AUGUST 2022

Quality Standard

+ STROKE

The Stroke Quality Standard describes key aspects of high-quality stroke care to guide improvement work in BC.

BC PATIENT SAFETY & QUALITY COUNCIL
Working Together. Accelerating Improvement.

BC PATIENT SAFETY & QUALITY COUNCIL

Working Together. Accelerating Improvement.

Our work leads to better health care for British Columbians.

We deliver the latest knowledge from home and abroad to champion and support high-quality care for every person in our province. This system-wide impact requires creativity and innovative thinking, which we combine with evidence-informed strategies to shift culture, improve clinical practice and accelerate our partners' improvement efforts.

We also understand that meaningful change comes from working together. We are uniquely positioned to build strong partnerships with patients, care providers, health leaders, policymakers, senior executives, academics and others. These connections enable us to nurture networks, recognize the needs of our health care system and build capacity where it is needed the most.

If you want to improve BC's health care system, visit **BCPSQC.ca** to access programs and resources that can help you start today.

Table of Contents

Stroke Quality Standard

WHAT IS A QUALITY STANDARD?

Quality standards are tools for helping our health care systems deliver consistent, high-quality care to support the health of patients and the population. They describe key aspects of high-quality services for a condition or topic to guide opportunities for improvement that can lead to better health outcomes.

Quality standards feature concise future-focused statements, and indicators to measure progress, that serve as common goals to which our health care system can aspire. They support:

- **People with stroke** to understand key aspects of high-quality stroke care, and to make informed decisions in partnership with their health care teams;
- **Health care professionals** to make decisions about appropriate care; and
- **Health care organizations** to examine their systems and policies, and improve the services they provide.

See bold text like ***"unwarranted variation"*** *at the right?*

That means we've included a definition for that term in our glossary on page 29

Quality standards outline priority areas for improvement within the health care system for a condition or topic. In this way, they differ from best practice guidelines that aim to guide aspects of the direct care, assessment or treatment for a patient with a condition. Quality standards are based on the best available evidence and focus on areas of BC's health care system with known **unwarranted variation**. This helps guide improvement efforts to where they are needed most.

Quality standards also aim to promote **cultural safety** and equity within the health care system. Some statements will directly address cultural safety or equity concerns, while others will highlight cultural safety and equity considerations when implementing a statement into practice. It is important to continue the process of **cultural humility** when applying the information in this document. The BC Patient Safety & Quality Council will review each quality standard every three years to determine its effectiveness and relevance.

Quality Statements

Quality statements describe priority areas for improvement within the BC health system, focusing on specific areas of the patient journey where improvement can lead to better health outcomes. These are areas where there is known unwarranted variation and gaps between evidence and practice. Unwarranted variation occurs when the care someone receives is not what is expected and is not the result of their individual circumstances or choices. Quality statements aim to reduce areas of unwarranted variation in the BC health system by focusing improvement efforts where they are needed the most.

Quality Indicators

Each quality statement includes at least one **quality indicator**. These indicators can be used to monitor local improvements and measure progress in these priority areas. Quality indicators are not a set of targets, but rather provide guidance on what to measure to help track improvements. This document includes measures which are already used within the BC health system, as well as indicators that will be developed.

About this Quality Standard

WHAT IS STROKE?

A stroke happens when blood stops flowing to any part of the brain, damaging brain cells. The effects of a stroke depend on the part of the brain that was damaged, and the amount of damage done.[1] Types of stroke include:

- **Ischemic stroke** - when a blockage or clot in a blood vessel stops blood flow to the brain.
- **Hemorrhagic stroke** - when a blood vessel in the brain breaks open because it is damaged or weakened. The interrupted blood flow causes damage to the brain.
- **Transient Ischemic Attack (TIA)** - when a small clot briefly blocks blood flow to the brain. This is sometimes called a mini-stroke or warning stroke. It is a medical emergency because it is a warning sign that a more serious stroke may occur soon.[1]

In this quality standard, the word stroke is used to collectively refer to all different types of stroke, unless it is stated otherwise.

Why Do We Need a Stroke Quality Standard?

The goal of the Stroke Quality Standard is to improve the quality of care offered to people experiencing or living with stroke, increase their chance of survival, maximize their **recovery** and reduce their risk of another stroke.

Stroke is a leading cause of death and disability but in recent years, efforts to prevent and treat stroke are leading to improvements in stroke care and decreases in death rates in BC.[2] This quality standard provides a provincially guided approach to this continued improvement.

Stroke is the third-leading cause of death in Canada after cancer and heart disease and a leading cause of adult disability.[3] The incidence of stroke is increasing as the population grows and ages[3.] There are now more than 10,000 admissions to hospital for stroke or TIA each year in British Columbia.[2]

Up to 80% of all strokes are preventable by maintaining a healthy lifestyle, including being physically active, eating healthy and not smoking.[3] However, there are many barriers to achieving a healthy lifestyle, including barriers beyond a person's control. The *Stroke Quality Standard* aims to address some of the systemic barriers that lead to poorer health outcomes for people with stroke.

Scope

This Stroke Quality Standard relates to care provided when people are at risk of having a stroke, experiencing a stroke or recovering from a stroke. It covers early recognition, acute stroke management, **secondary stroke prevention**, **rehabilitation**, recovery, community reintegration and transitions between care areas. It does not directly cover primary stroke prevention and end-of-life care for people with stroke. **Advance care planning**, which occurs throughout the care journey, is included to address the person with stroke's beliefs, values and wishes related to care.

This quality standard provides a guided approach to quality improvement for all health care settings where people may seek care due to the risk of having a stroke, experiencing a stroke or recovering from a stroke.

Patient, Caregiver and Family Guide

A Patient, Caregiver and Family Guide to the Stroke Quality Standard has been developed as a resource for people with stroke, as well as friends and family members who are involved as caregivers. It describes key aspects of high-quality stroke care for people when they are at risk of having a stroke, experiencing a stroke or recovering from a stroke.

If you are a person with stroke, their chosen caregiver or family, the guide can help illustrate what high-quality care looks like to support you to make informed decisions in collaboration with your health care team.

