

Aging in Ontario: Using Population-Based Data in the Evaluation of Trends in Health System Use

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The Issue

Internationally, changing demographic patterns worry governments and engage researchers. Their main concern is the impact of population aging on the future provision of health and social services (Johri et al. 2003). Currently, 15% of the Canadian population is aged 65 years or older and by 2036, this proportion will be 24% (Statistics Canada 2010). We will need an unprecedented collaboration between health and social services to ensure timely and coordinated care for an expanding population with multiple concurrent health conditions (Canadian Institute for Health Information 2011). This will involve coordinating the care provided by a variety of healthcare providers, including home and community care, primary care, acute care hospitals (together with emergency departments), long-term care facilities and assisted-living settings. These agencies will have to manage the transitions of large numbers of patients between care systems in order to provide the best quality of care. Although population growth on its own will increase demand for these services, it is likely that the persons requiring this care will become more clinically complex over time.

The sustainability of health systems will, in part, depend on creative solutions to ensure that individuals are receiving the right care, at the right time and in the right place. This will require access to an appropriate range of community and institutional services with continuity across these settings (Williams et al. 2009). Policy makers will need to access an accurate assessment of a strategy's value and impact in order to be efficient and effective with limited resources. This requires rapid evaluation of programs to determine their effects on the health of seniors and on the healthcare system overall. Evaluations must provide information on the characteristics of successful initiatives and how best to share effective programs with other regions.

In developing metrics to evaluate programs for seniors there are attractions to using population-based databases, such as healthcare administrative databases and existing social surveys. These data can track individuals over time and across a variety of institutional settings and geographical boundaries, and allow for the comparison of regional differences in the provision of care. Often characterized as "broad but not deep," the use of

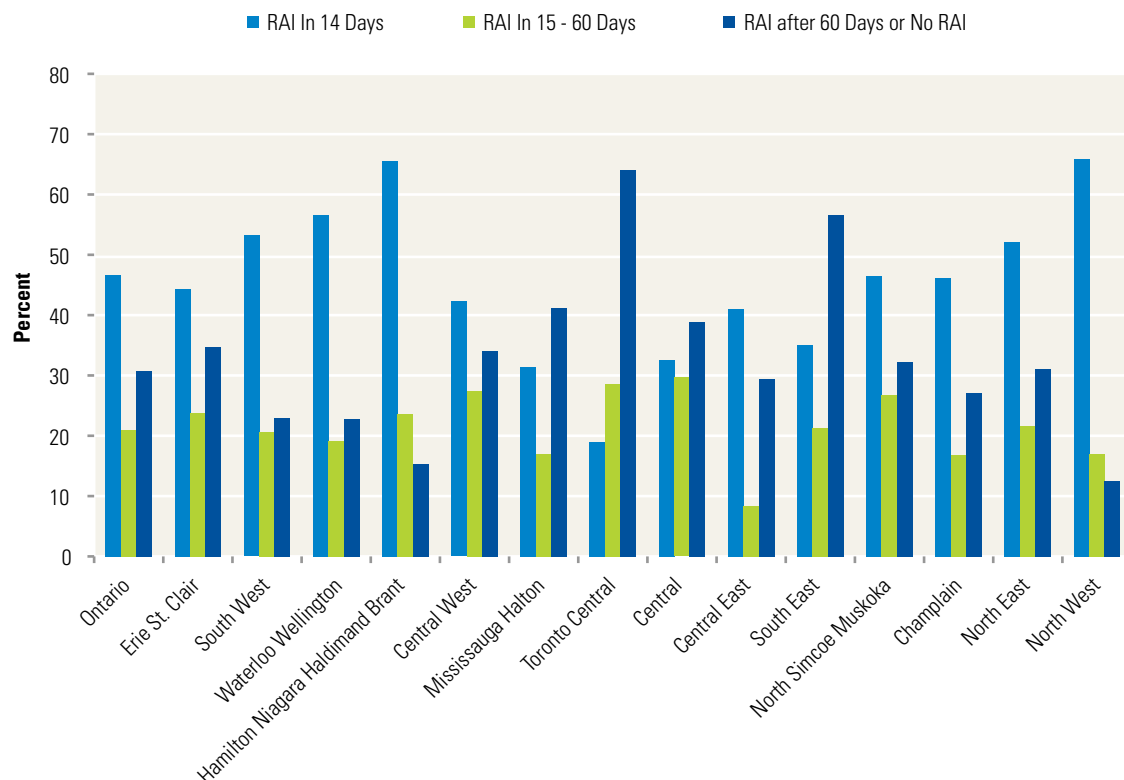
these databases is evolving over time. For instance, in Ontario, administrative data are enriched through linkage to the Resident Assessment Instrument (RAI) (Bernabei 2009; Hirdes 2006). RAI data are collected through a series of streamlined clinical assessments developed by experts in the field of study and tailored to a specific population. These are then enhanced through the development of various companion applications like quality indicators and outcome scales, designed to make the information useful to healthcare policy makers. In other cases, population-based data can be validated with electronic health records (Tu et al. 2010) or abstracted medical record data (Tu et al. 2001) and supplemented with primary data (Alter et al. 2004), which can provide greater detail than administrative data alone.

