Canadian Stroke Best Practice Recommendations
Overview of Methodology
**CSBPR Management Responsibilities**

**Heart & Stroke**

In collaboration with the **Canadian Stroke Consortium**

- Coordination
- Evidence synthesis
- Performance measurement
- Knowledge translation
- Systems change

**CSBPQ Advisory Committee**

- Membership
- Conflict of Interest
- Methodology
- Scope
- Content
- Quality monitoring

**Writing Groups**

- Evidence analysis
- Recommendation development
- Publication
- Knowledge translation
Roles and Responsibilities

Co-chairs
Writing groups
External reviewers
CSBPR: Roles and Responsibilities

Co-chairs of writing groups

- Declare all personal conflicts of interest
- Select writing group members, consider and minimize conflict of interest
- Lead overall review and update process for module
- Ensure timelines are met
- Liaise regularly with Advisory committee and report progress
- Conduct full review of draft module and assist in creating final draft versions;
- Final voting for consensus at end of process
- Participate in meetings to review all feedback received from internal and external reviewers;
- Contribute to supporting sections of module (i.e., rationale, system implications, performance measures)
- Authors (first and senior) of publication of recommendations and active participation in manuscript development and review;
- Participate in discussions and development of knowledge translation resources and learning events; and
- Promote best practices with professional colleagues.
Writing group members

- Declare all conflicts of interest
- Review and deliberate on all available research evidence and existing recommendations
- Revise the module recommendations as deemed appropriate
- Participate in review and response to reviewer feedback as required
- Final voting for consensus at end of process
- Contribute to supporting sections of module (i.e., rationale, system implications, performance measures)
- Identify potential external reviewers
- Co-author of publication of recommendations and active participation in manuscript development and review as required;
- Participate in discussions and development of knowledge translation resources and learning events; and
- Promote best practices with your professional colleagues.
CSBPR: Roles and Responsibilities

- **External Reviewers:**
  - The external review takes place after internal review is completed as the last step before final approval.
  - The expert external review group consists of approximately twelve healthcare professionals representing a cross section of health disciplines as appropriate to the module topic. At least two external reviewers are selected from international experts outside of Canada.
  - External reviewers must not have participated in the development of the module and are not current members of the writing group or the advisory committee.
  - External reviewers must declare all conflicts of interest prior to participation, and will not be selected if CSBPQAC deems conflicts would interfere with unbiased review.
  - External reviewers provide feedback on draft stroke best practice module update as proposed by writing group and approved by CSBPQ advisory committee.
CSBPR Methodology Summary
First introduced in 2006, the CSBPR undergo a thorough formal review and update of each module every two years. Coordination for the 2019-2021 update cycle began in the winter of 2019.

Research evidence for stroke care delivery is dynamic and evolving, thus, 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, the evidence is reviewed, 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.
The recommendations provided in the CSBPR should be considered as evidence-based guidelines rather than rigid rules.

Not all recommendations will be applicable to all patients in all settings.

The goal is to implement all applicable recommendations into routine practice.

Patient management decisions can be impacted based on individual circumstances and strong clinical judgement.

The recommendations provided in the CSBPR should support, not supplement, individualized care planning.
The CSBPR development and update process is guided by a core set of principles which are applied to all activities of the writing groups.

All recommendations included in the CSBPR must be:

- Supported by high quality evidence and/or strong consensus that they are essential 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.
Establish interdisciplinary expert writing group

Systematic search, appraisal and update of research literature; report findings by sex and gender

Systematic search and appraisal of third-party reference guideline recommendations

Update of evidence summary tables; include specific information on sex and gender findings

Final approvals, endorsements and translation

External review by topic experts and voting; including expert in SGBAR

Internal review of draft recommendations by CSBPQ Advisory Committee; voting

Writing group review and revisions of recommendations; final review and voting; address sex and gender issues

Development of knowledge translation resources and activities, such as webinars; integrate SGBAR findings

Dissemination: Publication in peer-reviewed journal and update on SBP website

Implementation strategies to enhance uptake; include SGBAR targeted strategies

Systems change initiatives to support implementation; consider SG targeted strategies

Note, will be transitioning to GRADE during 7th Edition
CSBPR: Module Update Process

Research (3 months)
- Systematic of evidence
- Build/update evidence tables

Writing and Refinement (5-6 months)
- Working group meetings and discussions
- Draft recommendations
- Internal reviews

Release (4 months)
- External Reviews
- Publication and distribution
- Develop supportive tools for clinicians, website updates
Rapid Review Process

Purpose:
• A rapid review process may be launched at the discretion of the CSBPQ Advisory Committee too address a specific new set of evidence that has direct immediate impact on one recommendation topic within a module, that does not warrant a full module review at the time the evidence becomes available.

