HEART & STROKE FOUNDATION

CANADIAN Stroke BEST PRACTICE RECOMMENDATIONS

CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS

Overview and Methodology

Update 2014 – 2015

Fifth Edition

Lindsay MP, Gubitz G, Bayley M, Phillips S, and Smith EE (Editors),
on Behalf of the Canadian Stroke Best Practices Advisory Committee

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Stroke Team Contact

The Canadian Stroke Best Practices and Performance team invites comments, suggestions, and inquiries on the development and application of the *Canadian Stroke Best Practice Recommendations*. Please forward comments to: strokebestpractices@hsf.ca

Canadian Stroke Best Practice Recommendations Summary

The *Canadian Stroke Best Practice Recommendations* are intended to provide up-to-date evidence-based guidelines for the prevention and management of stroke, and to promote optimal recovery and reintegration for people who have experienced stroke (patients, families, informal caregivers). The goal of disseminating and implementing these recommendations is to reduce practice variations in the care of stroke patients across Canada, and to reduce the gap between knowledge and practice. Recommendations are updated on a rotating cycle every two years to ensure they continue to reflect the most current stroke research evidence and leading expert opinion. Each update involves critical review of the current healthcare literature, which informs decisions regarding modification of the recommendations and the performance measures used to assess their impact. Every attempt is made to coordinate with other Canadian groups who are developing guidelines that relate to stroke, such as hypertension, atrial fibrillation and diabetes. If significant new evidence becomes available in between update cycles, a process is in place to conduct a modified Delphi review to rigorously assess the new evidence and gain consensus on the impact of that evidence on current recommendations. Modifications that are required through the consensus process will be made as soon as they are available, which is readily enabled through the web-based format of the Canadian stroke best practices.

This is the fifth edition of the *Canadian Stroke Best Practice Recommendations,* which were first released in 2006. The theme of the 2012 – 2013 update (fourth edition) was ***Taking Action,*** and stressed the critical role and responsibility of healthcare providers at every stage of the continuum of care to ensure that best practice recommendations are implemented and adhered to. ***Taking Action*** will lead to optimal outcomes for each person affected by stroke by providing the best care within the most appropriate setting, by healthcare professionals with stroke expertise.

The theme for the 2014 – 2015 update is ***Working Together with Stroke Survivors and their Caregivers to Achieve Optimal Outcomes***. This theme emphasizes the need for a committed interprofessional team approach to stroke care across the continuum, and to ensure consistent patient-centred care delivery. With stroke patients and family members at the core, the entire team must be supported and actively engaged at every stage of care and in every setting. The HSF Canadian Stroke Best Practice Recommendations provide healthcare professionals with the most current evidence and expert guidance on how to engage in patient-centred optimal stroke care for patients and family members. Patients and family caregivers particularly should receive education and be empowered as active participants throughout their journey of recovery to ensure meaningful contributions to goal setting and treatment planning. This theme aligns with and supports the new HSF survivorship mission priority and will be incorporated within each chapter of the Canadian Stroke Best Practice Recommendations as they are updated in 2014 and 2015.

ALL CANADIAN STROKE BEST PRACTICE RECOMMENDATIONS,
EVIDENCE REVIEWS, SUPPORTING DOCUMENTS AND IMPLEMENTATION TOOLS CAN BE ACCESSED THROUGH OUR STROKE BEST PRACTICES WEBSITE AT:
WWW.STROKEBESTPRACTICES.CA

1.0 OVERVIEW

1.1 Introduction

The *Canadian Stroke Best Practice Recommendations* (CSBPR) are intended to provide up-to-date evidence-based guidelines for the prevention and management of stroke, and to promote optimal recovery and reintegration for people who have experienced stroke (patients, families and informal caregivers). The CSBPR are under the leadership of the Heart and Stroke Foundation, Canada (HSF), following the 2013 transition of Canadian stroke best practices and quality activities to the HSF from the Canadian Stroke Network.

The goal of disseminating and implementing these recommendations is to reduce practice variations in the care of stroke patients across Canada, and to reduce the gap between current knowledge and clinical practice.

Why is better stroke management important?

- Every year, approximately 60,000 people with stroke and transient ischemic attack are treated in Canadian hospitals. Moreover, it is estimated that for each symptomatic stroke, there are nine "silent" strokes that result in subtle changes in cognitive function and processes.
- Stroke and other cerebrovascular diseases are the third leading cause of death in Canada.
- Stroke is the leading cause of adult disability, with some 315,000 Canadians living with the effects of stroke.
- The annual cost of stroke is approximately $3.6 billion, taking into account both healthcare costs and lost economic output.
- The human cost of stroke is immeasurable.

The HSF works closely with national and provincial stakeholders and partners to develop and implement a coordinated and integrated approach to stroke prevention, treatment, rehabilitation, and community reintegration in every province and territory in Canada. The CSBPR provides a common set of guiding principles for stroke care delivery, and describes the infrastructure necessary at a system level, and the clinical protocols and processes that are needed to achieve and enhance integrated, high-quality, and efficient stroke services for all Canadians. Through the innovations embodied within the stroke best practices, these guidelines contribute to health system reform in Canada and internationally.

The *Canadian Stroke Best Practice Recommendations* are developed and presented within a continuous improvement model and are written for health system planners, funders, administrators, and healthcare professionals, all of whom have important roles in the optimization of stroke prevention and care and who are accountable for results. A strong stroke research literature base is drawn upon to guide the optimization of stroke prevention and care delivery. Several implementation tools are provided to facilitate uptake into practice, and are used in combination with active professional development programs. By monitoring performance, the impact of adherence to best practices is assessed and results then used to direct ongoing improvement. Recent stroke quality monitoring activities have compelling results which continue to support the value of adopting evidence-based best practices in organizing and delivering stroke care in Canada.

1.2 Canadian Stroke Best Practices Optimal Stroke Services Framework Overview

The Heart and Stroke Foundation, in collaboration with the CSBPR advisory committee and key stakeholders have developed a framework to facilitate system improvement through the adoption of evidence- based best practices in stroke across the continuum of care.
Optimal stroke services include access to stroke experts, diagnostic equipment and expertise, and a range of emergent and timely evidence-based treatment options. Canadian stroke audit data has revealed considerable variations in the levels of stroke care services provided within the Canadian health care system. These services can be arranged along a continuum from minimal, non-specialized services in organizations that provide general health care, to providing basic diagnostic services and management, then advanced care at a single site, and on to comprehensive stroke care across a region.

The Canadian Stroke Best Practices Optimal Stroke Services Framework, as visualized in Figure 1 is meant to organize and prioritize stroke services based on resource availability for a regional or geographic area. The goal set forth within this framework is for each organization involved in the delivery of stroke care services to engage in an ongoing cycle of developing the expertise, processes and protocols needed to provide optimal stroke patient care, taking into consideration the organization's geographic location, patient population, structural resources, and relationship to other centres within their healthcare region or system. Once a level of stroke services has been achieved, the organization should strive to develop and incorporate components of the next higher level for ongoing growth of stroke services where appropriate, as well as continuous quality improvement within the level of service currently provided. Within this framework, certain aspects of patient care are paramount and represent the continuum of care and cross-continuum issues (such as rehabilitation and prevention). These supporting elements (identified in the outer ring of the framework) should be considered at every healthcare encounter for patients with stroke or TIA.

The *Canadian Stroke Best Practice Recommendations* are written with this framework as a reference point. Optimally, in Canada, all acute stroke patients should be initially managed in centre providing either advanced or comprehensive stroke services where acute thrombolysis, access to advanced neuro-interventional expertise are available . It is acknowledged that in a small number of cases this may not be required or it may not be possible as a result of geography or resource availability (e.g., ambulances leaving a small community for a long duration for a transport, or a patient with mild resolving symptoms). Advanced and comprehensive centres not only provide access to acute thrombolysis, they also have active stroke teams that can be mobilized in a timely manner to rapidly assess, diagnose and implement management strategies to reduce the risk of stroke recurrence or poor outcomes. Basic stroke services have neuroimaging capability (i.e., a CT scanner on site), but do not offer tPA or other organized stroke care. In some cases, they offer basic prevention services. Organizations that are considered general health services do not have brain imaging capability.

