

# Integrated stroke care system results in fewer deaths, discharges to long-term care facilities

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An integrated system of stroke care delivery in Ontario, Canada, has resulted in fewer deaths from stroke and fewer discharges to long-term care facilities because of better access to optimal stroke care, according to a study published in *CMAJ* (*Canadian Medical Association Journal*).

Stroke is a major cause of death and disability worldwide. Stroke care requires specialized resources such as neuroimaging, treatments to dissolve blood clots and other therapies delivered by skilled [health care professionals](#). Organizations such as the Canadian Stroke Network and the American Stroke Association have recommended implementation of stroke care systems to address regional disparities and provide access to specialized care.

Ontario, Canada's largest province with a population of more than 12.1 million people at the midpoint of the study and 140 acute care institutions, was the first large jurisdiction in North America to implement a regional system to provide access to optimal, evidence-based stroke care. The province began phasing in the Ontario Stroke System in 2000 with full implementation in 2005. Under the system, there are 11 designated regions in the province, each with a stroke centre and a director who coordinates stroke care within the region.

Researchers looked at care before and after implementation of the Ontario Stroke System (2001 to 2005 and 2005 to 2010). During the 10-year study period, there were 243 287 emergency department visits and 163 198 hospital admissions for [acute stroke](#) and "mini-strokes"

([transient ischemic attacks](#)). After implementation, 46.5% of patients received stroke care at a regional or district centre compared with 40% in the pre-2005 period. The proportion of people being discharged to long-term care facilities decreased from 16.9% to 14.8% and 30-day rates of death decreased from 38.3% to 34.4% for [hemorrhagic stroke](#) and 16.3% to 15.7% for [ischemic stroke](#). Length of stay also decreased, from 7 to 6 days.

"We found that implementation of a provincial system of stroke care was associated with increased rates of care at specialized stroke centres, improved processes of acute stroke care delivery and decreased rates of admission to a long-term care facility and decreased rates of death after stroke, beyond what would be expected based on underlying temporal trends," writes Dr. Moira Kapral, Institute for Clinical Evaluative Sciences (ICES) and the Department of Medicine, University of Toronto, with coauthors.

"Our findings provide strong support for the ongoing development and implementation of regional systems of organized [stroke care](#) delivery. Future research should focus on identifying the specific components of such systems that are most likely to account for improvements in outcomes," the researchers conclude.

**More information:** [www.cmaj.ca/lookup/doi/10.1503/cmaj.121418](http://www.cmaj.ca/lookup/doi/10.1503/cmaj.121418)

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