Cardiovascular Health and Stroke
Strategic Clinical Network

Cardiovascular Health and Stroke Strategic Clinical Network

2023-2026 Transformational Roadmap

Alberta Health Services
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August 2023

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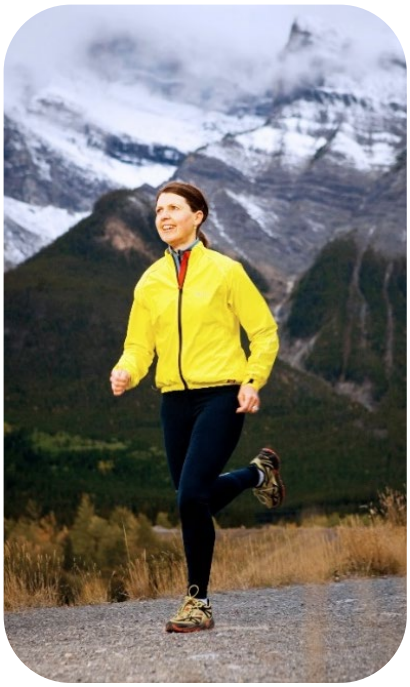
Introduction

Since 2012, the Cardiovascular Health and Stroke Strategic Clinical Network (CvHS SCN) has brought together a diverse group of Albertans with a common goal: **healthier hearts and brains for all Albertans** by excelling in the prevention, treatment and research of cardiovascular disease and stroke. The purpose of this Transformational Roadmap (TRM) is to share our strategic plan for 2023-2026 including our direction, priorities, and targeted outcomes which aim to positively impact the health of people living in Alberta.

Landscape of Cardiovascular Health and Stroke in Alberta

Vascular disease remains a serious and ongoing health concern for many people living in Alberta.

- **Nine out of ten** Canadians have at least one risk factor for heart disease and stroke.
- Up to **80%** of premature heart disease is caused by modifiable factors such as smoking (tobacco), poor physical activity, air pollution, and a diet lacking in fruits and vegetables. Reduction or elimination of these factors could substantially decrease risk of premature heart disease.
- Data from a pilot study suggests approximately 27% of the adult Alberta population are eligible for a statin medication that can reduce risks for heart attack and stroke. However, **only 30%** of this group is receiving a statin.
- **One out of six** stroke victims die and 90% of survivors have some degree of neurological disability.
- In Alberta, approximately **7,900 emergency department visits** occur every year for stroke and transient ischemic attack (TIA). Of those, 5,000 patients require admission to hospital, and approximately 65% reside in urban zones and 35% are in rural zones.
- In 2021-2022, there were approximately **5,220 cardiac hospitalizations and 425 readmissions** in Alberta.
- The mean cost of congestive heart failure to the healthcare system is **$55 million** and increases with patient age.



Quality care for cardiac patients in Alberta is an important priority.

- There is a **lack of consistent measurement of core quality indicators** for cardiac services which impacts Alberta Health Services' (AHS) ability to monitor performance and areas for care improvement.
- It is estimated that **30%** of tests performed in Canada have low diagnostic and prognostic value. While electrocardiogram (ECG) testing can be useful to find the cause of unexplained chest pain, shortness of breath or palpitations, ECGs are not recommended in certain situations.
- Routine testing for minor abnormalities may also result in **unnecessary worry and stress** and further testing called "testing cascade" where multiple low value tests are performed could end up being harmful.

- **One in two** Canadians is impacted by the growing epidemic of Heart Failure (HF). Patients with HF and Chronic Obstructive Pulmonary Disease (COPD) account for the **highest hospital admission rates** of all chronic diseases in Alberta.
- Current evidence-based HF care including early recognition, management, and follow-up is essential to reduce HF emergency room visits, hospital admissions, and length of stay (LOS). By translating research into practice, new tools can be made available to improve quality of life while keeping patients at home.
- Atrial Fibrillation (Afib) is a type of irregular heart rhythm which affects **59,000 Albertans**. The main complications of Afib if left untreated are heart failure and stroke, with **25%** of strokes after age 40 caused by Afib.

Ensuring consistent, quality care for stroke patients in Alberta is key.

Implementation of the Stroke Action Plan in 2013 reduced inequities in stroke unit equivalent care and in stroke rehabilitation (rehab) care. Early Supported Discharge programs in Calgary and Edmonton have cut the average LOS for stroke patients substantially. Allowing patients to return home sooner after a stroke helps free up inpatient beds and has been shown to improve patient outcomes. However, Alberta still does not meet the *Canadian Best Practice Guidelines for Stroke Rehabilitation* in multiple areas of care.

According to the guidelines:

- Target times for entry into inpatient rehab are 5-7 days after a stroke. Comparatively, as of 2022 in Alberta, the median time for patients to enter into rehab is **14** days.
- Once a patient enters inpatient rehab, they have a long LOS for a variety of reasons, with the median LOS in Alberta for 2021 being a lengthy **36** days.