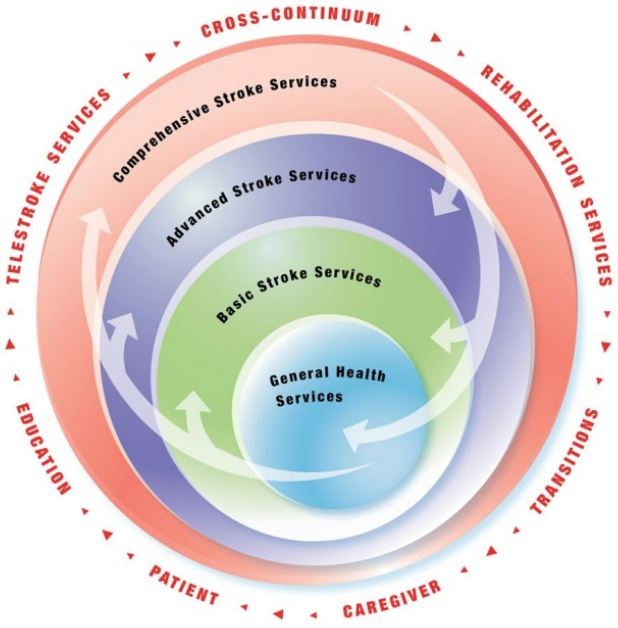


Figure 1: CANADIAN STROKE BEST PRACTICES OPTIMAL STROKE SERVICES FRAMEWORK

The goal for all stroke service providers is to continue to develop expertise and mechanisms to deliver high-quality evidence-based stroke care, optimizing structural resources (e.g., human, equipment, and space), geographic factors and patient populations. Therefore each increasing level of care described in the framework includes all elements, functions and services described for the preceding level plus additional elements, functions and resources with increasing levels of complexity and expertise involved.

1.3 Guiding Principles

The *Canadian Stroke Best Practice Recommendations* development and update process is guided by a core set of principles which are applied all activities of the writing groups. These principles state that all recommendations included in the CSBPR must be:

- supported by high quality evidence and/or strong consensus that they are essential drivers to delivering high-quality stroke care;
- integral to facilitating health system improvement;
- aligned with other stroke-related Canadian best practice recommendations, e.g., the management of hypertension, diabetes, and dyslipidemia to decrease ambiguity and contradictions for front-line clinicians;
- reflective, in their totality, of the full continuum of stroke care.

1.4 Scope and Target Audiences

The *Canadian Stroke Best Practice Recommendations* present high-quality, evidence-based stroke care guidelines in a standardized framework to support healthcare professionals across all disciplines. Implementation of these recommendations is expected to reduce practice variations and closing the gaps between evidence and practice.

Scope: This document provides a synthesis of best practices in stroke care across the continuum from stroke symptom onset and first contact with the healthcare system, though to community reintegration and long-term adaptation. The recommendations reflect areas of stroke care with the highest levels of available research evidence (Level A evidence), and/or those topics that are considered key system drivers of stroke care in Canada. The recommendations address system level, organizational level and patient level issues for stroke care delivery.

In this document, the “continuum of stroke care” is defined as including:

- Public awareness and early recognition of stroke
- Management of stroke risk factors (e.g., hypertension, diabetes, atrial fibrillation, carotid disease, sleep apnea)
- Hyperacute stroke management
- Acute stroke management (inpatient stroke care)
- Stroke rehabilitation
- Stroke Patient transitions across care settings and phases of care
- Prevention of stroke recurrence (secondary prevention)
- Community reintegration
- Long-term recovery and adaptation
- Use of Telestroke technology.

Target audiences: The recommendations are targeted to health professionals throughout the health system who care for those affected by stroke. Health system policy makers, planners, funders, senior

managers, and administrators who are responsible for the coordination and delivery of stroke services within a province or region will also find this document relevant and useful to their work.

The recommendations are designed to be used by front-line healthcare professionals from a range of disciplines who provide direct care to stroke patients, including primary care practitioners, neurologists, internists, emergentologists, nurses, physiatrists, physical therapists, occupational therapists, speech-language pathologists, social workers, dieticians, pharmacists, psychologists, health care professionals in training, and other disciplines and support staff.

The stroke care community recognizes that human, financial, and system resource limitations make it difficult to implement all recommendations provided in the *CSBPR* modules. However, the recommendations and performance measures are presented as "gold standards" toward which all organizations and systems should strive. Additionally, they can be valuable tools and information sources for anyone advocating for improved stroke care services, and used in self-assessment exercises to identify gaps in stroke service delivery.

1.5 Context

The actual recommendations provided in the CSBPR should be considered as evidence-based guidelines rather than rigid rules. As noted above in the description of the Optimal Stroke Services Framework (section 1.2), not all recommendations will be applicable to all patients in all settings. The goal is to implement all applicable recommendations into routine practice. Unique patient circumstances and good clinical judgment also play a critical role in patient management decisions. The recommendations provided in the CSBPR should support, not supplant, individualized care planning.

1.6 Updates and Revisions

The *Canadian Stroke Best Practice Recommendations* undergo a thorough formal review and update of each chapter every two years. The CSBPR were first introduced in 2006, and subsequently updated and expanded in 2008, 2010 and 2012. The 2012-2013 update underwent review between January 2012 and September 2013. Coordination for the 2014 update cycle began in October 2013.

Since research evidence for stroke care delivery is very dynamic and evolving, a protocol has been established to address late-breaking evidence in a timely way. When new evidence is released that may have an impact on any recommendations contained within these guidelines, the appropriate writing group is contacted and the evidence is reviewed, and decisions made regarding its impact on current recommendations. Any proposed revisions proceed through the same rigorous review process that is followed for the full chapter reviews. The CSBPR team then releases an interim bulletin regarding any off-cycle revisions that have been approved. These bulletins are incorporated into subsequent updates as applicable.

Details about the update cycle and process are described in Section 2 below.

2.0 GUIDELINE DEVELOPMENT AND UPDATE METHODOLOGY

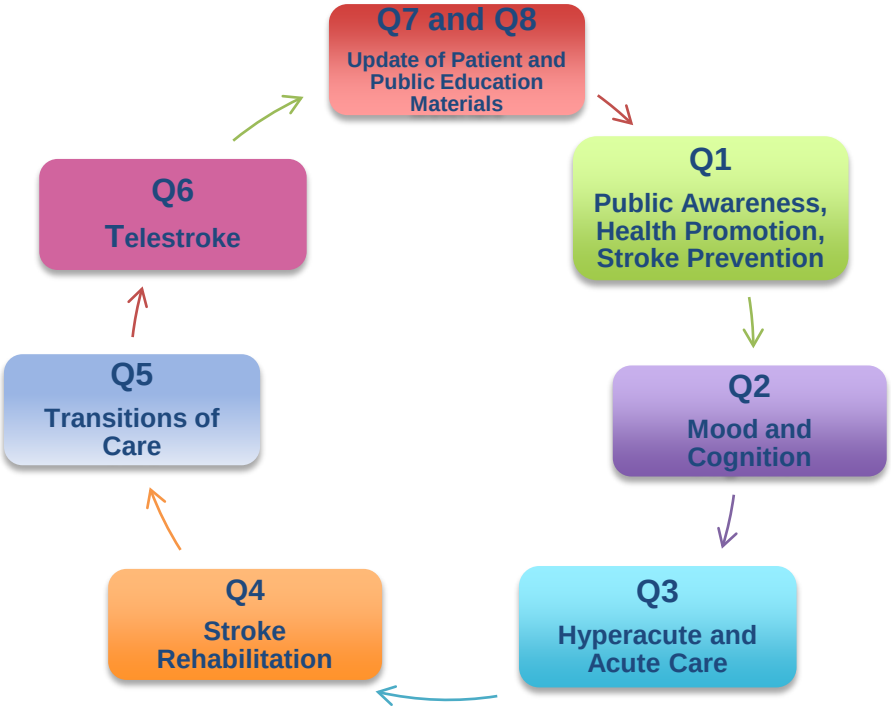
The *Canadian Stroke Best Practice Recommendations* are updated every two years. Starting with the 2012 cycle, the update process moved from a model where all chapters were reviewed and updated simultaneously to a new process where individual chapters are reviewed on a rotating basis, whereby at the end of a two-year cycle, all chapters would be reviewed and updated (see Figure 2). This new process enables efficiency of resources and greater engagement of internal experts and external reviewers for each chapter.