To see the Patient, Caregiver and Family Guide to the Stroke Quality Standard, go to **BCPSQC.ca.**

General Principles & Guiding Frameworks

Partnership

People with stroke, their chosen caregivers and/or their family will partner with health care professionals when using the information in this quality standard. Clinical judgement should be considered alongside the preferences, priorities and goals of people with stroke.

Alignment

Health care organizations should work towards aligning policies and processes with the quality standard and support health care professionals to partner with people with stroke to deliver high-quality care.

Equity

Providing stroke care to all residents of BC requires a coordinated and integrated approach. Stroke services must consider population needs when improving stroke care. Due to the unique geography of BC, stroke services must use innovative approaches in the delivery of equitable care. These approaches should aim to increase the opportunity for people with stroke to be as healthy as possible.

Cultural Safety & Humility

Cultural safety is an outcome based on respectful engagement that recognizes and strives to address power imbalances inherent in the health care system. It results in an environment free of racism and discrimination, where people feel safe when receiving health care.[5] Cultural safety is defined by the person receiving care, and their unique experiences shape the way appropriate care is provided.[6]

Cultural humility is a process of self-reflection to understand personal and systemic biases and to develop and maintain respectful processes and relationships based on mutual trust. It involves humbly acknowledging oneself as a learner when it comes to understanding another person's experience.[5] In health care, it means going through an active process of examining assumptions, beliefs and privileges, as well as how they influence the way that care is delivered.[6]

Indigenous Peoples in BC include First Nations, Inuit and Métis and within these groups there are distinct cultures, worldviews, languages and traditions. In BC, Indigenous Peoples experience poorer health outcomes compared to other people, and the prevalence of stroke in First Nations people is two times higher than other people of BC.[7] There are also systemic barriers to health which lead to Indigenous Peoples in BC being underserved by the province's health care system, including racism, stereotyping, discrimination and geographical barriers.[7] The Stroke Quality Standard aims to address some of the barriers to health for Indigenous peoples, through improving the quality of culturally safe stroke services across BC.

Person- and Family-Centred Care

Person- and family-centred care puts the person with stroke and their chosen caregivers and/or family members at the forefront of their health and care. It ensures that the person with stroke can partner with health care professionals, retain control over their own choices and make informed decisions about their care.

Chosen caregivers and/or family members are defined by the patient. They include relatives, partners, friends or community members that play an important role in ensuring people receive the care they need to have a good quality of life.

Chosen caregivers and/or family members may be identified in an advance care plan as a substitute decision maker. If there is not an advance care plan and the person with stroke is unable to make medical decisions, a **temporary substitute decision maker** will be identified by a health care professional.[10] In some emergency situations, when decisions are time critical this is not always possible.

This quality standard integrates person- and family-centred care principles. People experiencing or recovering from stroke and their chosen caregivers/ family members should be:

- treated with dignity and respect;
- provided with timely, accurate and complete information;
- encouraged and supported to participate in care and informed decision making; and
- provided with opportunities to engage and collaborate in the planning of their care.[4]

Involving the person, chosen caregivers and/or family members in planning care and education, whenever possible, is a key principle of this quality standard. This is to help meet the specific needs of the person with stroke and create a culturally safe environment for them.

Canadian Stroke Best Practice Recommendations

The ***Canadian Stroke Best Practice Recommendations*** are up-to-date, internationally recognized evidence-informed guidelines for preventing and managing stroke and promoting optimal recovery and reintegration for those who have experienced a stroke. They provide guiding principles for stroke care and the necessary infrastructure needed to achieve best practices in stroke care.[8] These recommendations are foundational to the references of best practice in the Stroke Quality Standard.

The BC Health Quality Matrix

The ***BC Health Quality Matrix (the Matrix)*** provides a common language and understanding about quality for all those who engage with, deliver, support, manage and govern health and wellness services.[9] A shared definition ensures that we can all approach thinking and learning about quality in the same way. This quality standard uses the **dimensions of quality** from the Matrix to describe what it is aiming to improve.

Interdisciplinary Care

Many different professions contribute to caring for people with stroke. These may include doctors, nurses, physiotherapists, occupational therapists, speech language pathologists and many more. They are referred to in this quality standard collectively as **health care professionals**.

Culturally appropriate health care is an important element of achieving cultural safety. Natural healing and traditional and/or complementary medicine, that the person with stroke identifies, may play an important role in their health and wellness and should be incorporated wherever possible into the care plan. Health care professionals must work together in a coordinated approach to deliver care that is safe and effective.

Virtual Health

Virtual health connects patients and their chosen caregivers and/or families with health care professionals using technology. It improves access, primarily in rural and remote locations, by enabling health care professionals to assess, monitor and treat a person with stroke virtually. While the use of virtual health plays a role in high-quality stroke care, it is more relevant at different stages of the stroke journey than others. It should be used in combination with in-person assessment, monitoring and treatment.

Quality Statements

CROSS-CONTINUUM

1

Quality Statement 1

People with a stroke diagnosis experience a care journey in the health care system that feels respectful and culturally safe.

Purpose

To improve accessibility of stroke services by delivering care that is culturally safe and respectful.

BC Health Quality Matrix Dimensions: Respect & Safety

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – Your stroke care should be professional and respectful. You should receive the same access to and quality of care, regardless of aspects of your personal identity such as race, ethnicity, colour, ancestry, place of origin, religion, marital status, family status, physical or mental disability, gender identity and expression, sex, sexual orientation and age.

  Cultural safety is an important concept in BC's health care system. Culturally safe health care services are free of racism and discrimination. Health care professionals show cultural humility in their interactions with you and seek to work with you in a way that respects your culture, circumstances, history, needs and preferences.

- **For health care professionals** – When providing care, it is important to be culturally humble and respectful. Cultural humility is a process undertaken by care providers to help identify personal and systemic biases that influence the ability to develop and maintain respectful relationships based on mutual trust.[4] Developing cultural humility starts with education and training but involves ongoing self-reflection, learning, curiosity and seeking feedback.

A patient-provider relationship developed with cultural humility promotes effective and meaningful shared decision-making and improves health outcomes.[4] Cultural safety is defined by the person receiving care and is actively achieved through ongoing cultural humility. A person's values, beliefs and wishes should be discussed throughout the decision-making process to promote respectful care.