Ultimately, these issues can result in poor access to care as patients wait in costly acute care beds where they do not receive appropriate rehab. A lack of timely and appropriate rehab can limit a patient's ability to recover after a stroke, **resulting in poor health outcomes**.

For some patients who experience a stroke, treatment with intravenous thrombolytic agents and/or endovascular thrombectomy (EVT) is life and disability saving. In 2020, recommendations from *Canadian Stroke Best Practices* increased the time window for all patients with acute ischemic stroke to be screened for EVT eligibility from 6 hours to 24 hours of symptom onset.

- Operationalizing this change across Alberta is anticipated to not only allow additional patients to potentially receive effective treatment that can reduce disability and mortality, but also reduce health system costs by an average of **$42,287** per patient who receives EVT.

Focus on Women & Populations Vulnerable to Poor Health Outcomes

While heart disease and stroke are the primary cause of premature death in Canada for women, **two thirds of clinical prevention research related to these conditions has focused on men.** Women and men are nearly equally affected by stroke with small differences. Women suffer more atraumatic sub-arachnoid hemorrhage and TIA and endure stroke at an older age as compared to men. Cardiovascular disease is **more than double in Indigenous peoples** in Canada compared to non-Indigenous. These inequities in stroke and cardiac outcomes demonstrate the need for action.

Role of the Cardiovascular Health and Stroke Strategic Clinical Network

While our population faces cardiovascular health issues, Alberta is home to some of the most forward-thinking and comprehensive prevention, treatment and disease management strategies in Canada. To address and improve these concerns, the mission of the CvHS SCN is to support the health of Albertans through **prevention, collaborative partnerships, research, and innovation** in cardiovascular health and stroke.

Heart disease and stroke share many of the same risk factors. Understanding how these conditions are connected and coordinating decision making based on this information allows the CvHS SCN to improve care for patients and all Albertans.

The CvHS SCN focuses on accessing supporting research, creating partnerships, and engaging patients and families to find evidence informed solutions to improve patient care. The following groups are engaged to identify areas for improvement, develop innovative solutions, and support system changes to improve the quality of cardiovascular and stroke care in Alberta:

The work of the CvHS SCN is guided by our Core Committee and the TRM, which documents the work we want to conduct for 2023-2026 and builds on many of our past successes. See Appendix A for more information on a few of our recent achievements, and Appendix B for details about the TRM development process.
The CvHS SCN will lead and collaborate with our partners to accomplish actions and priorities under the following key Strategic Directions over the next three years:

- Promote consistent **quality care for cardiac** patients anywhere in the province.
- Promote consistent **quality care for stroke** patients anywhere in the province.
- Improve vascular health at the **population level** through the integration and enhancement of **health promotion and prevention**.

Our Anchors

The CvHS SCN bases our work on three anchors – *Quality, Science and Community*. These anchors are the driving force behind every initiative we undertake.

As an overarching anchor, **QUALITY** includes incorporating the Health Quality Council of Alberta's six dimensions of quality (currently being updated) into our initiatives. It requires implementing Key Performance Indicators to measure the impact of our work, assessing the return on investment of our initiatives, and working to improve patient flow and consistent care throughout the province. In this work, we will intentionally search for opportunities to improve the equity of service delivery and outcomes for all Albertans regardless of geography or identity.

As a learning health system, we rely on **SCIENCE** as we seek solutions to the complex challenges we face. A systematic, scientific approach informed by data, research, and partnerships helps us align with the AHS Innovation Pipeline to better understand existing problems and generate new evidence. Transdisciplinary science drives us to be innovative yet rigorous to identify gaps in care as well as design, evaluate, and implement solutions to these problems. Finally, implementation science fosters the ability to translate the knowledge gained into solutions to apply and integrate within the healthcare system.

COMMUNITY acknowledges that we cannot do our work alone. We base the success and effectiveness of our work on nurturing a broad range of partnerships, being creative and flexible in how we engage our partners, attending to equity, diversity and inclusion in our working relationships, and ensuring that all voices are empowered to contribute.

Transformational Roadmap Summary

Cardiovascular Health & Stroke Strategic Clinical Network

Transformational Roadmap 2023-2026 Summary

Our Vision: Healthy hearts and brains for all Albertans.

Our Mission: Supporting the health of Albertans through prevention, collaborative partnerships, research and innovation in cardiovascular health and stroke.

Strategic Directions & Priorities

Promote consistent quality care for cardiac patients anywhere in the province.

- Develop core quality indicators for cardiac care services for monitoring and reporting.
- Focus on appropriateness of care and equity of care delivery.
- Continue to develop, implement, and sustain Care Path and end-to-end Clinical Pathway (e.g., Heart Failure).

Promote consistent quality care for stroke patients anywhere in the province.

