

# Is Transient Ischemic Attack a Medical Emergency? OHTAC Recommendation

Ontario Health Technology Advisory Committee

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## Conflict of Interest Statement

All authors in the Evidence Development and Standards branch at Health Quality Ontario are impartial. There are no competing interests or conflicts of interest to declare.

## About Health Quality Ontario

Health Quality Ontario (HQO) is an arms-length agency of the Ontario government. It is a partner and leader in transforming Ontario's health care system so that it can deliver a better experience of care, better outcomes for Ontarians, and better value for money.

Health Quality Ontario strives to promote health care that is supported by the best available scientific evidence. The Evidence Development and Standards branch works with advisory panels, clinical experts, developers of health technologies, scientific collaborators, and field evaluation partners to provide evidence about the effectiveness and cost-effectiveness of health interventions in Ontario.

To conduct its systematic reviews of health interventions, the Evidence Development and Standards branch examines the available scientific literature, making every effort to consider all relevant national and international research. If there is insufficient evidence on the safety, effectiveness, and/or cost-effectiveness of a health intervention, HQO may request that its scientific collaborators conduct economic evaluations and field evaluations related to the reviews. Field evaluation partners are research institutes focused on multicentred clinical trials and economic evaluation, as well as institutes engaged in evaluating the safety and usability of health technologies.

## About the Ontario Health Technology Advisory Committee

The Ontario Health Technology Advisory Committee (OHTAC) is a standing advisory subcommittee of the Board of Directors of Health Quality Ontario. Based on the evidence provided by Evidence Development and Standards and its partners, OHTAC makes recommendations about the uptake, diffusion, distribution, or removal of health interventions within the provincial health system. When making its recommendations, OHTAC applies a unique decision-determinants framework that takes into account overall clinical benefit, value for money, societal and ethical considerations, and the economic and organizational feasibility of the health care intervention in Ontario.

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Once finalized and approved by the Board of Directors of Health Quality Ontario, the research is published as part of the *Ontario Health Technology Assessment Series*, which is indexed in MEDLINE/PubMed, Excerpta Medica/Embase, and the Centre for Reviews and Dissemination database. Corresponding OHTAC recommendations and associated reports are also published on the HQO website. Visit <http://www.hqontario.ca> for more information.

When sufficient data are available, OHTAC tracks the ongoing use of select interventions it has previously reviewed, compiling data by time period and region. The results are published in the Ontario Health Technology Maps Project Report.

## Disclaimer

This report was prepared by the Evidence Development and Standards branch at Health Quality Ontario or one of its research partners for the Ontario Health Technology Advisory Committee and was developed from analysis, interpretation, and comparison of scientific research. It also incorporates, when available, Ontario data and information provided by experts and applicants to HQO. The analysis may not have captured every relevant publication and relevant scientific findings may have been reported since the development of this recommendation. This report may be superseded by an updated publication on the same topic. Please check the Health Quality Ontario website for a list of all publications: <http://www.hqontario.ca/evidence/publications-and-ohtac-recommendations>.

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# Background

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The Evidence Development and Standards branch at Health Quality Ontario conducted an evidence-based analysis (1) to answer the following research questions:

- Do rapid diagnosis and initiation of therapy reduce the risk of death and major vascular events in patients with transient ischemic attack (TIA)?
- Does inpatient admission result in significantly better outcomes as compared with rapid outpatient care?