- **For health care organizations** – A culturally safe environment is fostered by an ongoing process of cultural humility. Everyone involved with patient encounters within the system should be supported in developing key skills for cultural humility. Cultural safety is defined by the person receiving care; therefore, it is their experience that must be measured to ensure that efforts to build culturally safe practices and environments are successful. Mechanisms should be established to measure people's cultural safety experiences throughout their stroke care journey. Policies and guidelines should be established to support this commitment and to promote respectful care that reflects patients' values, beliefs and wishes.
- **Cultural safety and equity considerations** – There are many different cultures within BC. When providing care or planning services, the culture, values and beliefs of the person/people should be considered and potential barriers to accessing care should be minimized wherever possible. These may include language, geographical, social and economic barriers as well as many others.

Indicator

1. Proportion of respondents with a stroke diagnosis who report experiencing culturally safe care.

2 Quality Statement 2

People with stroke and their chosen caregivers and/or family collaborate with the care team to develop a **care plan** and work together to evaluate and update it throughout the patient journey.

Purpose

To ensure the person with stroke is at the centre of decision making and that their preferences, priorities and goals are addressed throughout their care and recovery.

BC Health Quality Matrix Dimensions: Respect, Safety & Appropriateness

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – The care plan is part of your medical record. It documents important information to help guide your stroke care and recovery. In addition to providing medical details about you as a patient – such as your stroke diagnosis, treatments and rehabilitation needs – the care plan is also a place where you can share your personal preferences, priorities and goals for recovery with everyone involved in your care.

  Your care plan will help ensure that you are at the centre of decision making about your care and that your needs are communicated and honoured. This may also include a formal advance care plan, which provides guidance about your wishes in the event you are not able to communicate them yourself.

  As you progress along your care journey, you can discuss with your care team how well the care plan is working for you, and make adjustments if needed.

- **For health care professionals** - Develop an interprofessional care plan in partnership with the person with stroke and their chosen caregivers and/or family at the earliest possible opportunity. Co-developed care plans should be revised and updated regularly and be based on recommendations from the *Canadian Stroke Best Practice Recommendations*. The care plan should reflect the person with stroke's values, beliefs and wishes, including patient-specific goals and advance care planning. Discuss the care plan with the person with stroke and their chosen caregivers and/or family and check their understanding of the plan. The most current care plan should be accessible to the person with stroke, their chosen caregivers and/or family and all relevant health care professionals.

- **For health care organizations** – Ensure protocols and policies are in place to enable the care teams to co-develop and communicate care plans with the person with stroke and their chosen caregivers and/or family, including ensuring they have access to the most current care plan. Systems should be in developed and used to facilitate the care plan to move with the person with stroke throughout their journey as this ensures better communication and safer care.
- **Cultural safety and equity considerations** – The person with stroke and their chosen caregivers and/or family are the experts in their needs, lived experience and cultural context. Their expertise should be acknowledged and reflected in the care plan. Elements of natural, traditional or complementary healing that the person with stroke identifies should be incorporated wherever possible.

Indicator

2. Proportion of respondents with a stroke diagnosis who report being involved in care planning from admission to transition into the community.

3 Quality Statement 3

People with stroke and their chosen caregivers and/or family actively take part in available stroke education and training, from the onset of their stroke and throughout their recovery.

Purpose

To increase the involvement of people with stroke and their chosen caregivers and/or family in reaching their health goals, through skills and knowledge in stroke care.

BC Health Quality Matrix **Dimensions: Respect, Safety, Accessibility & Effectiveness**

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – Learning about stroke and building your skills are important ways to help with your stroke recovery and to maintain your health and well-being. Education on stroke risk factors, treatment and recovery, as well as practical training in daily living skills can help you manage successfully at home.

  The education and training you receive should reflect your goals for recovery and wherever possible be tailored to your learning needs. Your chosen caregivers and/or family are encouraged to participate in your stroke care education.

- **For health care professionals** – Ensure people with stroke and their chosen caregivers and/or family are offered opportunities to be actively involved in education on stroke and training of necessary skills to optimize the person's independence and safety. The delivery of education and training should consider the needs and goals of the person receiving them wherever possible. This should include information on stroke awareness, secondary stroke prevention and care required. It also includes practical training of skills such as personal care, safe physical management and management of issues like swallowing or diet.

  Patients, caregivers and/or family should also know how and where to access more information in their community. Education and training should be aligned with the best evidence as described in ***Canadian Stroke Best Practice Recommendations***.

- **For health care organizations** – Systems are developed for people with stroke and their chosen caregivers and/or family to receive education on stroke, as well as training on skills required to support their ongoing recovery, health and well-being. When people with stroke and their chosen caregivers and/or family receive appropriate education and training, they will have a better opportunity to live independently while reducing hospital re-admissions.
- **Cultural safety and equity considerations** – When planning education and training, consider the literacy level, cultural background, location of the recipient and their impairments after a stroke. Educational materials should be available in a variety of languages, be aphasia friendly and tailored to the person receiving them wherever possible.

Indicators

3a. Proportion of respondents with a stroke diagnosis who report being involved in education and training related to the ongoing management of their condition.

3b. Evidence of local arrangements and protocols for providing education and training to people with stroke.

Quality Statements

EARLY RECOGNITION

4

Quality Statement 4

People with signs of stroke are recognized early and offered timely transport to the most appropriate care.

Purpose

To increase timely access to evidence-informed hyperacute therapies known to improve outcomes after stroke.

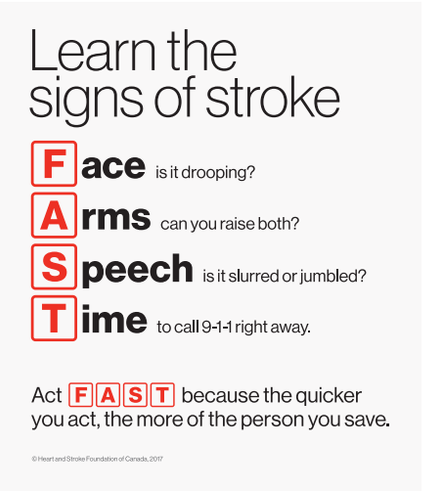
BC Health Quality Matrix **Dimensions: Respect, Accessibility, Appropriateness, Effectiveness & Equity**

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – Stroke is a medical emergency. When someone shows signs of a stroke, a rapid response can reduce the risk of permanent disability or death. This requires:
  - Early recognition of the signs of stroke
  - Rapid assessment by a trained health care professional
  - Quick transport to appropriate stroke care

It is important that everyone can recognize the signs of a stroke (see graphic on the right).