Goals:
• No compromise to CSBPR review process integrity or to the high quality of recommendation assets
• Rapid systematic review of significant new evidence
• Sufficient review and discussion with all appropriate stakeholders
Theme: Building connections to optimize individual outcomes

- **Context:**
  - People who have experienced a stroke often present to the healthcare system with multiple comorbid conditions – some that may contribute to their stroke, some that are consequences of their stroke, and some unrelated.
    - One study revealed that approximately 80% of people who survive a stroke have on average five other conditions and a wide range of psychosocial issues (Nelson et al., 2016).
  - These conditions must be considered as treatment and ongoing care planning is personalized and person-centred.
  - There is strong evidence of the intrinsic connections between the heart and brain, and management of people following stroke should take heart health and possible association with vascular cognitive impairment into consideration. The healthcare system is often designed in siloes with different planning and organization for individual conditions, that are not integrated across conditions, even related vascular conditions.
  - As people transition across settings and phases of care following a stroke, they report experiencing anxiety and feeling quite overwhelmed. Individualized care and ensuring and ensuring connections are made within the community have a significant impact on patient short and long-term outcomes.
  - The Seventh Edition of the CSBPR includes a broader wholistic focus and take into consideration issues of multimorbidity and increasing complexity of people who experience stroke. In addition, a more purposeful review of sex and gender representation in the seminal clinical trials upon which the recommendations are based has been undertaken to determine the extent to which available evidence has included both male and female subjects in sufficient proportions to be able to detect outcomes and generalize to a broader population. These findings are presented in the discussion sections of the module and integrated into the actual recommendations where appropriate to do so. Accompanying performance measures have been expanded to include system indicators, clinical indicators and new patient reported outcome measures, supporting our wholistic focus.
Seventh Edition Enhancements

1. **New SBP website** and opportunity to leverage website for knowledge translation, and SBP update processes

2. **Separate modules** for intracerebral hemorrhage, subarachnoid hemorrhage, paediatrics

3. All writing groups to consider **sex and gender** issues in major research trials and literature base:
   - Consider ratio of male:female participants included in trials that are refereed to in building recommendations
   - If results presented by investigators by sex, consider any significant sex-based differences in outcomes and include in recommendations
   - Consider noting any applicable sex differences in recommendation wording

4. **Complexity and multimorbidity** – All writing groups to consider issues of multimorbidity and how they may come into play within each section being updated within and across modules
   - Potential for polypharmacy – safety and interactions
   - Address system issues for people who have had a stroke and their family, related to siloes of care and impact of appointments with multiple specialists

5. **Telesstroke** will no longer be a stand alone module – the components will get integrated into all modules as appropriate
# 7th Edition 2019 – 2021 Plans

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*Will be published together with title of Rehabilitation, Recovery and Community Participation following Stroke (RRCP)*
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## CSBPR: Levels of Evidence

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<th>Level of Evidence</th>
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<tr>
<td><strong>A</strong></td>
<td>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 undesirable effects clearly outweigh desirable effects. (High quality evidence)</td>
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<td><strong>B</strong></td>
<td>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 undesirable effects outweigh or are closely balanced with desirable effects. (Moderate quality evidence)</td>
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<td><strong>C</strong></td>
<td>Writing group consensus and/or supported by limited research evidence. Desirable effects outweigh or are closely balanced with undesirable effects or undesirable effects outweigh or are closely balanced with desirable effects, as determined by writing group consensus. Recommendations assigned a Level-C evidence may be key system drivers supporting other recommendations, and some may be expert opinion based on common, new or emerging evidence or practice patterns. (Low quality or minimal evidence)</td>
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### Clinical Considerations