Each chapter update takes approximately nine months to complete and is conducted in three stages. At any given time, there is a chapter in progress at each stage of the update process. A full schedule is available in the Appendix of this document. The development stages include:

1. **Research** – identification of emerging research evidence since last release of each chapter, and update of evidence tables (approximately 3 months)
2. **Writing and Revisions** – the writing group reviews existing recommendations and all new evidence, and new material included in external guidelines. They discuss content and propose revisions to the chapter, and complete a final draft (approximately 3 months).
3. **Review and Release** – the proposed chapter update is reviewed internally and then externally. When the chapter update is complete it is translated into French and publicly released and posted on the CSBPR website. Dissemination and educational activities are planned to increase awareness and uptake of new components (approximately 3 months).

Figure 2: Canadian Stroke Best Practices Update Cycle

(Represents time when each chapter starts the Research phase. Based on 24 months, 8 fiscal quarters)



2.1 Guideline Development Framework

The conceptual framework used to guide the identification, selection, development, and revision of the *Canadian Stroke Best Practice Recommendations* is the Practice Guideline Evaluation and Adaptation Cycle described by Graham and colleagues (2002), and updated in 2005 with the formation of the ADAPTE Collaboration. Additional steps have been added to include original research evidence searches and appraisals in addition to guideline reviews, which are completed for all topics covered in the Canadian stroke guidelines (*).

For all stroke guideline updates and new recommendation development, the Canadian Stroke Best Practices writing groups follow these steps:

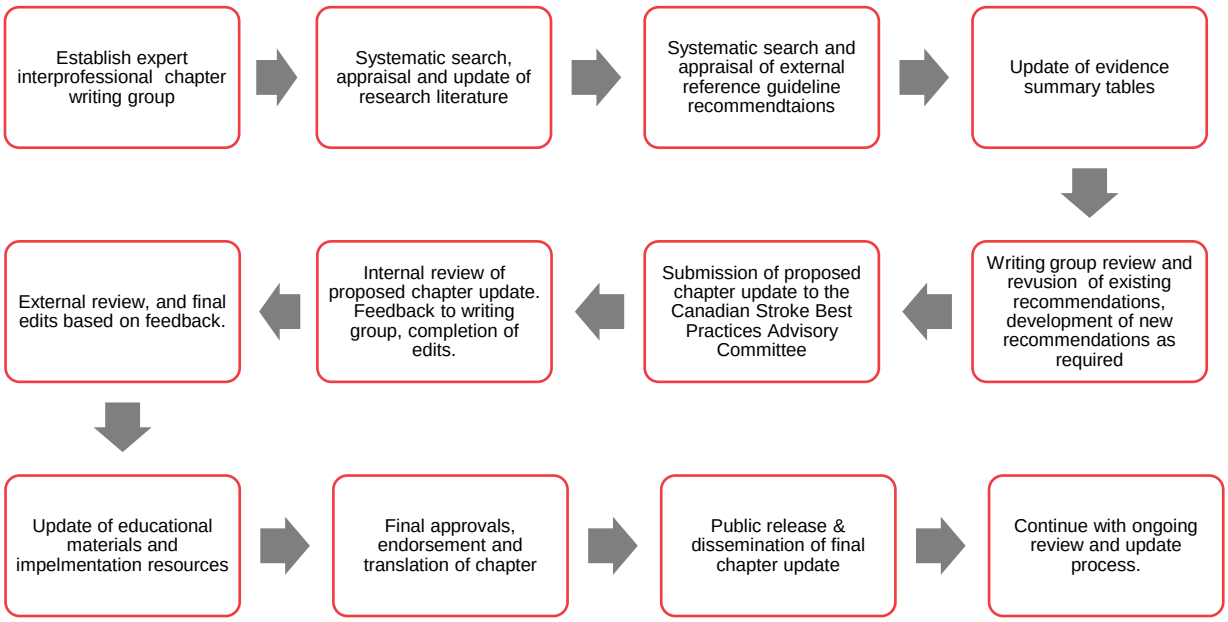


Figure 3: Canadian Best Practice Recommendations Methodology Model

At the onset of each stroke best practice update cycle, this guideline development framework itself is reviewed and refined to ensure high-quality and rigorous guideline development principles and methods continue to be adhered to. The stroke best practices team members are active members of the Guideline International Network and the World Stroke Organization Guidelines and Quality committee. These memberships allow international ongoing dialogue regarding guideline development and implementation methodologies, and opportunities to constantly learn and refine the stroke guideline development methodology.

Detailed descriptions of activities involved in each stage of the framework are described throughout the remainder of this section.

2.2 Leadership and Participants

The Canadian Stroke Best Practices Advisory Committee: This Advisory Committee has overall responsibility for the stroke guideline development and update process. This group meets bi-monthly. They are responsible for selecting writing group chairs and approving membership of writing groups. Prior to the initiation of each module update, the Advisory Committee meets with members of the writing group to discuss scope of the revisions and identifies areas of focus based on new evidence releases and feedback following the release of the previous edition of the module. This group serves as internal reviewers for all modules once the writing group has completed their final draft update. Members of the Advisory Committee represent the Canadian stroke guideline group on other national and international guideline committees. This committee is led by two co-chairs, and is supported by the HSF Director of Best Practices and Performance, Stroke. Members on the advisory committee serve a two-year term with the opportunity to serve for a maximum of two terms. For each update cycle, approximately half the advisory committee members are turned over, including one co-chair, to ensure a mix of both continuity and an influx of new perspectives.

The Writing Groups: An interprofessional group of stroke care experts are convened for each of the eight modules of the *Canadian Stroke Best Practice Recommendations* to participate in reviewing, drafting, and revising recommendation statements. Recognized experts in each topic area are selected by the Advisory Committee to chair each writing group. The Writing Group chairs then identify and propose membership, in consultation with the HSF Stroke team. Members are selected who have extensive experience in the topic area, are considered leaders and experts in their field have been involved in clinical trials or publications in the topic, are people who have experienced a stroke or their family members, and those who have experience appraising the quality of research evidence. Members are selected from across healthcare disciplines, such as stroke neurologists, physiatrists, nurses, emergency physicians, paramedics, physical therapists, occupational therapists, dietitians, speech-language pathologists, pharmacists, stroke survivors, education experts, professionals from other disciplines, guideline methodologists, healthcare economists, healthcare administrators and others as appropriate to each topic. This interprofessional approach ensures that the perspectives and nuances of all relevant health disciplines are considered in the development of the recommendations. In addition, every attempt is made to have representation from all or most provinces and territories to ensure geographic issues are considered. Other experts outside the writing group may be consulted for very specific issues as required throughout the development and update process. These writing groups are led by two co-chairs, and are supported by the HSF Director of Best Practices and Performance, Stroke.

Members of the writing groups are responsible for reviewing all available research evidence and existing recommendations, revising the module as deemed appropriate and responding to reviewer feedback in finalizing the module for public release. Members of the writing groups serve for one update cycle, with the opportunity to serve for a maximum of two cycles. For each update cycle, approximately half the writing group members are turned over, including one co-chair, to ensure a mix of both continuity and an influx of new perspectives.