If you or another person experiences any of the following FAST signs, call 9-1-1 immediately.[11]



Also, watch for these other possible signs of stroke that may suddenly appear:

- Weakness, numbness or lack of coordination on one side of the body
- Vision loss (cannot see) in one or both eyes
- Severe headache
- Memory loss or confusion
- Episode of dizziness and unsteadiness

- **For health care professionals** – A person suspected of stroke should be rapidly assessed at first contact in the community, pre-hospital or emergency triage using a validated stroke screening tool (e.g., FAST-VAN or NIH Stroke Scale) by a trained health care professional. If a person has any symptoms of stroke, it should be treated as such until it has been definitively ruled out. People suspected of stroke should be offered timely transport to appropriate care. People suspected of stroke and their chosen caregivers and/or family should be communicated with during this time and involved in decision-making.

- **For health care organizations** – Protocols and policies are developed to identify stroke symptoms and rapidly transport the person to receive definitive stroke care. Regional and provincial ambulance transport and triage pathways are developed to support timely emergency transport within and across regions to optimize access to the most appropriate stroke care. This includes clear pathways for transporting people suspected of stroke to a health care facility with appropriate hyperacute services to identify and treat people experiencing acute stroke.

- **Cultural safety and equity considerations** – It is critically important to consider biases, stereotypes and assumptions when screening and assessing people for stroke. Health care professionals must rule out the possibility of stroke before assuming other causes. Transportation to appropriate services may mean leaving a person's community and their support structures. This should be considered when planning transport with the person and their chosen caregiver and/or family to support them accessing care. People who choose not to leave their community should be supported with services that are available where they are, either in person or virtually.

Indicators

4a. Proportion of people suspected of stroke who are assessed using a validated screening tool by BC Emergency Health Services (BCEHS).

4b. Proportion of acute stroke patients transported by BCEHS to a stroke treatment-enabled hospital (i.e., designated hyperacute stroke treatment centre) as first hospital destination.

Quality Statements

ACUTE CARE

5

Quality Statement 5

When presenting to the emergency department, people with acute stroke are offered rapid assessment and treatment appropriate for their type of stroke as outlined by the ***Canadian Stroke Best Practice Recommendations***.

Purpose

To improve the appropriateness of assessment and treatment offered to people with stroke to decrease the severity of long-term effects.

BC Health Quality Matrix Dimensions: Respect, Safety, Appropriateness, Effectiveness & Equity

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – Once you arrive at the emergency department, you should be assessed without delay. If the health care professional suspects stroke, you should be sent immediately for a brain scan. If that is not available, transport should be arranged to the nearest appropriate facility as soon as possible.

  The brain scan can confirm a stroke and show what type of stroke you have. The treatment that is recommended for you will depend on the type and severity of your stroke:

  - If you have an ischemic stroke (caused by a blood vessel blockage or clot), your health care professional will look at ways to restore blood flow in the brain. Treatment may include medication to dissolve the blockage/clot (**thrombolysis**) or a procedure to remove the blockage/clot (**endovascular thrombectomy** or EVT).[1]
  - If you have a hemorrhagic stroke (caused by a burst blood vessel in the brain), your health care professional will consider how to stop the bleeding and relieve pressure in the brain. Treatment options may include surgery, managing your blood pressure and controlling how your blood clots.[1]

  These treatments may not be appropriate for everyone. The care team will

discuss their recommendations with you and ask for your consent to provide treatment. If you are unable to make medical decisions due to the stroke, the health care professional will attempt to identify a **temporary substitute decision maker** to provide consent on your behalf. In emergency situations this is not always possible. If you have an advance care plan, your wishes will be known and can be used to guide decisions.

- **For health care professionals** – Various options exist for treatment of stroke, depending on the type and severity. Rapid assessment and appropriate imaging will determine the type and severity of stroke. **Reperfusion** treatment such as thrombolysis or endovascular thrombectomy (EVT) should be offered for eligible and confirmed ischemic stroke as soon as possible. Emergency medical and surgical management options should be considered for hemorrhagic stroke, such as blood pressure control, management of **anticoagulation** (if applicable) and neurosurgical consultation. Collaborate with the person with stroke, their chosen caregivers and/or family, involving them in decision making whenever possible and seeking consent for treatment. If the person with stroke is unable to make medical decisions, the health care professional will attempt to identify a temporary substitute decision maker. If there is an advance care plan, this should be used to guide decisions.

- **For health care organizations** – Systems are developed to ensure people with stroke are rapidly assessed and offered treatment as per best evidence outlined by the ***Canadian Stroke Best Practice Recommendations***. Acute treatment of stroke is time-critical and requires coordinated services that bridge multiple specialties and health systems. **Virtual health** technologies, such as Tele-Stroke, should be considered to increase access to evidence-informed care if providers with stroke expertise are not available on site. Policies and protocols are developed to identify a temporary substitute decision maker when needed and use an advance care plan (if there is one) to guide decisions.

- **Cultural safety and equity considerations** –When explaining the person's condition and treatment options, care should be taken to ensure the person and their chosen caregivers and/or family understand the information and can make informed decisions about their care options. Consideration should be made to involve community supports if the person with stroke, their chosen caregivers and/or family request their support. Virtual health should be considered to provide access to expert stroke care to communities that do not have on-site health care professionals with stroke expertise.

Indicators

5a. Median time from patient arrival at a hospital to first brain imaging scan.

5b. Median time from patient arrival in the emergency department to administration of thrombolysis .

5c. Median time from patient arrival at a hospital to arterial puncture for patients undergoing acute endovascular treatment

6 Quality Statement 6

A person with stroke is offered **stroke unit care** as defined by the **Provincial Stroke Unit Care Definition**.[12]

Purpose

To improve acute stroke outcomes by increasing access to best practice, **interdisciplinary** stroke unit care.

BC Health Quality Matrix **Dimensions: Respect, Accessibility, Appropriateness, Effectiveness & Equity**

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – If you require hospitalization for stroke, you should be offered stroke unit care. A stroke unit is a specialized hospital unit staffed by a team of health care professionals with stroke expertise, such as physicians, nurses, occupational therapists, physiotherapists, speech-language pathologists, pharmacists, social workers and dietitians. Members of the stroke unit team may see you in person or they may see you virtually.