Reasonable practical advice provided by consensus of the writing group on specific clinical issues that are common and/or controversial and lack research evidence to guide practice. (Paucity of evidence; based on expert guidance)

## Standardized language for SBP recommendations relative to evidence levels

<table>
<thead>
<tr>
<th>Evidence Level</th>
<th>A-Level Evidence</th>
<th>B-Level Evidence</th>
<th>C-Level Evidence (System Drivers)</th>
<th>C-Level Evidence (Expert Opinion)</th>
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<tr>
<td><strong>Target Population</strong></td>
<td>All or most stroke patients (specify type where applicable)</td>
<td>Most or within specific subgroups</td>
<td>Most or within specific subgroups</td>
<td>Unclear, some subgroups</td>
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<tr>
<td><strong>Strength of Recommendation</strong></td>
<td>Strong</td>
<td>Strong-Moderate</td>
<td>Moderate</td>
<td>Weak/Conditional</td>
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<td><strong>Quality of Evidence</strong></td>
<td>•High Quality •MA, SR, &gt; 1 RCT with consistent findings</td>
<td>•Moderate Quality •Single RCTs or &gt;1 with conflicting results; large observational studies or case controlled studies with large samples</td>
<td>•Low/very low Quality direct evidence •Stronger indirect evidence extrapolated from related RCTs (e.g., CT scans)</td>
<td>•Low/very low Quality •No evidence but strong need to make a statement</td>
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<td><strong>Preferred wording</strong></td>
<td>•Should/should not be done •Must •Is/is not recommended •Is effective/useful</td>
<td>•Should be considered •May be considered •Is/is not recommended •Is preferable •Is reasonable •May be useful</td>
<td>•Should/should not be done •Should be considered</td>
<td>•Might/Could be considered •May be helpful •May be reasonable •May be appropriate •Lack of evidence to recommend … •Is not recommended</td>
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Note: Clinical considerations do not get assigned an evidence level and wording should be cautious and clear regarding lack of evidence, and any parameters used to base considerations.
New approach to assess and report on sex disparities in research evidence

- New knowledge about male-female differences in pathophysiology, diagnosis, and treatment is shifting the practice of medicine from a one-size-fits-all approach to a more individualized process that considers sex-specific interventions at the point of care. (Tannenbaum et al, 2019)

- CCS is adopting a sex and gender lens for all new guidelines

- Process:
  1. Identify the number of males and females recruited in the research study if was this reported;
  2. Assessment of whether or not this was adequate enrollment or bias enrollment in favour of one sex based on known or presumed population incidence by sex;
  3. Assessment of whether or not the results reported were stratified by sex and whether a specific comparative analysis was done, such as efficacy by sex.
  4. Conclusions from RCTs reported by sex. Conclusions apply to females using data reported.

Option: Provide statements in rationale and evidence summary of CSBPR regarding sex and gender
CCS Structured framework for generating sex-specific guidelines

Cara Tannenbaum, Colleen Norris, Michael Sean McMurtry, CJC, 2019
The HSF will retain ownership for the intellectual content of each module.

A manuscript based on the CSBPR module update will be prepared and submitted to a peer-reviewed scientific stroke journal for consideration for publication.

Authorship inclusion will be based on current standardized journal criteria for scientific publications described by the ICMJE (International Committee of Medical Journal Editors)

- The returning co-chair will be given first authorship on the publication;
- the incoming co-chair has the option to be listed as either second author or as last author (senior author)
- The Senior Editor (H&S Director of Systems Change and Stroke Program) will be corresponding author for all publications
- All members of the WG will be included as authors and listed alphabetically (based on attendance on writing group calls and active participation in review process).
- The persons conducting the evidence searches and writing the evidence summaries will be granted authorship
- CSBPR advisory committee cochairs and advisors to the writing group, as well as other members who contributed significantly to the review of the module and/or manuscript will be given authorship
- Other potential authors will be determined on a case-by-case basis in discussions with the co-chairs and the HSF lead.