Recent initiatives by the Ontario Ministry of Health and Long-Term Care (MOHLTC) engaged Ontario's regional health planning bodies, the Local Health Integration Networks (LHINs) and other health and community support organizations in the development of innovative, community-based care. These initiatives had the dual goals of enabling seniors to live safely in their own homes and alleviating related pressures on more costly care settings, such as acute care hospitals and long-term care homes (Ministry of Health and Long-Term Care 2010). As a prelude to province-wide evaluation of these programs, the Institute for Clinical Evaluative Sciences (ICES), along with the Ontario Home Care Research Network (OHCRN), was asked to provide a system-wide "snapshot" of Ontario's health services for seniors in the form of a chartbook in the fall of 2010.

The Study

Aging in Ontario: An ICES Chartbook of Health Service Use by Older Adults (Bronskill et al. 2010) characterized Ontario seniors and their health service use over time and across LHINs, including emergency department visits, use of alternate level of care (ALC) beds in acute care settings, waiting times for home care and long-term care admission and self-perceived unmet home care needs. It also included the comparison of several population characteristics including age, gender, income quintile, immigration status and frailty. An accompanying technical report (Bronskill et al. 2010b) provided detailed infor-

FIGURE 1.
Time to client assessments: distribution of wait times in days to home care assessment among seniors designated for initial assessment, in Ontario and by LHIN, 2007-2008*



LHIN = local health integration network; RAI = resident assessment instrument.

*Technical note: Cases included all individuals who were admitted to a community care access centre as service recipient code 93 (maintenance) or 94 (long-term supportive), had a stay on service of at least 60 days and received either personal support service or at least two other types of service. This excluded cases that may have been long stay but were not complicated enough to merit an assessment. This indicator may have over-estimated proportions of individuals with no RAI-HC assessment due to identifier entry error, estimated at approximately 5% of cases.

Sources: Ontario RAI-HC Database and Home Care Database (Waterloo).

mation on the data used and the methodology behind the calculations. Both reports are available at the ICES website (http://www.ices.on.ca/webpage.cfm?site_id=1&org_id=68).

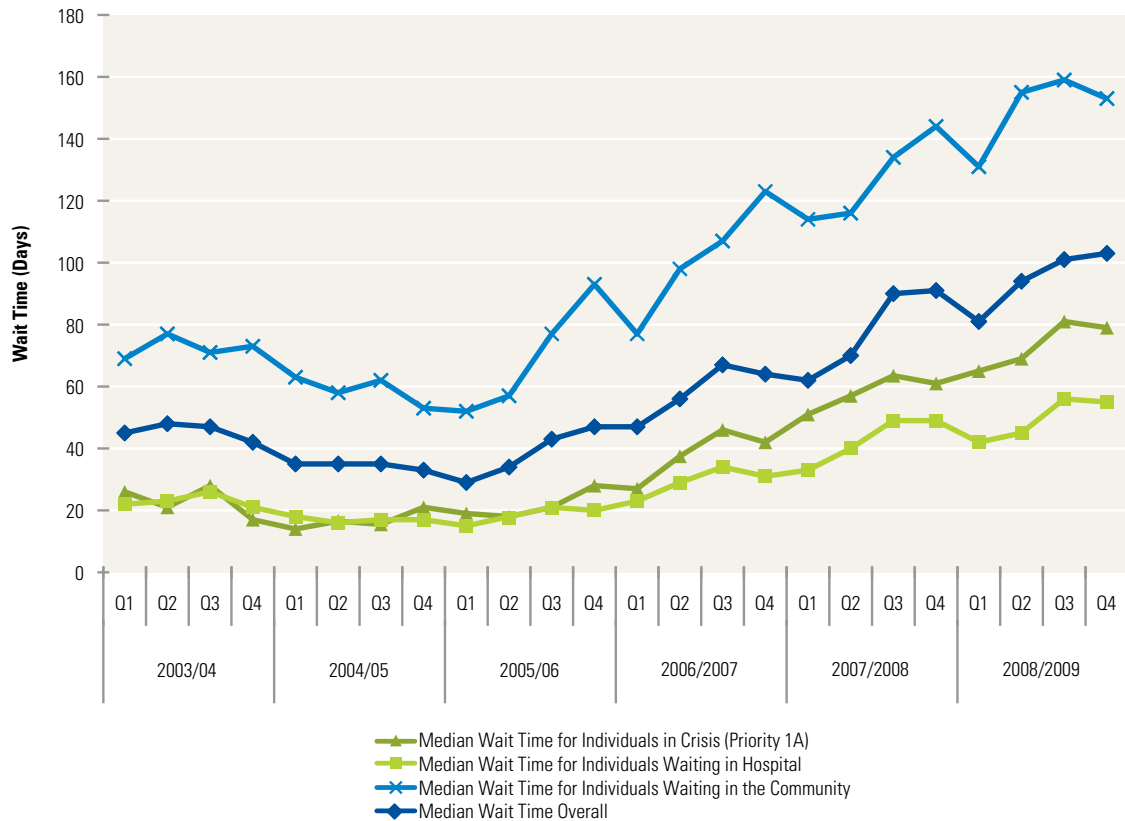
The chartbook is intended to serve two main purposes. First, it provides historical baseline data prior to (and during) the expansion of services to support Ontario seniors. This is essential information against which to compare any progress in future years and to quantify the impact of the expansion in services on the overall sustainability of the provincial health system. Second, the chartbook reports on the performance of the health system in a standardized way that allows for cross-provincial and inter-LHIN comparisons. This permits the “mechanics” of the chartbook to be adopted, adapted and shared with other organizations and promotes transparency and continuity in measurement over time.