  Not all hospitals have a stroke unit on site. Depending on your needs and preferences, you may be transferred to another hospital to receive stroke unit care. You and your chosen caregivers and/or family should be involved in any decisions about transferring to another hospital.

- **For health care professionals** – People with stroke should be offered stroke care by an interdisciplinary team with stroke expertise. The team may include physicians, nurses, occupational therapists, physiotherapists, speech-language pathologists, pharmacists, social workers and dietitians. The team may also include access to other health care team members depending on the person's needs, preferences and goals. The interdisciplinary team should assess the person with stroke within 48 hours of admission to hospital and form a care plan in collaboration with the person with stroke and their chosen caregivers and/or family. This assessment should be based on the best evidence as outlined in ***Canadian Stroke Best Practice Recommendations***, using **validated tools**.

- **For health care organizations** – Systems should be in place to ensure people with stroke have access to evidence-informed stroke unit care as defined by the **Provincial Stroke Unit Care Definition**. Virtual health options should be considered to increase access to evidence-informed care if providers with stroke expertise are not available on site.

- **Cultural safety and equity considerations** – Elements of natural, traditional or complementary healing should be incorporated, as per the person with stroke's wishes, alongside care described by **best evidence** wherever possible. People who choose not to transfer to facilities with stroke unit care should be supported in their community with services available. Virtual health may be in place to provide expert stroke care to communities that do not have on-site health care professionals with stroke expertise.

Indicator

6. Proportion of people with acute stroke who are admitted to a designated stroke unit at any point during hospitalization.

Quality Statements

SECONDARY PREVENTION

7

Quality Statement 7

At the time of diagnosis, people with stroke (including **TIA**) are assessed for risk of recurrent stroke and offered preventive treatment and education.

Purpose

To decrease the risk of recurrent or more disabling stroke in people who have a stroke (including TIA).

BC Health Quality Matrix **Dimensions: Respect, Safety, Appropriateness, Effectiveness & Efficiency**

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – If you have a stroke (including TIA), you are at risk of having another stroke. This could lead to more disability or death. Secondary stroke prevention is an important part of your stroke care.

  In addition to the urgent care you receive immediately following a stroke, you should be assessed for your risk of having another stroke. This may require further diagnostic tests.

  If you are admitted to hospital, your inpatient care may include treatments for secondary stroke prevention and education about how to reduce your risk by making changes to your diet, exercising or taking medicines.

  If you do not require hospitalization, you may receive an urgent referral to a health care professional who specializes in secondary stroke prevention. Together, you can decide on treatment options and discuss ways to minimize your risk of another stroke.

  You may wish to talk to your chosen caregivers and/or family, as well as a health care professional, about advance care planning. This allows you to express your beliefs, values and wishes to guide decision making if you are unable to communicate your wishes.

- **For health care professionals** – People with stroke (including TIA) are at high risk of a reoccurring stroke, especially within 48 hours of their initial symptom onset.[4] People with stroke should be assessed for risk of reoccurring stroke by a health care professional with expertise in stroke. A care plan, including education, should be developed with the person with stroke, their chosen caregivers and/or family. The care plan should be based on the best evidence as outlined in ***Canadian Stroke Best Practice Recommendations*** as well as the person with stroke's values, beliefs and wishes. This includes assessment and management of blood pressure, irregular heartbeat, lipid levels, blood sugars, diabetes and other risk factors, and consideration of **anti-platelet therapy** and **anticoagulation**. Care plans should be accessible to the person with stroke and their chosen caregivers and/or family so they can be actively involved in the planning and care implementation.

  If the health care facility does not have a health care professional with expertise in stroke, the person with stroke should be referred to a health care facility or provider that specializes in secondary stroke prevention.

- **For health care organizations** – Systems are developed for people with stroke (including TIA) receive rapid access to services either virtually or in person that specialize in minimizing the risk of recurrent stroke. Processes and protocols should ensure a care plan that outlines preventative strategies is made in conjunction with the person with stroke and provided before they leave the health care facility. This includes providing the care plan in a language and format they understand.

- **Cultural safety and equity considerations** – When making a care plan to decrease the risk of recurrent stroke, collaborate with the person with stroke and their chosen caregivers/family to overcome physical, social and economic barriers. Ensure that the plan is culturally safe and relevant to the person with stroke. Consider their local community supports and how they may help meet the person's health goals. Virtual health should be considered to provide expert stroke care to communities that do not have on-site health care professionals with stroke expertise.

Indicators

7a. Proportion of patients with TIA or non-disabling stroke investigated and discharged from the emergency department who are referred to organized secondary stroke prevention services at discharge.

7b. Proportion of highest risk TIA and nondisabling stroke patients who are investigated and managed within 24 hours of the first contact with the health care system.

7c. Proportion of people with a final diagnosis of ischemic stroke or TIA prescribed antithrombotic therapy on discharge from acute care.

Quality Statements

REHABILITATION & RECOVERY

8

Quality Statement 8

Throughout their care journey, people with stroke have access to interdisciplinary rehabilitation that aligns with the ***Canadian Stroke Best Practice Recommendations***.

Purpose

To increase access to evidence-informed stroke rehabilitation delivered by health care professionals with expertise in stroke recovery that meets the person's needs.

BC Health Quality Matrix **Dimensions: Respect, Accessibility, Appropriateness & Effectiveness**

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – Rehabilitation is a process to help you regain skills that were lost due to stroke. Rehabilitation may occur at any point of the stroke recovery journey, and can be offered in hospitals, outpatient clinics, community programs and more.

  If you are hospitalized for stroke, your care will include an initial rehabilitation review to determine your rehabilitation needs. This usually happens within the first 48 hours, depending on your condition. You may need support from a range of health professionals with expertise in stroke rehabilitation, including **physiatrists**, other physicians, occupational therapists, physiotherapists, speech-language pathologists, nurses, social workers and dietitians. Depending on the hospital, some health care professionals may meet with you virtually rather than in person.

  If you do not require admission to hospital, you may be screened to see if you need a referral to an outpatient or community-based rehabilitation service.