All external reviewers and members of the CSBPQ advisory committee will be listed in the acknowledgements, and not as authors unless they qualify as described above.
CSBPR Presentation Format

- Definitions
- Recommendations
- Rationale
- System Implications
- Key Quality Indicators
- Implementation Resources and Knowledge Transfer Tools
- Summary of Evidence
- Evidence Tables and Reference Lists
CSBPR: Format

**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.
• 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.

• 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.
CSBPR: Format

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.
- Includes 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.
- A link is provided to the detailed evidence tables, including research evidence and external guidelines, and a complete reference list for the section.
Community Consultation and Review Panel (CCRP)

- People who have experienced a stroke, their family members, and informal caregivers are at the centre of the CSBPR.
- Heart and Stroke has created a CCRP to engage people with lived experiences (PWLE).
- These individuals are included in the CSBPR development process.
- One member of the writing group is involved as the liaison between the WG and the CCRP process, participating in meetings of both groups.

“I believe the inclusion of myself and my peers will reflect recovery from the stroke survivors' point of view. It's a great move forward to have diverse opinions from stakeholders in order to know if CSBP recommendations are having an effect.”
– CCRP participant
- **Create** an effective model of engagement of people with living experience in partnership with H&S;
- **Sharing** of experiences, insights and feedback to build best practice recommendations that will provide healthcare professionals with the tools to provide the best possible care;
- **Drive change** in health care, increase patient experience and satisfaction rates;
- **Ensure** the final recommendations are grounded in real-life experience and applicable to those directly impacted by the recommendations – people who have had a stroke, their families.
CSBPR and CCRP: Module Update Process

**Writing Group**
- Systematic review of evidence
- Build/update evidence tables
- Working group meetings and discussions
- Draft recommendations
- Module review and revisions
- 2 months

**CCRP**
- CCRP Start Up
- 2 months

**CSBPR Start Up & Research phase**
- General input on specific issues and challenges related to module topic
- Specific input on the recommendations – experiences, gaps, needs
- Patient-oriented performance measures
- Internal & External Review
- 3 months

**Module review and revisions**
- Internal review
- External review
- 2 months

**Module review and inputs**
- Additional context and final inputs
- 2 months

**Internal & External Review**
- Identification of information needs and resources
- Co-develop and review resources
- Dissemination to peer networks and local stroke teams
- Publication & Dissemination
- Patient & Professional Resources
- 2 months
As a knowledge-focused organization, our KTE activities should drive change at multiple levels in a wholistic integrated approach. SGABR is integrated as a core element at all levels.

Considerations:

• barriers/facilitators to knowledge implementation
• tailoring knowledge to different contexts
• power of knowledge sharing through networks
• use of champions
• use of innovative dissemination channels and partnerships
• co-creation of knowledge with people with lived experience
• developing knowledge products specific to the unique needs of each audience.
**Synthesis**
- Synthesizing results of individual research studies and interpreting findings or results in the context of global evidence. E.g., systematic reviews, scoping reviews.

**Exchange**
- Two-way sharing of knowledge between research producers and users, and engaging end users at all stages of the research process. E.g., WHBRN (PWLE + researchers), CSBPR Community Consultation and Review Panel.

**Knowledge Translation**

**Application**
- Also known as implementation – putting research into practice, policy, and or action. E.g., clinical practice guidelines, order sets, protocols.

**Dissemination**
- Communication or sharing of research results – ‘end of grant KT’. E.g., publication, presentation, social media, blogs, infographics.

Improve Health Service Delivery  
Improve Health Systems  
Improve Sex and Gender sensitive care  
Improve Health and Outcomes
Heart & Stroke
Knowledge Translation Framework

Understand Needs & Gaps
Who are the target audiences? What knowledge do they need?

Adapt Knowledge to Local Context
How can the knowledge be made relevant and feasible for the local context?

Assess Barriers/Facilitators to Knowledge Use
Why are people likely/not likely to use the knowledge?

Select, Tailor, Implement Interventions*
What KT interventions should be implemented? To whom, by whom, when, how?

Monitor Knowledge Use
Is the knowledge being used? How?

Evaluate Outcomes
What were the impacts of the KT interventions?

Sustain Knowledge Use
How can the knowledge use be sustained? Scaled?

