



Canadian Stroke Strategy Best Practices and Standards Working Group

A Resource for Implementation of Canadian Best Practice Recommendations for Stroke Care

Emergency Medical Services Management of Suspected Stroke Patients

Canadian Stroke Strategy Implementation Resource

Canadian Best Practice Recommendation for Emergency Medical Services Care of Acute Stroke Patients

Part One: Overview of EMS Implementation Resources

Purpose

The purpose of this resource is to facilitate the uptake and implementation of the Canadian Stroke Strategy best practice recommendation for emergency medical services. This recommendation was introduced in the 2008 update of the stroke best practices through collaboration with key stakeholders involved in emergency medical service delivery across Canada. In 2010 the EMS recommendations were further refined through an extensive consultation process with key stakeholders. During this consultation process, it became evident that targeted education and information strategies were required to increase the consistent uptake and implementation of the EMS best practice recommendations across Canada and across service providers.

Project Leads and Partners

Project Leads: Canadian Stroke Strategy EMS Task Group
Stakeholder Partners: EMS Chiefs of Canada, Paramedics Association of Canada, Canadian Relations Committee of the National Association of EMS Physicians (NAEMSP), Canadian Association of Emergency Physicians (CAEP)

EMS Stroke Best Practice Management Guide

EMS Stroke Best Practice Resource Overview:

The Canadian Stroke Strategy first published best practice recommendations for stroke care in Canada in 2006. In the 2008 update a new set of recommendations were added for emergency medical services management of suspected acute stroke and TIA patients. These recommendations were further refined for the 2010 edition. To support the implementation and uptake of the EMS recommendations, an implementation resource package has been developed.

The EMS best practice resource consists of two components. The first component provides the core content that should be integrated into all educational materials and reference materials for assessment of suspected stroke patients. The second component is a comprehensive educational workshop package that provides detailed information and explanations related to the core content reference guide for EMS assessment and management of suspected stroke patients.

The core content defined in this resource set was derived from a critical review and analysis of the following sources: published research literature that supported the development of the stroke best practice for emergency medical services; policy and

educational documents for EMS; EMS-related consensus papers, position papers and practice review documents; existing EMS stroke pocket guide content submitted from EMS providers across Canada. A panel of experts in emergency medical services and stroke care reviewed the information from these sources. Consensus was achieved on the core content for pre-hospital assessment and management of suspected stroke patients to be included in any reference guide used by EMS providers in Canada [Table One].

Intended Use of this Information:

The information contained in the following table should be integrated into all on-site assessment materials used by EMS providers in the field to manage suspected acute stroke patients. These materials may take the form of prompt cards, pocket guides, algorithms, transport protocols, and other tools.

It is recognized and acknowledged that these tools may be created at a local, regional or provincial level, depending on the model for EMS service provision. Those tools may contain additional information relevant to the specific EMS jurisdiction and/or reflect other geographic or resource issues unique to the service provider location in addition to the core content described in this document. We strongly recommend that the content provided in the chart below be integrated into all educational and reference materials for EMS providers who manage suspected acute stroke patients. This will increase consistency and standardization of assessment and management of suspected stroke patients in the pre-hospital phase of the continuum of stroke care.

Target Audience: The target audience for the EMS stroke best practices resource is all EMS ambulance personnel (including those with each level of EMS training) and EMS dispatch staff. It is also important and relevant information for staff working in emergency departments who care for stroke patients, to ensure alignment and coordination between EMS and the ED.

CSS Best Practice Recommendations (Update for 2010):

Patients who show signs and symptoms of hyper-acute stroke must be treated as a time-sensitive emergency and should be transported without delay to the closest institution that provides emergency stroke care.

The recommended total time from symptom onset to reperfusion for eligible patients is usually defined as 4.5 hours. This is broken into 2 phases: pre-hospital and ED

- The pre-hospital phase, which starts with symptom onset and includes on-scene management and anticipated transport time, should be less than 3.5 hours
 - The current evidence shows that emergency department phase should be less than 60 minutes.
- i. Immediate contact with emergency medical services (e.g., 9-1-1) by patients or other members of the public is strongly recommended because it reduces time to treatment for acute stroke [Evidence Level C] (ASA, ESO).