- **For health care professionals** – Rehabilitation is a process that may occur throughout the patient journey and should be considered after the person with stroke is stabilized. When clinically appropriate, an interdisciplinary stroke rehabilitation team should assess the person with stroke within 48 hours of hospital admission.

An interprofessional care plan should be informed by and developed with the person with stroke and their chosen caregivers and/or family to best suit their needs and goals. Evidence-informed rehabilitation interventions should commence as soon as appropriate during acute care.

A person with stroke who is not admitted to hospital should be screened for the need for referral to a health care professional with expertise in stroke rehabilitation, where feasible, before they leave the health care facility. When screening, assess any persistent disabilities that impact their activities of daily living.

- **For health care organizations** – Systems are developed so people with stroke have timely access to an interdisciplinary rehabilitation team with stroke expertise. This may be either fully in-person or a combination of in-person and virtual. This team may include physiatrists or other physicians with expertise in stroke rehabilitation, occupational therapists, physiotherapists, speech-language pathologists, nurses, social workers and dietitians, and other professionals based on the needs of the person with stroke. Rehabilitation may occur at any point of the patient journey, including in acute care facilities, rehabilitation facilities, ambulatory clinics, community programs and more.
- **Cultural safety and equity considerations** – When collaborating with people with stroke, consider their personal and cultural needs. Elements of natural, traditional or complementary healing that the person with stroke identifies should be incorporated, alongside care described by best evidence, wherever possible. Some people with stroke will choose to stay in their community rather than travelling to specialized centres. These people should be supported and offered services such as virtual health, wherever possible. Virtual health should be considered to provide expert stroke care to communities that do not have on-site health care professionals with stroke expertise.

Indicators

8a. Proportion of stroke patients with a rehabilitation assessment within 48 hours of hospital admission for acute stroke by at least one rehabilitation professional with expertise in stroke.

8b. Proportion of acute stroke patients discharged/transferred from acute care to an inpatient rehabilitation unit.

8c. Proportion of stroke patients discharged to the community who receive a referral for outpatient rehabilitation before discharge from acute and/or inpatient rehabilitation (either facility-based or community-based programs).

Quality Statements

COMMUNITY REINTEGRATION

9

Quality Statement 9

Within the first year after hospital discharge, people with stroke receive a health and social care needs review initiated by their primary health care provider.

Purpose

To ensure support for reintegration of people with stroke back into their community and to identify gaps in knowledge, skills or support.

BC Health Quality Matrix **Dimensions: Respect, Safety, Accessibility & Appropriateness**

WHAT THIS STATEMENT MEANS:

- **For patients, caregivers and/or family** – The decision to discharge you from hospital care will be guided by an assessment of your readiness to return to the community. In addition to assessing your health, your stroke care team will determine whether you and your chosen caregivers and/or family will require additional skills, knowledge or services to support you to live safely in the community.

  Once in the community you will work with your primary care team (such as a family doctor and community-based rehabilitation specialists) to develop a plan for follow-up and support after hospital discharge. You will also receive information on who to contact if you need to talk to someone about your health before your next scheduled review.

- **For health care professionals** – Use validated tools to assess the knowledge and ability of a person with stroke and their chosen caregivers and/or family to determine what supports they may need in the community before discharge from hospital. The **post-stroke checklist**[8] may assist in this assessment.

Collaboration should occur between the person with stroke, their chosen caregivers and/or family and their primary care team to determine when, where and how follow-up reviews will take place. Provide them with information on who to contact if they have any issues before the next review. When reviewing the information with the person with stroke and their chosen caregivers and/or family, look for gaps in their knowledge, skills or services and seek to address those areas. Referral to specialized community teams may be needed, such as community rehabilitation.

- **For health care organizations** – Systems are developed to support appropriately trained health care professionals to conduct health and social care needs reviews with people with stroke and their chosen caregivers and/or family before discharge and in the community. These reviews will help support people with stroke to remain in their community and ensure their health and well-being.

- **Cultural safety and equity considerations** – Different communities will have different support structures available. It is important to collaborate with the person with stroke and their chosen caregivers and/or family, as well as with community organizations, to determine what the person needs to successfully return to the community. Also consider the role the person has within their family and community, and how their stroke will impact that role. Integrated approaches and partnerships may be needed within and across regions to ensure equitable access to services.

Indicators

9a. The number and frequency of persons with stroke readmitted to acute care for reasons related to physical decline or failure to cope, following an initial stroke hospital stay.

9b. Proportion of respondents with a stroke diagnosis who report having their stroke care needs reviewed with their primary care provider within the first year following discharge from hospital.

Definitions

Term	Definition
advance care planning	A process of reflection and communication, where a person will reflect on their values and beliefs, and then let others know their future health and personal care preferences in the event that they become incapable of consenting or refusing care.[13]
anticoagulation	Therapy used to prevent blood clots from forming. Blood clots can cause a stroke when they make their way into blood vessels. Anticoagulants can also prevent blood clots from getting bigger.[14]
anti-platelet therapy	Anti-platelets help to prevent blood clots by preventing blood from clumping together.[14] Aspirin and Clopidogrel are common anti-platelet therapies.
care plan	A plan to outline a person's stroke care journey. It is developed with the person with stroke, their chosen caregivers and/or family and the health care team. It includes specific therapy goals, upcoming investigations and daily therapy activities.[18]
complementary medicine	A variety of health care practices that may be used along with medical treatment. Examples include alternative health approaches (e.g., naturopathy), mind and body techniques (e.g., acupuncture) and natural health products (e.g., herbs and dietary supplements).[15]
computerized tomography scan (CT scan)	A CT scan sends X-rays through the body to make detailed pictures of body structures such as organs, bones or blood vessels.[16]
cultural humility	A process of self-reflection to understand personal and systemic biases and to develop and maintain respectful processes and relationships based on mutual trust. Cultural humility involves humbly acknowledging oneself as a learner when it comes to understanding another's experience.[5]
cultural safety	An outcome based on respectful engagement that recognizes and strives to address power imbalances inherent in the health care system. It results in an environment free of racism and discrimination, where people feel safe when receiving health care.[5]