Key Findings

The chartbook contains several important observations about the state of health and social services for seniors in Ontario:

- There were significant regional differences across Ontario in how quickly long-stay home care clients received the comprehensive, in-home assessment required to measure their care needs and provide an appropriate response. For example, the proportion of individuals waiting over 60 days for their assessments ranged from 13 to 64% across LHINs (Figure 1).
- Wait times for Ontario’s long-term care facilities increased over time, with the median wait reaching 103 days in 2009; the wait times varied more than four-fold across regions. However, individuals in crisis (median wait 79 days in 2009) or waiting in acute care (median wait 55 days in 2009) were

FIGURE 2.
Median wait time to long-term care placement for Ontario seniors in crisis, waiting in hospital, waiting in the community and overall*



Data source: Client Profile Database (Ontario Association of Community Care Access Centres)

*Technical note: Crisis (Priority 1A) defined according to Ontario Nursing Home Act. Clients waiting to transfer between LTC homes were excluded from these analyses.

placed more quickly than other applicants (Figure 2).

- Seniors aged 85 and older were more than twice as likely as their younger counterparts (aged 75–84 years) to visit an emergency room for a fall-related injury (111 versus 55 per 1,000 individuals).
- Based on the Method for Assigning Priority Levels (MAPLe) scores (Hirdes et al. 2008) – a measure of need for home care or long-term care – the proportion of individuals waiting in hospital for long-term care placement with high or very high scores ranged from 56 to 72% across the LHINs.
- The number of hospital bed days occupied by seniors designated as ALC increased over time for all age groups: by 52% for those aged 65–74 years, by 46% for those aged 75–84 years and by 34% for those aged 85 and older.

Next Steps

This chartbook represents an important first step towards a systematic and ongoing monitoring of health system use by Ontario seniors. By documenting baseline trends, essential information is available against which to compare progress in caring for seniors in future years and to improve the sustainability of the health system as a whole. ICES and its collaborators will continue to measure and report on patterns of health-system use at the provincial level in key areas related to Ontario seniors. To enable this, we will be undertaking a number of important initiatives, including the following:

- **Expanding the linked, population-based data resource.** The exhibits presented in the chartbook are those that could be readily prepared with existing provincial data holdings; significantly, the community support service sector is not

represented. In the future there will be an opportunity to build on the existing population-based resources at ICES by adding other relevant databases and collecting new information. This will result in a more comprehensive view of the health system and will provide a critical foundation for future health services planning, policy development and system performance evaluation.