External Reviewers: An expert external review group of approximately twelve healthcare professionals and persons living with stroke are engaged to review and provide feedback on each stroke best practices module update. The external review takes place after internal review is completed. External reviewers are selected based on expertise in subject matter, representation from appropriate health care disciplines relevant to the module under review, and willingness to participate. External reviewers are identified by both the writing group members and the advisory committee. All external reviewers must not have participated in the development of the module in any direct way and are not current members of the writing group or the advisory committee. At least one or two external reviewers are selected from international experts outside of Canada, and two are people who have had a stroke or are a family member or informal caregiver.

Inclusion of Persons Living with Stroke: People who have experienced a stroke, their families and informal caregivers are at the centre of the Canadian Stroke Best Practices. Within Canada, there are several active stroke support groups across provinces who are engaged with the HSF. Members of these groups are included on writing groups and serve as external reviewers. They also participate in the development of resource materials for both families and professionals, presentations on behalf of best practices and stroke, and on related working groups.

Conflict of Interest: All potential participants in the recommendation development and review process are required to sign confidentiality agreements and to declare all actual and potential conflicts of interest in writing. Any conflicts of interest that are declared are reviewed by the Chairs of the Advisory committee and appropriate HSF staff members for their potential impact. Potential members of any writing group who have conflicts that are considered to be significant are not selected for advisory or writing group membership.

There is no financial remuneration provided to any member of the Stroke Best Practices advisory committee, writing groups, or to external reviewers. Participants are provided with a certificate of participation and many are able to count their participation on these committees as part of their professional education declarations for their annual professional license renewal process.

2.3 Collaborations and Alignment

Healthcare professionals working in stroke and related vascular conditions, and those working in primary care, are frequently faced with several dilemmas that impede evidence-based guideline uptake into their routine practice. Implementation Science research has identified several barriers, such as: increasing number of guidelines available; multiple guidelines disseminated on the same topic by different groups; conflicting recommendations on the same topic; and, ambiguous or unactionable recommendations. To circumvent some of these barriers, the Canadian Stroke Best Practices group has formed alliances with several related guideline development groups. Some of these groups include the Canadian Cardiovascular Society (atrial fibrillation guidelines), Canadian Partnership for Stroke Recovery, Canadian Hypertension Education Program (blood pressure recommendations), Canadian Diabetes Association, CAN-ADAPTT and C-Change for smoking cessation and lifestyle management recommendations; the Canadian Stroke Consortium (tPA recommendations); the Emergency Medical Services Chiefs of Canada and Paramedics Association of Canada (prehospital EMS management of patients with stroke); National Stroke Nursing Council and the Registered Nursing Association of Ontario (nursing activities related to several topic areas); and, Accreditation Canada (system level recommendations, medication reconciliation, patient education, transitions of care). In addition the Canadian Stroke Best Practices groups work closely with two stroke evidence synthesis groups who contribute significantly to the Canadian Stroke Best Practices update process: the Evidence Based Review of Stroke Rehabilitation (Teasell et al) and StrokEngine (Korner-Bitensky et al).

The goal of these collaborations is three-fold: 1) to increase cross-sector participation on guideline development initiatives in Canada, 2) to ensure consistent recommendations are available in Canada, and 3) to reduce duplication of effort. Through these relationships, every attempt is made to provide identical or very similar recommendations on the same topic by all groups, through reciprocal consensus building processes. Representatives from some of these groups are invited to participate of related Canadian stroke writing groups and members of the Canadian stroke writing groups actively participate on the writing groups of these other guideline developers, or serve as external reviewers. In addition, where detailed Canadian guidelines for specific components of stroke care already exist (for example, diabetes management in persons with stroke, hypertension, and primary prevention of stroke in patients with atrial fibrillation), the recommendations from those groups are formally reviewed and in most cases endorsed or adopted and are not redeveloped by the Canadian stroke groups. Rather, readers are referred to those original documents for the specific recommendation, whereas the *Canadian Stroke Best Practice Recommendations* address related structural and process issues for those components.

2.4 Format of the Canadian Best Practice Recommendations

The *Canadian Stroke Best Practice Recommendations* are divided into the following eight modules: 1) Stroke Awareness, 2) Prevention of Stroke, 3) Hyperacute Stroke Management, 4) Acute Inpatient Stroke Care, 5) Stroke Rehabilitation, 6) Transitions of Care following Stroke, 7) Mood and Cognition following Stroke, and, 8) Telestroke. Modules are further separated into topic-based subsections, each of which consists of the following elements:

- ***Best Practice Recommendations:*** describes the recommended practices, processes of care and activities, providing specific direction for front-line staff and caregivers for delivering optimal stroke care.
- ***Rationale:*** summarizes the importance of the topic and recommendations, their relevance to stroke care delivery or patient outcomes, and the potential impact of implementation of the recommendations.
- ***System Implications:*** provides information on the mechanisms and structures that need to be in place if health systems, facilities, front-line staff, and caregivers are to effectively implement the recommendations (see below for more information on system implication categories).
- ***Performance Measures:*** provide managers and administrators with a standardized and validated mechanism to consistently monitor the quality of stroke care and the impact of implementing best practice recommendations. The most important performance measures are highlighted in **bold type**. The remaining performance measures are provided for those who are able to conduct a more extensive evaluation of stroke performance. Performance measures that are part of the Canadian Stroke Quality and Performance core indicator set are indicated by the notation ***(core)*** following the indicator statement. Refer to the Appendix for a full list of core indictors.
- ***Implementation Resources and Knowledge Transfer Tools:*** provides links to websites and tools developed or recognized by the Canadian Stroke Best Practices group and/or their partners and collaborators. Resources include 'how-to' guides and educational materials for healthcare professionals, patients, and caregivers. This section also identifies patient screening and assessment tools that have been found through review and consensus to be valid, reliable and relevant to stroke populations.
- ***Summary of the evidence:*** provides a brief summary of the research used as part of the development of the recommendations. At the bottom of each summary, a link is provided to the detailed evidence tables, including research evidence and external guidelines, and a complete reference list for the section.

2.4.1 System Implication Categories

Each recommendation is accompanied by system implications. These are actions and mechanisms that are needed for high-functioning systems of stroke care, and that require leadership and/or coordination at the local, regional and/or provincial/ territorial level. The system implications fall into four broad categories:

- **Community-wide efforts**, including collaborations among non-profit organizations such as the Heart and Stroke Foundation and municipal departments of health and recreation, expanded roles for community-based healthcare professionals such as pharmacists, and trained volunteers such as those providing peer-to-peer support. Community-wide efforts are central to effective awareness and prevention strategies as well as stroke recovery support.
- **Engagement and effective partnerships** within and among organizations to deliver optimal stroke care across the continuum and within a range of settings. This would include collaboration in the development and administration of bypass, transfer and repatriation agreements, referral systems, stroke care protocols, and communication mechanisms. There should be plans and

mechanisms in place to effectively and equitably respond to the needs of stroke patients regardless of geographic location in Canada.

- **Education**, including professional development for healthcare providers managing patients across the continuum of stroke care as well as education for patients, family members, informal caregivers, and the community-at-large. Education includes information about stroke and the development of skills and expertise in caring for stroke patients as it relates to each topic addressed in the Canadian Stroke Best Practices.
- **Continuous performance improvement** at all levels of the healthcare system. This requires measurement and monitoring strategies that includes ongoing surveillance and data collection specific to systems of care, front-line service delivery of stroke processes of care, and patient outcomes at national, provincial or territorial, and regional levels.

Responsibility rests with provincial and territorial governments and regional health authorities to ensure all Canadians have access to optimal stroke care, and to provide the resources necessary to implement and sustain effective and integrated evidence-based healthcare services and monitoring strategies for stroke.