Knowledge Creation
- Research
- Expertise and knowledge from lived experience
- Data gathering, synthesis, and analysis

Mission Levers of Change*

Integrate SGBAR at all stages

Research
Advocacy
Systems Change
Support & Capacity Building with People with Lived Experience
Public Awareness & Knowledge

Adapted from Graham et al., (2006)
H&S levers to support and effect systems change through KT

Patient and Family Engagement
• Community of Survivors
• Community of Caregivers
• CareConnect

Research
• GIAs
• Chairs
• Personnel awards
• Impact grants

Quality Monitoring
• Hospitalization Process and Outcome measures
• National stats (PHAC, Stats Can)Services and Resources
• Resource inventories

Policy
• Provincial Leaders Roundtable
• Policy and position statements
  • Pharmacare
  • Marketing to Kids
  • Tobacco and Vaping

Advocacy & Awareness
• FAST Campaign Asset
• Personal stories
• Partnerships and coalitions

Knowledge Translation
• Stroke best practices
• Conferences, Webinars
• Resources (websites, guides)
• Health information

Partnerships
• Health charities
• Research funders
• Professional organizations

Integrate SGBAR in all levers
Current Heart & Stroke Knowledge Translation Activities for Multidisciplinary Healthcare Providers

**Conferences**
- Canadian Stroke Congress
- Clinical Update
- Canadian Cardiovascular Congress session
- Presentations at external conferences
- Women’s Heart Health Summit
- Lectureships

**Webinars**
- Health professionals – H&S Lead
- For Health Professionals – H&S as partners
- H&S Training Videos
- Facebook Live for PWLE
- Internal staff education and awareness

**Evidence-based Best Practice Recommendations**
- Stroke Best Practice Guidelines
- Resuscitation Guidelines
- Consultation and Review Panel for PWLE
- Collaboration on guidelines for other organizations
- Inform health information
- Inform accreditation standards

**SBP Digital, Websites and Social**
- SBP recommendations
- Healthcare provider implementation resources
- Resources for PWLE
- Upcoming events
- New research releases
- @HSF_science

**Research, Quality & Performance Monitoring**
- Funded research
- Core quality indicators across H&S conditions
- Resource Inventories
- Upcoming events
- Public Polling (e.g., FAST)
- Generated research questions
- DataHub and visualization
- Site visits and program reviews

**Policy and Advocacy**
- Position statements
- Policy statements
- Advocacy campaigns
- Collaborations with PWLE

**KT drives systems change and improves experience and outcomes for people living with conditions**
Key Quality Indicators

1. Number of stroke admissions to ED and inpatient annually.
2. Time from onset of stroke symptoms to hospital arrival.
3. Time from hospital to first brain imaging scan.
4. Time from arrival to administration of intravenous alteplase (tPA).
5. Proportion of all ischemic stroke patients who receive IV thrombolysis.
7. Time from LSN to arterial puncture.
8. Proportion of symptomatic ICH following thrombolysis or EVT.
10. Admission to a designated acute stroke unit.
11. Hospital length of stay.
13. Discharge dispositions.

1. Rehabilitation assessment within 48 hours of admission.
2. Admission rates to inpatient rehabilitation.
3. Time from stroke onset to inpatient rehabilitation admission.
4. Change in FIM score from rehabilitation admission to discharge.
5. Length of stay in inpatient rehabilitation.
6. Dysphagia screening documented.
7. Depression screening documented.
8. Vascular cognitive impairment screening documented.

1. Overall inpatient mortality.
2. 7-day inpatient mortality.
3. 30-day inpatient mortality.
4. Proportion of stroke patients who received palliative care services.
Heart & Stroke KT – Now on Twitter!

Heart & Stroke Science
@HSF_science
Official account for H&S Science, featuring knowledge translation, guidelines, research, data, education & advocacy. En français @FMCAVC_science @Heartandstroke
Canada strokebestpractices.ca Joined August 2019

Coeur et AVC science
@FMCAVC_science
Compte officiel @FMCAVC_science présentant transfert des connaissances, lignes directrices, recherche, données, éducation et mobilisation. English @HSF_science
Canada pratiquesoptimalesavc.ca Joined August 2019