- **Enriching the analytical work.** Future research will focus on identifying and following key cohorts of Ontario residents who will benefit from expanded services for older adults. This body of work, to be profiled in a series of ICES Atlases, will offer more in-depth analyses on groups such as frail older women, clinically complex seniors, those with chronic diseases such as dementia and those awaiting placement in long-term care homes. Through the linked data available at ICES, the Atlases will examine the complete continuum of care for individuals as they move across the health system and assess service use, access to care and health outcomes in these important populations over time.
- **Engaging the broader research community and planners.** ICES, OHCRN and our collaborators wish to engage with the broader research community (both those who conduct research and those who use it) as future province-level analyses proceed. The transition of Ontario seniors across community and institutional settings poses challenges not only for those providing care, but also for those conducting research, and a collaborative approach is required. As well, the alignment of the health system performance metrics used in our research with metrics used by other groups that report on the health system is critical in order to produce transparent and consistent results. It is important that political imperatives do not mandate a set of measures that are limited to health system performance. We need to include a broad and balanced assessment of the health of seniors. The aging population will continue to challenge the healthcare systems in the years ahead, but investment in an ongoing evaluation is an essential step in developing an effective response to that challenge. The chartbook is a product of that direction, designed to provide an impartial visual representation of the current state of the health system. **HQ**

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References

- Alter, D.A., K. Iron, P.C. Austin and C.D. Naylor. 2004. "Socioeconomic Status, Service Patterns, and Perceptions of Care among Survivors of Acute Myocardial Infarction in Canada." *Journal of the American Medical Association* 291: 1100–07.
- Bernabei, R., L. Gray, J. Hirdes, X. Pei, J. Henrard, P.V. Jonsson et al. 2009. "International Gerontology." In J. Halter, J.G. Ouslander, M.E. Tinetti, S. Studenski, K. High and S. Asthana, eds., *Hazzard's Geriatric Medicine and Gerontology*. New York: McGraw Medical.
- Bronskill, S.E., M.W. Carter, A.P. Costa, A.V. Esensoy, S.S. Gill, A. Grunier et al. 2010a. *Aging in Ontario: An ICES Chartbook of Health Service Use by Older Adults*. Toronto, ON: Institute for Clinical Evaluative Sciences.
- Bronskill, S.E., M.W. Carter, A.P. Costa, A.V. Esensoy, S.S. Gill, A. Grunier et al. 2010b. *Aging in Ontario: An ICES Chartbook of Health Service Use by Older Adults – Technical Report*. Toronto, ON: Institute for Clinical Evaluative Sciences.
- Canadian Institute for Health Information. 2011. *Seniors and the Health Care System: What Is the Impact of Multiple Chronic Conditions?* Toronto, ON: Author. Retrieved 26 January 26, 2011. <<https://secure.cihi.ca/estore/productFamily.htm?locale=en&cpf=PFC1575>>.
- Hirdes, J.P. 2006. "Addressing the Health Needs of Frail Elderly People: Ontario's Experience with an Integrated Health Information System." *Age and Ageing* 35: 329–31.
- Hirdes, J.P., J.W. Poss and N. Curtin-Telegdi. 2008. "The Method for Assigning Priority Levels (MAPLe): A New Decision-Support System for Allocating Home Care Resources." *BMC Medicine* 6: 9.
- Johri, M., F. Beland and H. Bergman. 2003. "International Experiments in Integrated Care for the Elderly: A Synthesis of the Evidence." *International Journal of Geriatric Psychiatry* 18: 222–35.
- Ministry of Health and Long-Term Care. 2010. *Ontario's Aging at Home Strategy*. Toronto, ON: Author. Retrieved January 28, 2011. <http://www.health.gov.on.ca/english/public/program/ltc/33_ontario_strategy.html>.
- Statistics Canada, Demography Division. 2010. *Population Projections for Canada, Provinces and Territories*. Ottawa, ON: Minister of Industry. Retrieved January 20, 2011. <<http://www.statcan.gc.ca/pub/91-520-x/91-520-x2010001-eng.pdf>>.
- Tu, K., T. Mitiku, D.S. Lee, H. Guo and J.V. Tu. 2010. "Validation of Physician Billing and Hospitalization Data to Identify Patients with Ischemic Heart Disease Using Data from the Electronic Medical Record Administrative Data Linked Database (EMRALD)." *Canadian Journal of Cardiology* 26: e225–28.
- Tu, J.V., P.C. Austin, R. Walld, L. Roos, J. Agras and K.M. McDonald. 2001. "Development and Validation of the Ontario Acute Myocardial Infarction Mortality Prediction Rules." *Journal of the American College of Cardiologists* 37: 992–7.
- Williams, A.P., D. Challis, R. Deber, J. Watkins, K. Kuluski, J.M. Lum et al. 2009. "Balancing Institutional and Community-Based Care: Why Some Older Persons Can Age Successfully at Home While Others Require Residential Long-Term Care." *Healthcare Quarterly* 12: 95–105.

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