2.5 Development of the Canadian Best Practice Recommendations

2.5.1 The Literature Search

The identification of existing external guidelines and original research to support the development of the *Canadian Stroke Best Practice Recommendations* and update process takes place in two stages initially – search and selection of external guidelines that are considered as 'reference guidelines', and search and selection of original research. Each of these steps builds on all work conducted for the previous editions to ensure continuity and a comprehensive understanding of all available evidence, past and present, for each topic area.

a. External Guideline Identification and Appraisal

Guidelines developed by groups other than the Canadian Stroke Best Practices Group (referred to as 'external guidelines') are identified through searches in healthcare search engines (OVID), general internet searches, international stroke association websites, and searches of guideline clearinghouse sites (such as the Internet Stroke Centre, Canadian Medical Association guideline InfoBase, and the United States Agency for Healthcare Research and Quality National Guideline Clearinghouse). In addition, lists of current stroke related guidelines are available on the World Stroke Organization website, and these are reviewed as part of this process.

The methods used to identify and include external guidelines as part of the Canadian Stroke Best Practice Writing Group review and update processes includes:

- Preliminary identification of external guidelines through search engines notes above;
- Search terms include: words related to the topic of interest used alone or in combination with guidelines, evidence-based guidelines, clinical practice guidelines, best practice recommendations, position statements, white papers, consensus statements, reports, and standing orders.
- Brief review of identified guidelines for content related to relevant topic;
- If the guideline contains recommendations related to the topic being searched, then the guideline is appraised for development quality using the Appraisal of Guidelines Research and Evaluation II (AGREEII) tool (This tool assesses guideline development processes in six domains: identification of a clinical area to promote best practice, stakeholder involvement, rigor of

development, clarity and presentation, applicability, and editorial independence. More information about AGREEII can be found at www.agreetrust.org);

- If the guideline achieves a score of at least 60% on the rigor of development and the editorial independence domains, then it is included as part of the evidence table documents prepared for the writing groups.
- Once a stroke-related guideline has been appraised and meets inclusion criteria, it may be included in searches and reviews for other topic areas, and is considered a 'reference guideline'.
- With each Canadian Stroke Best Practice update, the reference guidelines from the previous edition are reviewed to determine whether the originating group has released an update. If updates to these guidelines are available, they undergo appraisal again to ensure continued rigor of development prior to including as a reference in the Canadian stroke guidelines.

b. Original Research Literature Search and Appraisal

The first edition of the *Canadian Stroke Best Practice Recommendations* was released in 2006 following an extensive systematic review of the literature completed in Canada and in collaboration with other stroke guideline development groups internationally. For all subsequent update editions of the Canadian stroke best practices, the original evidence base is reviewed and modified/updated with new evidence that has emerged since the last review took place.

For each update, systematic literature searches are conducted to identify research evidence for each topic area addressed in the *Canadian Stroke Best Practice Recommendations*. All literature searches are conducted by individuals with expertise performing systematic literature reviews and who also have some experience in the area of stroke. During the two years between updates of each module, the research literature is continually monitored by members of the writing groups and advisory committee, enabling rapid identification of key research that emerges between updates which may impact current recommendations. Literature searches include set time frames which overlap the previous search time frame by six-months to ensure high catchment of key articles within that time frame.

The methodology followed for the search and selection of original research for consideration by the advisory committee and writing groups include:

- The specific databases, search terms, time frames and other search limits applied to each search are initially determined by the writing group members in consultation with the individual conducting the literate search during a start-up teleconference that includes the writing group chairs, the search analyst, the advisory committee chair(s), and the HSF staff lead for best practices.
- All recommendation topics are generally organized to address screening, assessment, interventions, pharmacotherapy, and other management strategies. Search strategies and search terms for each topic are derived from this format. Where appropriate, incidence, prevalence, occurrence rates, economic impact and patient and family impact are also included where appropriate.
- Key search questions were identified during the original version of the Canadian Stroke Best Practices in accordance with the format of addressing screening, assessment, interventions and management. These key questions are reviewed by each respective writing group at the outset of a search and used to further guide selection of search terms and direction of subsequent searches. All key questions and search terms are provided in the evidence tables for each topic within the stroke best practice recommendations.
- Inclusion and exclusion criteria for literature searches were identified during the original 2006 edition and have been modified based on an assessment of methodological rigor and the strength of evidence for each particular topic area at the time of an update.

- General inclusion criteria are: research published in English or with a journal-issued English translation; articles with sufficient sample size and power for the topic being explored; and articles published with sufficient editorial independence (particularly related to pharmacological studies and medical device studies).
- Exclusion criteria are based on type of evidence available, language of publication, undue influence of sponsoring organization leading to lack of editorial independence, validity and low power or concerns over sample size or selection.
- Meta-analyses, systematic reviews, and RCTs are given priority when selecting studies for inclusion, although uncontrolled trials and observational studies are also considered, particularly in areas with a limited literature base.
- Additional relevant articles may also be identified by hand searching reference lists of identified articles or guidelines.
- All attempts are made to first consider direct evidence to support stroke best practice recommendations; however, in some situations only indirect evidence may be available or may be used in combination with direct evidence (e.g., CT scanning to diagnose stroke is considered a key system driver despite the absence of direct evidence from randomized controlled trials, because such trials have never been done and are unlikely to be attempted now because they would not be considered practical or ethical).
- Once the search strategy is executed, the analyst conducting the literature search is responsible for the initial title review and then abstract review of selected titles.
- Studies selected for inclusion following the abstract reviews are then fully appraised and summarized in an evidence table that was designed to facilitate writing group discussions regarding recommendation content and determination of levels of evidence.
- A final literature review update is conducted during the external review period, just prior to module release to ensure no new evidence has emerged since the writing group was completed that may impact the module before it is finalized.
- Once the draft evidence tables are completed, they are submitted to all writing group members for review. Writing group members may suggest additional articles for review and inclusion in the evidence tables, and likewise they may suggest some articles included by the search analyst be removed, and they would provide rationale for both these courses of action. Final selection of articles for inclusion and exclusion in the evidence tables are made by consensus of each writing group.
- All evidence tables are posted on the Canadian Stroke Best Practices website for transparency and free public access. They are also shared with the World Stroke Organization members through collaborative efforts to reduce duplicity of efforts among guideline development groups.

2.5.2 Levels of Evidence

Each recommendation within the *Canadian Stroke Best Practice Recommendations* is associated with a level of evidence. Levels of evidence are assigned by the writing group according to a structured ranking system, which reflects both the design of supporting research and the balance of desirable and undesirable effects. Strength of supporting research is determined in part according to the following hierarchy of methodological design (in descending order of rigor):

- Meta-analyses of randomized studies: Such analyses offer a quantitative synthesis of previously conducted studies. The strength of evidence from a meta-analysis is based on the quality of the

conduct of individual studies. Meta-analyses of randomized studies are placed in the same category of strength of evidence as are randomized studies.

- Systematic reviews: Systematic and explicit methods are used to identify, appraise and synthesize research relevant to a particular question. They include the collection and analysis of data from the identified studies to answer specific questions and minimizing bias. This evidence integrates the results of primary research studies to determine the best available evidence levels and recommendations for processes of care, interventions, treatments and diagnostic tests.

In determining levels of evidence, the writing groups consider the methodological rigor of supporting research, including the use of blinding, concealed allocation, analysis based on intention-to-treat, and sample size. For each recommendation, the level of evidence is determined through writing group consensus following review of all available evidence. The level of evidence assigned to a particular recommendation does not necessarily imply the strength of that recommendation.

The evidence assignment system we use also includes evidence level C. When developing and including "C-Level" recommendations, consensus is obtained among the writing group and validated through the internal and external review process. This level of evidence is used cautiously when there is a lack of stronger evidence for topics which are considered important system drivers for stroke care (e.g., transport using ambulance services or some screening practices). Recommendations with this level of evidence may also be made in response to requests from a range of healthcare professionals who seek guidance and direction from the experts in the absence of strong evidence on certain topics.

