthma by family physicians or specialists from January 1992 to December 2001 in Toronto; correlated these with air pollution and meteorological conditions, as well as patients' neighbourhood income level.

Key Findings Asthma visits for both children and adults had a significant positive association with levels of sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and particulate matter ($PM_{2.5}$). The risk ratios for individuals in the lowest income group were significantly higher than for those in the highest income group for SO_2 and $PM_{2.5}$. A socioeconomic gradient in the number of physician visits was observed among children and adults and both sexes. Among male children who had at least one asthma physician visit in 1996, 9.8% were from the lowest-income group and 3.5% were from the highest-income group.

Implications Given the high prevalence of asthma and the large number of physician visits involved in its treatment, the excess asthma visits associated with low socioeconomic status have major health care and economic resource implications. Clarifying the role of socioeconomic status in altering susceptibility to the affects of air pollution not only serves to inform revisions of air quality standards, but also to design public health interventions to reduce health impacts on sensitive subgroups of the population.

Hip and knee replacement surgery saves the health system money

Hawker G, Badley E, Croxford R, Coyte P, Glazier R, Guan J, Harvey B, Williams J, Wright J. A population-based nested case-control study of the costs of hip and knee replacement surgery. *Med Care*. 2009; 47(7): 732–741.

Issue Previous studies of total joint arthroplasty (surgery performed to relieve severe arthritis pain and restore range of motion by reconstructing a dysfunctional joint) have not compared costs and outcomes in those who have had the surgery versus those who live with the expectation of worsening arthritis.

Study Compared pre- and postoperative direct healthcare costs, arthritis severity and general health status of 183 patients with disabling hip or knee arthritis who received joint replacement surgery in Ontario between 1996 and 2003 with a matched control group of 183 patients who did not get a new hip or knee.

Key Findings The average patient age was 71 years, 77.6% were female, 35.5% had 2 or more co-existing medical conditions, and 81.5% had 2 or more joints affected. Patients who had arthroplasty reported a reduction in arthritis-related pain, and their treatment costs (calculated over a 30-week window before and after surgery) fell, on average, $278 in the months after surgery. Those who did not have arthroplasty reported rising pain scores, and their total healthcare costs rose $1,978, on average, over the same period. More than one in five patients (23.6%) did not experience improvement after surgery, and 17.1% were worse.

Implications Arthroplasty is associated with significant reductions in pain, disability and arthritis-attributable direct healthcare costs. However, there should be more careful selection of patients who receive joint replacements so that surgical intervention maximizes both the medical and economic benefits.