Term	Definition
dimensions of quality	Quality is defined by seven dimensions that span the full continuum of care: ◢ **Respect:** honouring a person's choices, needs and values ◢ **Safety:** avoiding harm and fostering security ◢ **Accessibility:** ease with which health and wellness services are reached ◢ **Appropriateness:** care is specific to a person's or community's context ◢ **Effectiveness:** care is known to achieve intended outcomes ◢ **Equity:** fair distribution of services and benefits according to population need ◢ **Efficiency:** optimal and sustainable use of resources to yield maximum value[9]
end-of-life care	Supportive and compassionate care that focuses on comfort, quality of life, respect for personal health care treatment decisions, support for the family, and psychological, cultural and spiritual concerns for dying people and their families.[17]
endovascular thrombectomy (EVT)	A surgical procedure used to remove a blood clot in a blood vessel.[18]
FAST signs	**FAST** is an acronym used to highlight the most common signs of a stroke: ◢ **Face** is it dropping? ◢ **Arms** can you raise both? ◢ **Speech** is it slurred or jumbled? ◢ **Time** to call 911 right away.[11]
health care professionals	Health care professionals provide essential services to promote health, prevent diseases and deliver health care services based on the needs of the person.[19]
hemorrhagic stroke	A stroke which occurs when a blood vessel in the brain breaks open because it is damaged or weakened. The interrupted blood flow causes damage to the brain.[1]

Term	Definition
interdisciplinary team	A team of health care professionals dedicated to the care of a person with stroke. The team will include physicians, nurses, allied health professionals such as physiotherapists, speech-language pathologists, pharmacists, social workers and dietitians, to name a few.[20]
ischemic stroke	A stroke which occurs when the blood supply to the brain is disrupted, normally due to a blood clot or blockage in a blood vessel in the brain.[1]
people with stroke	People who are having or have had a stroke, including TIA.
personal identity	A person's sense of self which is made of different identities. These identities may include gender, culture, race, sexuality and many more. Each person has a unique mixture of identities and lived experiences which form their personal identity.
physiatrist	A physician who specializes in the field of physical medicine and rehabilitation.[22]
primary stroke prevention	Approach to prevent the initial occurrence of a stroke in otherwise healthy individuals. Prevention strategies include lifestyle and risk factor management, diabetes management and screening for high blood pressure.[26]
quality indicators	A quality indicator is used to measure health system performance, provide comparable and actionable information and track progress over time.[23]
recovery	Stroke recovery is a process which includes seven steps: exercise and mobility; communication and language; social interaction; thinking, memory and perception; support; healthy lifestyle; and navigating the health care system.[24]
rehabilitation	A process in the stroke recovery journey to help regain skills and functions that were lost due to stroke.[25]
reperfusion treatment	Used to restore blood flow to the brain by using either medication (thrombolysis) or surgery (endovascular thrombectomy).[26]
secondary stroke prevention	Efforts such as lifestyle modifications to prevent stroke in patients who are at risk of experiencing a stroke or have already experienced one.[27]

Term	Definition
stroke	A disruption of blood supply to the brain - either through a blockage due to clot (ischemic), or bleeding (hemorrhagic). The amount of brain affected by the stroke and the type of symptoms a person experience depends on where the blockage or bleed occurs. In both cases, if the blood supply is not restored quickly, the affected part of the brain dies, causing disability or death.[1]
stroke unit care	A stroke unit is a specialized, geographically defined hospital unit dedicated to the management of stroke patients and staffed by an experienced interdisciplinary stroke team.[20]
temporary substitute decision maker	An adult chosen by a health care professional from a list of family and/or friends of someone who is unable to speak for themselves. This person must be willing and able to make decisions about health care treatments of the person who cannot communicate.
thrombolysis	Medication used to break up a blood clot to allow blood to begin flowing properly again.[14]
transient ischemic attack (TIA)	A "mini-stroke" when blood flow to the brain stops for a short period of time. A TIA is an important sign of a problem with blood flow to the brain and should be treated as an emergency.[1]
unwarranted variation	Variation in care received that cannot be explained by the condition or the preference of the patient; it is variation that can only be explained by differences in health system performance.[29]
validated tools	Recommended assessment and screening tools used during stroke care to assess levels of functional and disability due to stroke.[30] Examples of validated stroke tools: ◢ **Alpha-FIM (Functional Independence Measure):** used in the acute care setting to assess functional ability. ◢ **FAST-VAN:** used to identify large vessel occlusion. ◢ **NIH-Stroke Scale:** used to assess neurologic function (visual, auditory, sensory).
virtual health	Connects patients and their chosen caregivers and/or families with health care professionals using technology. It improves access in remote locations by enabling health care professionals to assess, monitor and treat a person with stroke virtually.[28]

References

1. What is stroke? [Internet]. Heart and Stroke Foundation of Canada; [Date Unknown] [cited 22 October 2020]. Available from: **https://www.heartandstroke.ca/stroke/what-is-stroke**

2. Canadian Institute for Health Information. CIHI Portal [Internet]; 2003 [cited 17 February 2021]. Available from **https://secure.cihi.ca/cas/login**

3. Heart and Stroke Foundation of Canada. (Dis)connected: How unseen links are putting us at risk; 2019 [cited 17 February 2021]. Available from: **https://www.heartandstroke.ca/-/media/pdf-files/canada/2019-report/heartandstrokereport2019.ashx?la=en&hash=17A3D9DFAFA68D977E48879F320E38CBE76D3B54**

4. Carman KL, Dardess P, Maurer M, Sofaer S, Adams K, Bechtel C, Sweeney, J. Patient and family engagement: A framework for understanding the elements and developing interventions and policies. Health Affair. 2013; 32[2]: 223-32

5. Cultural safety & humility [Internet]. First Nations Health Authority; [Date Unknown] [cited 10 January 2021]. Available from: **https://www.fnha.ca/wellness/cultural-humility**

6. San'yas Indigenous Cultural Safety Training [Internet]. Provincial Health Services Authority; [Date Unknown] [cited 10 February 2021]. Available from: **https://www.sanyas.ca/**

7. Turpel-Lafond ME. In plain sight: Addressing Indigenous-specific racism and discrimination in B.C. health care, full report [Internet]; 2020 [cited 13 July 2021] Available from: **https://engage.gov.bc.ca/app/uploads/sites/613/2020/11/In-Plain-Sight-Full-Report.pdf**