A table summarizing the criteria for each level of evidence is presented below. This evidence appraisal system is similar to the grading systems used by other stroke guideline developers. It is easy to interpret and facilitates comparison of approaches and interpretation of evidence among many stroke guideline groups. It should be noted that the level of evidence assigned to a particular recommendation does not necessarily imply the strength of that recommendation (i.e., strong or weak recommendation, based on public health benefit), rather it focuses on the strength and quality of the available evidence. At this time the *Canadian Stroke Best Practice Recommendations* has not moved to the GRADE system of assigning levels of evidence[5], although some partner organizations such as the Canadian Cardiovascular Society have transitioned to this model. The methods for grading evidence are reviewed at the beginning of each update cycle and the selected method is followed for a full cycle for consistency.

Table 1: Summary of Criteria for Levels of Evidence Reported in the Canadian Stroke Best Practice Recommendations

Level of Evidence	Criteria*
A	Evidence from a meta-analysis of randomized controlled trials or consistent findings from two or more randomized controlled trials. Desirable effects clearly outweigh undesirable effects or vice versa.
B	Evidence from a single randomized controlled trial or consistent findings from two or more well-designed non-randomized and/or non-controlled trials, and large observational studies. Desirable effects outweigh or are closely balanced with undesirable effects or vice versa.
C	Writing group consensus and/or supported by limited research evidence. Desirable effects outweigh or are closely balanced with undesirable effects or vice versa, as determined by writing group consensus.

* adapted from Guyatt et al. 2008

2.5.3 Development of Canadian Stroke Best Practice Recommendations

The recommendations that are included in each module of *Canadian Stroke Best Practice Recommendations* are developed through an iterative consensus building process with each of the writing groups. The writing groups meet by teleconference every two weeks during the Writing and Revisions stage. The Best Practices and Performance Director and/or analyst participate on all teleconferences and monitor the update process carefully to ensure consistency, standardization, and rigor of development across and within all writing groups. In addition, the person who conducted the literature searches and developed the initial evidence tables also participates in the teleconferences.

The process followed by all writing groups in the development of the current version of the *Canadian Stroke Best Practice Recommendations* for each module includes the following steps:

- All members are given an orientation package which includes this methodology document, the previous version of their respective module, and all draft updated evidence tables (which include external guideline information and summary tables for research articles) completed during the research stage.
- During the first teleconference, the best practices update process is reviewed and questions answered. An overall discussion takes place for the module under review and comments, thoughts, and feedback is shared. New significant research that has emerged on this topic since the previous update is also brought forth. The co-chairs facilitate a discussion of anticipated additions, revisions and deletions that may be required for the module. The results of this discussion are shared with the Canadian Stroke Best Practices Advisory Committee for consideration and feedback prior to the writing group proceeding with significant changes.
- On subsequent calls, writing group members discuss and debate each topic and specific recommendations with respect to their continued relevance and accuracy in light of new evidence, and the clarity and actionability of the recommendation statements. The writing group reviews all new evidence, as well as current related recommendations included in external guidelines. Tis step is important in helping to promote consistency among similar guidelines where possible and reduce variations that may impede uptake by target end-users.
- Recommendations are organized by the writing groups into screening, assessment, interventions (pharmacological and non-pharmacological) and other management issues, where appropriate. Recommendations may address stroke system and organizational structure, clinical processes or patient outcomes. System-level and clinical-level recommendations may be included for each topic as warranted.
- Existing recommendation statements may be revised to reflect the consensus of the group. New recommendations may be proposed and drafted during the teleconferences to reflect new and emerging evidence revealed during the initial literature search. New recommendations may be (i) taken directly from other guideline documents, (ii) adapted from one or more other recommendations, or (iii) written by the writing group. Some recommendations may be deleted based on emerging evidence.
- All proposed recommendations are reviewed for the assigned levels of evidence, consideration to the strength of available supporting evidence, and potential harms and benefits of the proposed recommendations (see above for more information on Levels of Evidence criteria). Previous evidence levels may be promoted to a higher level if sufficient new evidence is available to support such changes.
- The reference articles or guidelines which contribute to each recommendation are described in the summary of evidence that follows the recommendations and in the evidence tables and reference list provided for each topic.

- Draft recommendations are provided to the Canadian Stroke Quality and Performance Advisory Committee and staff members to review and update all performance measures to ensure appropriate alignment and measurement of final recommendations.
- Once a final draft of the revised module is achieved and approved by all writing group members it is submitted to the Canadian Stroke Best Practices Advisory Committee for review, revision and approval of the final draft for external peer review.
- Any differences of opinion or conflicts that arise among the writing group members are first addressed by the writing group co-chairs, and when required brought to the Canadian Stroke Best Practices Advisory Committee for resolution.

Throughout the update process, additional emerging topics were suggested by writing group members, stakeholders, and reviewers as being relevant to current stroke care clinical practice and within the scope of the *Canadian Stroke Best Practice Recommendations*. These topics were discussed among the writing group members, and the writing group chairs presented them to the advisory committee. Where the evidence did not meet the criteria for inclusion, these topics have been documented and will be monitored for ongoing emerging evidence, and potentially considered as part of a future update should sufficient evidence or rationale for inclusion become available.

Handling of late-breaking evidence: Since research evidence for stroke care delivery is very dynamic and evolving, a protocol has been established to address late-breaking evidence in a timely way. When new evidence is released that may have an impact on any recommendations contained within these guidelines, the appropriate writing group is contacted and the evidence is summarized and reviewed by the group. Appropriate discussions take place, and decisions are made regarding its impact on current recommendations. Any proposed revisions proceed through the same rigorous review process that is followed for the full module reviews. The CSBPR team then releases an interim bulletin regarding any off-cycle revisions that have been approved. These bulletins are incorporated into subsequent updates as applicable.

2.5.4 Guideline Review and Finalization

The third phase in the stroke best practices module update process includes internal review, external review, module completion and approval, tool development and French translation. Once these steps are completed the module is publicly released and actively disseminated.

a. Internal Review

Once the writing group reaches consensus on the completed draft of the module update, the revised document is submitted to the Canadian Stroke Best Practices Advisory Committee. Members of the advisory committee conduct a full review of the document and provide written feedback. The module is then discussed on a teleconference and all feedback is compiled and sent to the writing group chairs. Minor edits are completed by the writing group chairs and the HSF Stroke Best practices team lead, more significant issues are brought to the full writing group for discussion and resolution. A final draft version of the module is then completed.

b. External Review

When the final draft of a module is ready, it is sent to the external reviewers. As noted in section 2.2, this is a group of experts who were not directly involved in any part of the module update. The external reviewers also include people who have experienced a stroke and/or family members and informal caregivers. External reviewers are provided with the final module and access to all evidence tables. They are provided a standardized template for feedback which asks the reviewer to complete the following for each section of the module:

- Initial agreement with the recommendations and evidence; or, initial that they have significant concerns regarding a specific recommendation(s) within a topic. If this is chosen, they are asked to provide a detailed rationale for their concerns, and provide additional references as appropriate to support their concerns.
- Provide feedback on the rationale, system implications, performance measures and implementation tools sections.
- Provide additional general comments regarding the module under review.

All feedback from the external review is compiled by the HSF stroke best practices staff lead for the module and submitted to the chairs of the advisory committee and the chairs of the writing group. Minor edits are addressed as appropriate. Significant issues are discussed by teleconference with the chairs and members of the writing group to reach consensus on resolution. The module is then finalized, and submitted to the Chairs of the Canadian Stroke Best Practices Advisory Committee and the stroke leads at the Heart and Stroke Foundation for final approval.

2.6 Development of Stroke Performance Measures

The Canadian Stroke Quality and Performance Advisory Committee (see master CSBP Participant List for members) has been established to provide leadership, guidance, consistency and standardization in stroke measurement and monitoring across Canada. These goals facilitate opportunities to compare performance and monitor progress in achieving high quality care delivery relative to national benchmarks within and across provinces and peer groups based on stroke resources and service availability. Members of the Canadian Stroke Quality and Performance Advisory Committee include experts in quality of care, measurement and evaluation, and optimal stroke care delivery. Persons who have experienced a stroke, their family members and/or informal caregivers also participate on this committee.