In addition, HGO commissioned the Toronto Health Economic and Technology Assessment (THETA) Collaborative to conduct a rapid review on the cost-effectiveness of rapid access TIA clinics compared to hospital admission (to an emergency department observation or inpatient unit). (2)

# Conclusions

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- The results of this systematic review, based on low to moderate quality of evidence, have important clinical implications.
- Emergency investigation and initiation of treatment of patients with signs and symptoms of TIA is an effective strategy in reducing the incidence of subsequent stroke. Management in TIA clinics, where patients can be evaluated and treated urgently, results in lower rates of stroke and disability than conventional treatment. About half of strokes following TIA occur within the first 48 hours; therefore, patients with TIA should be evaluated as early as possible within 24 hours of first call to medical attention.
- Patients at high risk of stroke may require admission to a stroke unit for further evaluation and appropriate treatment. This review showed that patients with an ABCD<sup>2</sup> score of 4 or higher have significantly higher rates of stroke or recurrent TIA if they receive standard treatment and are discharged from an ED, compared to patients who are hospitalized. This may indicate that higher-risk patients need more comprehensive, intensive investigation and management than lower-risk patients.
- At the same time, this analysis identified limitations to the use of ABCD<sup>2</sup> risk scores in assessing which patients are at higher risk of stroke. ABCD<sup>2</sup> risk scores do not reflect the absence or presence of conditions that require immediate treatment (i.e., symptomatic internal carotid or intracranial artery stenosis of 50% or greater, or a major cardiac source of embolism). Therefore, imaging data can improve both diagnosis and prognosis for patients at particularly high risk for stroke. The diagnosis of TIA should be based on all available information including history, clinical examination, and laboratory tests supplemented with imaging.
- For patients with ABCD<sup>2</sup> score of 5 or less, no recurrent TIA in the previous week, and no active embolic source, no significant differences were found in rates of stroke or subsequent TIA between those managed in a TIA clinic and those admitted to hospital. The cost of initial assessment of these patients at a TIA clinic is less than the cost of hospital admission. No studies compared outcomes for high-risk patients cared for in a TIA clinic versus hospital admission.

# Decision Determinants

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OHTAC has developed a decision-making framework that consists of 7 guiding principles for decision making and a decision determinants tool. When making a decision, OHTAC considers 4 explicit main criteria: overall clinical benefit, consistency with expected societal and ethical values, value for money, and feasibility of adoption into the health system. For more information on the decision-making framework, please refer to the *Decision Determinants Guidance* document available at: <http://www.hqontario.ca/evidence/evidence-process/evidence-review-process/decision-making-framework>.

Appendix 1 provides a summary of the decision determinants for this recommendation.

Based on the decision determinants criteria, OHTAC weighted in favour of effectiveness of TIA clinics in reducing the rate of stroke following TIA.

# OHTAC Recommendations

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- OHTAC recommends that patients presenting with a transient ischemic attack (TIA) with high-risk features<sup>1</sup> or a minor stroke<sup>2</sup> undergo a brain CT scan and initiation of antiplatelet therapy (provided this is not contraindicated) as soon as possible and no later than 24 hours after symptom onset, followed by other stroke prevention treatments tailored to each patient. With respect to the location of care, OHTAC recommends that:
  - such immediate care be provided at a specialized TIA/minor stroke clinic.<sup>3</sup>
  - where delays to accessing a specialized TIA/minor stroke clinic pose risks to patient health, evaluation (as outlined above) occur at an appropriately resourced emergency department, and further consideration be given to inpatient evaluation and management for stroke prevention. OHTAC further recommends the establishment of accreditation standards for TIA/minor stroke care to ensure equitable access to appropriate, high-quality care irrespective of the location of initial presentation.
  - where medical attention has been sought after 48 hours from symptom onset, patients be referred for evaluation at a specialized TIA/minor stroke clinic or alternatively an outpatient clinic with stroke prevention services<sup>4</sup> within 24 hours of initial presentation.
- OHTAC recommends that patients presenting with a TIA without high-risk features<sup>1</sup> undergo a brain CT scan and initiation of antiplatelet therapy (provided this is not contraindicated) as soon as possible and no later than 24 hours after initial presentation, followed by referral to an outpatient clinic with stroke prevention services<sup>4</sup> for comprehensive evaluation and management within 1 month of symptom onset.