- ii. The Emergency medical services system must be set up to categorize patients exhibiting signs and symptoms of a hyperacute stroke as a high priority [Evidence Level C] (ASA, AU, ESO, NAEMSP, RCP).
 - iii. A standardized acute stroke out-of-hospital diagnostic screening tool should be used by paramedics (See Table One for CSS core content for EMS stroke reference cards) [Evidence Level B] (ASA, AU, ESO).
 - iv. Out-of-hospital patient management should be optimized to meet the needs of suspected acute stroke patients [Evidence Level A] (ASA, RCP).
 - v. Direct transport protocols must be in place to facilitate the transfer of eligible patients to the closest and most appropriate facility providing acute stroke care [Evidence Level C] (AU, ESO).
 - vi. Direct transport protocol criteria must be based on (1) the local ED resources and performance, which is recommended as being less than 60 minutes; and (2) the out-of-hospital phase, including symptom duration and anticipated transport duration, being less than 3.5 hours and/or (3) other acute care needs of the patient [Evidence Level B] (ASA).
 - vii. History of event, including time of onset, signs and symptoms, and previous medical and drug history, must be obtained from the patient if able and/or informant when available [Evidence Level C] (RCP).
 - viii. Paramedics must notify the receiving facility of a suspected acute stroke patient in order for the facility to prepare for patient arrival [Evidence Level C] (ASA, ESO, NAEMSP, RCP).
 - ix. Transfer of care from paramedics to receiving facility personnel must occur without delay [Evidence Level C].
 - x. Patients who are not considered potentially eligible for time-sensitive reperfusion should be transported to the closest appropriate emergency department [Evidence Level B].
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For the complete Canadian Best Practice Recommendations for Stroke Care, including the additional information for the EMS recommendations (rationale, system implications, performance measures and evidence summaries), please log onto:

www.canadianstrokestrategy.ca

Table One:

Core Content for Reference Material for EMS Assessment and Management of Suspected Acute Stroke Patients

Strongly Recommended Core Content for Inclusion on all EMS Acute Stroke Management Educational and Reference Materials
Patient condition on EMS arrival to scene <ul style="list-style-type: none">○ Airway, Breathing, Circulatory status
Initial history and medical information <ul style="list-style-type: none">○ Last seen normal (LSN) date and time (i.e., last stroke symptom-free time)○ Palliative status
Physical assessment specific to stroke <ul style="list-style-type: none">○ Current stroke signs and symptoms<ul style="list-style-type: none">▪ ARM/LEG unilateral motor weakness or drift▪ Speech slurring, loss, inappropriate words, mute, or other changes▪ Facial droop or weakness
Additional Assessments <ul style="list-style-type: none">○ Presence of seizures○ Glasgow Coma Scale score○ Blood glucose level○ Presence of sudden severe headache at onset of symptoms
Assessment for Contraindications to tPA (may impact transport location decisions) <ul style="list-style-type: none">○ CTAS 1 and/or uncorrected ABC○ Blood glucose ≤ 3.0 mmol/l○ Seizure at onset of symptoms or witnessed by Emergency Medical Service providers○ Glasgow Coma Scale <9○ Terminally ill or palliative care patient
Transport decisions and considerations * ^ <p>Time is Brain – there is a need for efficiency and minimizing time from on-scene arrival to transport to a stroke centre</p> <ul style="list-style-type: none">○ The recommended total time from symptom onset to reperfusion for eligible patients, is usually defined as 4.5 hours. This is broken into 2 phases: pre-hospital and emergency department:<ul style="list-style-type: none">○ The pre-hospital phase, which starts with symptom onset, and includes on-scene management and anticipated transport time, should be less than 3.5 hours○ The current evidence shows that the emergency department phase should be less than 60 minutes○ Direct transport protocol criteria must be based on (1) the local ED performance which is recommended as being less than 60 minutes; and (2) the out-of-hospital phase, including symptom duration and anticipated transport duration, being less than 3.5 hours and/or (3) other acute care needs of the patient○ Transport to closest/designated stroke centre (comprehensive or intermediate)

- Implement normal EMS en-route transport management (18 gauge needle preferred for stroke)
- Prenotification to the destination emergency department of a suspected acute stroke in transport

Notes:

- * local variations need to be taken into consideration for pre-hospital time
- ^ EMS personnel should identify comprehensive and intermediate stroke centres within the relevant EMS catchment areas

Additional Transport Information

- Patients who are not considered potentially eligible for time-sensitive reperfusion should be transported to the closest appropriate emergency department
- Patients with symptoms that resolve prior to paramedic arrival on scene may not require medical redirect to an acute stroke centre, but should be assessed emergently.
- Those patients whose symptoms resolve after paramedic assessment or during transport should continue on medical redirect to a stroke centre.
- It is important to request that a family member accompany the ambulance to the hospital so that they could provide vital information. In the absence of a person being present, verify the contact number of an informant and/or decision-maker.

Handover to destination emergency department personnel:

- Communication to receiving staff (triage nurse or attending physician) including last seen normal time
- EMS documentation completed and a copy left with the receiving ED. Ensure last seen normal time, and any hospital bypass is documented.

Optional Additional Information

****This is not considered essential information for EMS stroke pocket guides. It is included here only as it has been previously included on some existing provincial stroke pocket guides and is considered routine care by emergency medical services***

- Previous stroke history
- Other vital signs (blood pressure, heart rate, respirations, temperature)
- Presence of sensory deficits
- Other medical history and comorbidities
 - Medications (especially antithrombotics)
 - Cardiac conditions
 - Recent surgery

An educational workshop has been developed which provides detailed explanations of each component of the EMS best practice recommendations and the core content listed in Table One. To access this workshop, please log onto:

www.canadianstrokestrategy.ca