This group has developed a quality framework which identifies the stroke best practices, HSF supporting services and mechanisms, internal and external partnerships and collaborations, and stroke data monitoring activities. This framework was approved at a Stroke Quality and performance Summit held in December 2013, and included 45 stroke experts and quality of care leaders from across Canada. The quality framework and goals of this group are operationalized through the development of a standardized set of case definitions for stroke care, a core set of stroke performance measures and quality indicators, a repository of additional recommendation-specific quality indicators, audit tools, data collection tools in collaboration with the Canadian Institute for Health Information (CIHI), and a comprehensive performance measurement manual.

2.6.1 Stroke Case Definitions

As part of its mandate, the Canadian Stroke Quality and Performance Advisory Committee has developed a standardized set of ***case definitions*** for selecting appropriate stroke cases for quality monitoring, and they have established core set of performance measures which represent best practice elements with the highest levels of evidence and impact on patient outcomes, as well as elements that are considered key system drivers (such as stroke onset to hospital arrival times). The case definitions were established through extensive data analysis and validity of case definition scenarios by stroke researchers in Canada. Sensitivity and specificity analyses have been conducted and several discussions have been held with partner organizations such as the Canadian Institute for Health Information and the Public Health Agency of Canada. Consensus was reached among these groups regarding appropriate International Classification of Diseases codes for inclusion and exclusion in a standardized set of case definitions. The case definitions account for age variations, types of stroke, and include TIA. The goal is that all

organizations and research groups in Canada who are measuring stroke processes and outcome of care would use the same case definitions.

2.6.2 Core Stroke Performance Measures and Key Quality Indicators

The ***core stroke performance indicators*** were selected through a rigorous Delphi process, and they form the basis of ongoing measurement and monitoring activities by the Heart and Stroke Foundation, as well as through partnerships with the Public Health Agency of Canada, the Canadian Institute for Health Information, and Accreditation Canada. All core indicators are reviewed and updated as required every two years as a component of the *Canadian Stroke Best Practice Recommendations* bi-annual update cycle. The core stroke performance indicators were selected based on the criteria stated below by a group of 50 stroke and epidemiology experts.

In addition to the core indicator set, this advisory committee has also identified a more in-depth list of quality indicators for each topic area and set of recommendations included in the Canadian Stroke Best Practices. These additional indicators enable groups to more closely monitor the impact of implementing specific recommendations on the quality of patient care and/or patient outcomes. These are often applicable when quality improvement initiatives are undertaken on a specific stroke best practices topic.

The core and additional performance measures are identified through a literature review that runs concurrently to the review for the stroke best practice recommendations. Indicators are often included in research studies as primary and secondary outcomes, and some documents have been published that list stroke quality indicators specifically. Research articles that identify stroke performance measures undergo the same rigorous critical appraisal as do articles for recommendation content.

All quality indicators included with the stroke best practice recommendations are selected based on the following selection criteria:

i. **Strong Evidence:** align with stroke best practice recommendations that have the highest levels of supporting evidence and/or measure key system drivers;

ii. **Relevance:** Are relevant and important in monitoring quality of stroke care within current clinical practice priorities;

iii. **Validity:** Are valid stroke performance measures, have been reported in the literature or have been tested by members of the advisory committee or collaborators, and have strong face and content validity;

iv. **Reliability:** Are reliable for measurement over time and among a range of groups;

v. **Feasibility:** Are feasible to collect (data can be available with appropriate mechanisms established) and the benefits of collecting the data outweigh the costs of data collection;

vi. **Actionability:** Have clearly defined actions that could be taken to improve the quality of care being measured by the indicator;

vii. **Unambiguous:** Are clearly defined and can be calculated consistently by different groups, with specific numerators, denominators and inclusion/exclusion criteria.

The advisory committee also provides Measurement Notes for many of the performance measures that identify potential data sources, methods to enhance data collection, challenges to data access, and data quality issues. These notes are included in the Stroke Best Practice templates described in section 2.4 of this document.

As a supplement to the stroke best practice recommendations, the Canadian Stroke Quality and Performance Advisory Committee created the comprehensive Canadian Stroke Performance Measurement Manual. This document includes all performance measures contained in the Canadian Stroke Best Practice Recommendations and provides detailed definitions, formulas for calculation,

inclusion and exclusion criteria, data sources and additional notes. The Canadian Stroke Performance Measurement Manual (CSPMM) is intended as a reference guide for all organizations and groups who are collecting stroke performance data in Canada. The goal of the information contained in the CSPMM is to increase consistency and standardization of measuring stroke care performance across Canada, and allow for cross-group comparisons and the development of validated national benchmarks. Benchmarks are currently available for a limited number of stroke performance measures, and several initiatives are under way nationally and internationally to further develop these benchmarks.

The *Canadian Stroke Performance Measurement Manual* can be found at www.strokebestpractices.ca.

2.6.3 Measurement and Monitoring Systems

For every best practice recommendation that is implemented, a system for measuring and monitoring its impact must be in place at the local and regional level. Members of the Canadian Stroke Quality and Performance Advisory Committee have collaborated with research investigators from the Ontario Stroke Registry (formerly, the Registry of the Canadian Stroke Network) to develop audit tools and data collection mechanisms that are available nationally to support the collection of vital stroke data. In addition, through a partnership with the Canadian Institute for Health Information, a special data collection mechanism has been established to collect data for six of the core indicators as part of routine hospital abstraction of all emergency department and inpatient charts. All organizations are encouraged to take part in this project. Additional information regarding the CIHI Stroke Quality Special Project 340 can be found in the *Canadian Stroke Performance Measurement Manual.*

Further, the Canadian Stroke Quality and Performance Advisory Committee have worked closely with Accreditation Canada on the development of their Stroke Distinction Program. Within this program, nine mandatory indicators and two of eleven optional indicators must be collected and reported on a semi-annual basis to maintain distinction status. All of these indicators are taken directly from the Canadian Stroke core quality indicators and some of the additional indicators identified within the best practices. The same definitions and calculation formulas are used to ensure consistency and standardization across organizations.

It is not expected that users will be able to collect data for all of the performance measures provided. Therefore, as noted above, the most important and relevant performance measures for each set of recommendations are highlighted in **bold type** and/or noted to be from the core set. The remaining performance measures are provided for those who are able to conduct a more extensive evaluation of stroke practices in their region.

3.0 KNOWLEDGE MOBILIZATION

The Heart and Stroke Foundation and the Canadian Stroke Best Practices team encourage provincial/territorial and regional stroke programs to adopt the *Canadian Stroke Best Practice Recommendations* in their entirety. While the process and speed of implementation will vary depending on resource availability, geographic location and local circumstances, the vision of offering integrated, high quality, and efficient stroke services to all Canadians should be shared and supported across the country.

The Canadian Stroke Best Practices team recognizes that producing and publishing evidence-based guidelines is not sufficient to change practice. Research has shown that a range of mechanisms are required to achieve uptake and adherence to evidence-based care. To enhance implementation of best practice recommendations, the advisory committee and writing groups work closely with professional education specialists and tool developers. The results of these efforts are integrated directly within the best practice recommendations for easy access. In addition, members of the HSF stroke team, advisory and writing group members provide educational sessions, lectures, training workshops, abstract submissions to local, national and international stroke meetings, and contribute to the growing body of stroke research evidence.

3.1 Implementation Resources and Knowledge Transfer Tools

In order to deliver a comprehensive stroke best practice package, several implementation tools and resources are included within the recommendation supporting materials. Some materials provided are developed by members of the writing groups and directly reflect the Canadian stroke best practices content. Other materials have been developed by external, third-party groups. These materials are reviewed by writing group members and selected based on content, quality of material and development process, and editorial independence, similar to the criteria applied in selecting external recommendations which are considered as reference guidelines for the chapter update process. The resources provided for any topic are not exhaustive of what may be available; they are intended to provide a solid starting place to facilitate uptake and implementation.