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<sup>1</sup> High-risk features: symptoms consistent with a hemispheric event, including sudden hemiparesis, speech difficulties, or monocular vision loss, and/or known high-risk conditions associated with stroke, including atrial fibrillation (especially if inadequately anticoagulated) or known carotid artery atherosclerosis with greater than 50% stenosis (narrowing) on the side consistent with the hemispheric event.

<sup>2</sup> Minor (non-disabling) stroke: patients with very mild persistent symptoms or no residual symptoms but having a small asymptomatic infarct (stroke) on imaging.

<sup>3</sup> Specialized TIA/minor stroke clinic: a clinic with stroke expertise and the resources to conduct all necessary investigations in one place, including brain and vascular imaging, heart monitoring, and laboratory tests, in order to initiate rapid treatment.

<sup>4</sup> Outpatient clinic with stroke prevention services: for example, a provincial stroke prevention clinic or community neurology/internal medicine clinic with a stroke prevention focus.



# Appendices

## Appendix 1: Decision Determinants

**Table A1: Decision Determinants for Urgent Care of Transient Ischemic Attack**

Decision Criteria	Subcriteria	Decision Determinants Considerations
<b>Overall clinical benefit</b>	<b>Effectiveness</b>	TIA clinic is effective in reducing the incidence of subsequent stroke.
	<b>Safety</b>	No adverse events were reported for TIA clinics.
	<b>Burden of illness</b>	The Canadian Stroke Network studied more than 38,000 patients admitted for stroke care in Canadian hospitals in 2008/2009 and found that more than one-third had experienced a previous stroke or TIA.
	<b>Need</b>	<p>Risk of stroke after TIA is high and half of that risk occurs within the first 48 hours:</p> <ul style="list-style-type: none"> <li>• 3.9% within the first 48 hours</li> <li>• 5.5% within 7 days</li> <li>• 7.5% within 30 days</li> <li>• 9.2% within 90 days</li> </ul> <p>Educational programs for primary care providers and stakeholders in stroke care can be useful in referring patients to appropriate services.</p>
<b>Consistency with expected societal and ethical values<sup>a</sup></b> How likely is adoption of the health technology/intervention to be congruent with societal and ethical values?	<b>Societal values</b>	In light of the effectiveness of early treatment, the general public should receive ongoing education on how to recognize TIA signs and symptoms in order to take action and seek medical attention.
	<b>Ethical values</b>	Since much of the morbidity and mortality associated with subsequent stroke could be avoided by the application of timely and appropriate treatment, access to rapid assessment and management services can impact the rates of disability and dependency among these patients.
<b>Value for money</b> How efficient is the health technology likely to be?	<b>Economic evaluation</b>	A cost-effectiveness study that focused on the impact of tPA usage found that 48-hour hospitalization for all TIA patients is not cost-effective compared to care in an urgent access specialty clinic.
<b>Feasibility of adoption into health system</b>	<b>Economic feasibility</b>	Feasible
	<b>Organizational feasibility</b>	Feasible but it may be necessary to redesign health services for stroke care to include management of TIA patients

Abbreviations: TIA, transient ischemic attack; tPA, tissue plasminogen activator.

<sup>a</sup>The anticipated or assumed common ethical and societal values held in regard to the target condition, target population, and/or treatment options. Unless there is evidence from scientific sources to corroborate the true nature of the ethical and societal values, the expected values are considered.

# References

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- (1) Sehatzadeh S. Is transient ischemic attack a medical emergency? An evidence-based analysis. Ont Health Technol Assess Ser [Internet]. 2015 February;15(3):1–45. Available from: <http://www.hqontario.ca/evidence/publications-and-ohtac-recommendations/ontario-health-technology-assessment-series/transient-ischemic-attack>.
- (2) Health Quality Ontario. Cost-effectiveness of urgent care for transient ischemic attack: an economic rapid review. Toronto: Health Quality Ontario; 2015 February. 18 p. Available from: <http://www.hqontario.ca/evidence/publications-and-ohtac-recommendations/rapid-reviews>.

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