8. Stroke best practices [Internet]. Heart and Stroke Foundation of Canada; [Date Unknown] [cited 7 January 2021]. Available from: **https://www.strokebestpractices.ca/**

9. BC Patient Safety &Quality Council. BC Health Quality Matrix [Internet]; 2020. [cited 29 January 2021]. Available from: **https://bcpsqc.ca/matrix**

10. Advance care planning [Internet]. Government of British Columbia; [Date Unknown] [cited 13 July 2021]. Available from: **https://www2.gov.bc.ca/gov/content/family-social-supports/seniors/health-safety/advance-care-planning**

11. AST signs of stroke...what are the other signs? [Internet]. Heart and Stroke Foundation of Canada; [Date Unknown] [cited 09 February 2021]. Available from: **https://www.heartandstroke.ca/stroke/signs-of-stroke/fast-signs-of-stroke-are-there-other-signs**

12. Stroke [Internet]. Provincial Health Services Authority; [Date Unknown] [cited 13 July 2021]. Available from: **http://www.phsa.ca/health-professionals/clinical-resources/stroke#Provincial--Clinical--Practice--Guidelines**

13. Glossary [Internet]. Advance Care Planning Canada; 2020 [Cited 13 July 2021] Available at: **https://www.advancecareplanning.ca/resource/advance-care-planning-terms**

14. Medications [Internet]. Heart and Stroke Foundation of Canada; [Date Unknown] [cited 3 March 2021]. Available from: **https://www.heartandstroke.ca/stroke/treatments/medications**

15. Complementary medicine [Internet]. HealthLink BC; 2020 [cited 26 March 2021]. Available from: **https://www.healthlinkbc.ca/health-topics/aa63785**

16. Computed Tomography (CT) scan of the body [Internet]. HealthLink BC; 2019 [cited 10 February 2021]. Available from: **https://www.healthlinkbc.ca/medical-tests/hw233596#:~:text=A%20computed%20tomography%20(CT)%20scan,a%20large%20doughnut%2Dshaped%20machine.&text=For%20some%20types%20of%20CT%20scans%2C%20you%20drink%20the%20dye**

17. End-of-life care [Internet]. Government of British Columbia; [Date Unknown] [cited 26 March 2021]. Available from: **https://www2.gov.bc.ca/gov/content/health/accessing-health-care/home-community-care/care-options-and-cost/end-of-life-care**

18. Acute ischemic stroke treatment [Internet]. Heart and Stroke Foundation of Canada; 2018 [cited 10 February 2021]. Available from: **https://www.strokebestpractices.ca/recommendations/acute-stroke-management/acute-ischemic-stroke-treatment#p54-Acute-Endovascular-Thrombectomy-Treatment-EVT**

19. Health professions networks [Internet]. World Health Organization; [Date Unknown] [cited 12 February 2021]. Available from: **https://www.who.int/teams/health-workforce/health-professions-networks/#:~:text=Health%20professionals%20play%20a%20central,the%20primary%20health%20care%20approach.**

20. Acute stroke unit care [Internet]. Heart and Stroke Foundation of Canada; [updated 2018] [cited 10 February 2021]. Available from: **https://www.strokebestpractices.ca/recommendations/acute-stroke-management/acute-stroke-unit-care**

21. Section 3: Interprofessional care planning and communication [Internet]. Heart and Stroke Foundation of Canada; [updated 2019] [cited 12 February 2021]. Available from: **https://www.strokebestpractices.ca/recommendations/managing-stroke-transitions-of-care/interprofessional-care-planning-and-communication**

22. Staehler R. What is a physiatrist? [Internet]. Spine-health; 2011 [cited 3 March 2021]. Available from: **https://www.spine-health.com/treatment/spine-specialists/what-a-physiatrist**

23. Health indicators [Internet]. Canadian Institute for Health Information; [Date Unknown] [cited 10 February 2021]. Available from: **https://www.cihi.ca/en/health-indicators**

24. Stroke Recovery Association of British Columbia. 7 steps to recovery: Learn how to reclaim your life [Internet]; [Date Unknown] [cited 17 February 2021]. Available from: **https://strokerecoverybc.ca/wp-content/uploads/SRABC-7STEPS-0217-R4E-draft01.pdf**

25. Stroke rehabilitation [Internet]. HealthLink BC; 2019 [cited 29 January 2021]. Available from: **https://www.healthlinkbc.ca/health-topics/zp3369**

26. UpToDate [Internet]. UpToDate: Evidence-based clinical decision support [Internet]. Wolters Kluwer; [Date Unknown] [cited 10 February 2021]. Available from: **https://www.wolterskluwer.com/en/solutions/uptodate**

27. Definitions [Internet]. Heart and Stroke Foundation of Canada; [updated 2020] [cited 10 February 2021]. Available from: **https://www.strokebestpractices.ca/recommendations/secondary-prevention-of-stroke/definitions**

28. Definitions [Internet]. Heart and Stroke Foundation of Canada; [Date Unknown] [cited 10 February 2021]. Available from: **ttps://www.strokebestpractices.ca/recommendations/telestroke/definitions**

29. Unwarranted clinical variation resources [Internet]. Agency for Clinical Innovation; [Date Unknown][cited 21 July 2021]. Available from: **https://aci.health.nsw.gov.au/resources/unwarranted-clinical-variation**

30. Teasell R, Salbach NM. Rehabilitation and recovery following stroke: Table 1: Suggested stroke rehabilitation screening and assessment tools [Internet]. Heart and Stroke Foundation; 2019 [cited 10 February 2021]. Available from: **https://www.heartandstroke.ca/-/media/1-stroke-best-practices/rehabilitation-nov2019/csbpr-rehabiliation-table1-suggested-stroke-rehabilitation-screening-and-assessment-toolsnov19.ashx?rev=96be9dace11948ccaa56529fcc674f60**

BC PATIENT SAFETY & QUALITY COUNCIL

Working Together. Accelerating Improvement.

BCPSQC.ca

info@bcpsqc.ca

@BCPSQC

201-750 Pender St W
Vancouver, BC V6C 2T8
604.668.8210 | 1.877.282.1919

HOW TO CITE THIS DOCUMENT

BC Patient Safety & Quality Council. (2022). Stroke Quality Standard.
Available from: **www.bcpsqc.ca/improve-care/stroke-quality-standard**