Depending on the topic of the recommendations, these materials may consist of:

- links to summary tables, websites and tools specifically developed by Canadian Stroke Best Practices groups;
- educational teaching materials for health professionals, including a full set of educational slides covering each chapter content that are available on the website and openly accessible for unrestricted educational purposes;
- training and skills development materials for health professionals;
- educational and skills development materials that stroke team professionals can provide to patients and their families;
- validated screening and assessment tools that have been reviewed and selected by consensus for strong psychometric properties, applicability, reliability and relevance to stroke populations;
- standing order set templates, protocols, checklists and work flow sheets;
- links to websites and tools developed by third party stroke best practices partners and collaborators, which are reviewed and selected by consensus through the stroke best practice writing groups.

All materials included in these sections of the recommendation documents are available in print or electronically. The Canadian Stroke Best Practices team members do not receive any remuneration or profits from their support and distribution of third-party materials.

Some of the screening and assessment tools that are listed within the implementation resources may be

proprietary. Access to these materials and payment for their use is the responsibility of the individuals who chose to use them.

3.2 Access to the Canadian Stroke Best Practice Recommendations

The *Canadian Stroke Best Practice Recommendations are* openly available at no cost, in English and French.

The most current editions are available on-line at www.strokebestpractices.ca.

Whereas previous versions were available in print through the Canadian Stroke Network, the Heart and Stroke Foundation and the Canadian Medical Association (2008 edition publication), our dissemination strategy has changed in response to user feedback to electronic distribution. The stroke best practices website enables the stroke best practice team to provide a broader range of materials with direct links between components. In 014-2015, some components of the recommendations may be published in the International Journal of Stroke, while all supporting materials and resources remain on the stroke best practices website.

The primary **target audience** for the stroke best practices website is healthcare professionals and people in supporting roles caring for people who have been affected by stroke. This includes people who have experienced a stroke, their families, their professional and informal caregivers, and the lay public.

People who are affected by stroke and the general public can find educational materials produced directly for them, including educational guides for both adult and pediatric stroke, a guide to TIA, and a post-stroke checklist that helps guide discussions with healthcare team members.

3.3 Dissemination of the Canadian Stroke Best Practice Recommendations

The Heart and Stroke Foundation actively participates in disseminates of the *Canadian Stroke Best Practice Recommendations* through the following activities:

- Posting the recommendations on the Canadian Stroke Best Practices website with free open access internationally;
- Posting links to the website on the websites of stroke best practices partners and collaborators who are identified throughout this document;
- Working closely with the HSF Stroke Provincial-Territorial Advisory Group to disseminate information about stroke best practices throughout their networks, and to work with these contacts to set up educational sessions;
- Posting links to the stroke best practices website on central guideline repository websites such as the World Stroke Organization website, the National Guidelines Clearing House, the Internet Stroke Centre, and the Canadian Medical Association Infobase;
- Writing articles for publication describing changes included in updates, such as the Canadian Medical Association Journal, and the International Journal of Stroke;
- Releasing media announcements and posting media releases on all HSF websites, and in newsletters of the HSF, their partners and stroke best practice collaborators when a new chapter is released;

- Sending email announcements to all stroke contacts in the HSF database, and using social media such as Twitter and stroke blogs to share updated information and draw attention to the stroke best practices website;
- Work with stroke support groups and persons who are affected by stroke to disseminate and interpret stroke best practice materials, including speaking at gatherings, sending newsletters, and having ongoing discussions;
- Presenting at national, provincial, and regional meetings of healthcare professionals across healthcare disciplines and across the continuum of stroke care.
- Making presentations to front-line healthcare professionals at the local level and using local consensus processes to review and provide structured assessment of the enablers and barriers to guideline implementation, as well as innovative implementation strategies.
- Disseminating the recommendations at international stroke meetings, and through the World Stroke Organization, the Guidelines International Network, and international partners and collaborators.

The HSF Canadian Stroke Team encourages provincial or territorial and regional stroke strategy leaders to use these or other applicable approaches to further disseminate the recommendations and supporting tools to healthcare professionals, health system planners, decision-makers, and funders.

3.4 Accreditation Canada Stroke Distinction Program

Accreditation Canada, in partnership with the Canadian Stroke Network and the Heart and Stroke Foundation, created a Stroke Services Distinction program to recognize health organizations that demonstrate clinical excellence and an outstanding commitment to leadership in stroke care. Distinction offers rigorous and highly specialized standards of excellence that are closely based on the *Canadian Stroke Best Practice Recommendations,* addressing acute stroke services, inpatient rehabilitation stroke services, and comprehensive stroke services (for use in a regional setting). Organizations that are currently accredited by Accreditation Canada are eligible for participation in the Stroke Services Distinction program. As of 2013, several stroke centres across Canada have earned Stroke Distinction awards.

In addition to standards and protocols, Distinction requires the ongoing submission of data related to a core set of stroke quality indicators. These indicators are directly derived from key quality indicators embedded within all stroke best practices.

An on-site visit by expert evaluators with wide-ranging experience in the stroke care field takes place once all documentation has been submitted to Accreditation Canada. During the on-site visit, evaluators interact closely with stroke team members and a range of care providers to understand the extent to which the standards and best practice recommendations have been operationalized. They also spend significant time with people who have experienced a stroke and their family members to understand care delivery from their perspectives.

Distinction is a new opportunity for stroke care leaders to:

- Be recognized for their exceptional commitment to excellence, innovation, high- quality service, and positive outcomes.
- Be part of an innovative strategy to strengthen the uptake and dissemination of stroke best practice recommendations and clinical practice guidelines.
- Achieve and maintain quality and safety by demonstrating compliance with national standards of excellence and meeting performance measure thresholds.

Stroke Services Distinction takes into consideration the way stroke programs are integrated across the communities they serve. This program is an important initiative within the HSF and the Canadian stroke quality strategy, and all stroke care programs in Canada are encouraged to participate in this program as a way to drive quality improvement and consistent monitoring of care and service.

Accreditation Canada works closely with the HSF stroke team. A process is in place between the two groups to ensure the Accreditation stroke distinction standards continue to align with stroke best practices. At the completion of each stroke best practices update cycle, a review of the stroke distinction standards is undertaken and a report provided to Accreditation Canada indicating areas that have been changed in the stroke best practices and/or quality indicators which may require revision in the distinction standards.

Participating in Distinction is a valuable tool that helps stroke service organizations across the continuum identify and celebrate their strengths in stroke care delivery and identify areas for ongoing quality improvement.

More information about Stroke Services Distinction can be found at
http://www.accreditation.ca/accreditation-programs/distinction/stroke-services

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Appendix: Stroke Best Practice Update Cycle

Time	Q1			Q2			Q3			Q4			Q5			Q6			Q7			Q8		
Activity+	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug
Research^	Public Awareness, Health Promotion, Prevention			Cognition and Mood			Hyperacute and Acute			Stroke Rehabilitation			Transitions of Care			Telestroke			Patient and Family Education and Outreach Professional Development, Continuing Education and Knowledge Translation					
Writing	Patient and Family Education and Outreach Professional Development, Continuing Education and Knowledge Translation			Public Awareness, Health Promotion, Prevention			Cognition and Mood			Hyperacute and Acute			Stroke Rehabilitation			Transitions of Care			Telestroke			Patient and Family Education and Outreach Professional Development, Continuing Education and Knowledge Translation		
Release*	Patient and Family Education and Outreach Professional Development, Continuing Education and Knowledge Translation						Public Awareness, Health Promotion, Prevention			Cognition and Mood			Hyperacute and Acute			Stroke Rehabilitation			Transitions of Care			Telestroke		