- Launch Stroke Rehabilitation (Health Evidence Review) in at least one zone.
- Implement Endovascular Therapy (EVT) 24-hour treatment window.
- Explore at home monitoring e.g., wearables for atrial fibrillation monitoring (replace Holter monitor).

Improve vascular health at the population level through the integration and enhancement of health promotion and prevention.

- Build on and expand current work (e.g., Enhanced Lipid Reporting) and identify opportunities to expand to populations not currently reached.
- Model the cost and impact of interventions to lower CVD risk through modifiable risk factors.

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- Heart disease and stroke are the #1 killer globally.
- People living with heart failure and chronic obstructive pulmonary disease (COPD) have the highest hospital admission rates of all chronic diseases in Alberta.
- 1 in 6 stroke victims die and 90% of survivors have a disability.

Our Priorities and Expected Outcomes

We acknowledge that AHS is a learning health system, and that we are accountable to the AHS Executive Leadership Team and the Government of Alberta. As such, while the priorities of our work will remain the same, we will also respond to changes in environment and requests for specific work from our partners over the next three years.

Under all three Strategic Directions, we will **engage patients, caregivers, and persons with lived experience to co-design Key Performance Indicators** that measure patient experience to ensure all our work and initiatives are patient oriented. We will collaborate closely with our patient partners to enhance the patient experience by drawing upon Patient Reported Experience Measures (PREMs) and Patient Reported Outcome Measures (PROMs).

Strategic Direction: Promote consistent quality care for cardiac patients anywhere in the province.		
Priorities & Actions	**Target Outcomes**	**Key Performance Indicators**
Develop and implement core cardiac care service quality indicators for monitoring and reporting.	Consensus on a set of measurable and feasible indicators Pilot Zone, Site, and Physician level reports for key cardiac quality indicators relevant to coronary artery disease, heart failure, and arrhythmia care Address an area of excessive variability in care or a defined care gap in a particular geographic region or population subgroup	Core quality indicators identified & tested Zone, Site and Physician level reports available for use Development of >=1 intervention protocol
Focus on appropriateness of care and equity of care delivery.	Develop up-to-date dashboards of wait times for cardiac procedures including cardiac catheterization, percutaneous coronary intervention (PCI), transcatheter aortic valve replacement (TAVR), cardiac implantable electronic devices (CIEDs) (pacemakers and defibrillators), and ablation	Dashboard / wait times for cardiac procedures
Continue to develop, implement, and sustain Care Path and end-to-end	80% uptake rate of HF/COPD Care Path in Connect Care	% uptake/enrollment of HF/COPD Care Paths in Connect Care

Clinical Pathway (e.g., Heart Failure). Optimize HF and COPD Care Path (e.g., functionality, communications, evaluation). Improve the end-to-end Clinical Pathway (e.g., Coach Trial, Magic Scores, Express Lanes, support primary care pathways).	90% uptake rate for patients receiving HF and COPD education Shared learnings and helping others to succeed for new Care Path development	% of patients receiving HF and COPD education % of patients with reduced Ejection Fraction (EF) who are on optimal guideline-directed medical therapy (GDMT) during hospital stay *(modified heart failure collaboratory (mHFC) score)* Readmission for HF and COPD at 7, 14, 30, and 90 days HF: Mortality within 6 months or one year adjusted for age, sex, brain natriuretic peptide (BNP), EF, Charleston comorbidity index. etc., categories COPD: Mortality within 6 months or one year adjusted for age, sex, Charleston comorbidity index, etc. categories *Note: Data will be shown for last 90 days; trends can be shown*
Strategic Direction: Promote consistent quality care for stroke patients anywhere in the province.		
Priorities & Actions	**Target Outcomes**	**Key Performance Indicators**
Launch Stroke Rehabilitation (Health Evidence Review) in at least one zone.	Optimal model for stroke rehabilitation services in place in at least one zone	# of stroke rehab community services in pilot zone(s) # of stroke patients receiving community stroke rehab Decrease LOS for patients in acute care
Implement Endovascular Therapy (EVT) 24-hour treatment window.	Reduction in disability for stroke patients Improvement in home time metric Mortality for stroke patients Disability for stroke patient	# of EVT procedures Improvement in home time metric LOS

	Increase in patients receiving EVT Increase in access for stroke patients in rural areas Decreased LOS for stroke patients	
Explore at home monitoring e.g., wearables for atrial fibrillation monitoring (replace Holter monitor).	Literature review completed	
Literature review addressing cardiac testing appropriateness through Population, Intervention, Comparator(s), Outcomes (PICO) survey.	Literature review completed	
Strategic Direction: Improve vascular health at the population level through the integration and enhancement of health promotion and prevention.		
Priorities & Actions	**Target Outcomes**	**Key Performance Indicators**
Build on and expand current intervention strategies (e.g., Enhanced Lipid Reporting).	Better utilization of existing infrastructure and resources Expanded partnerships with collaborators (Provincial Population & Public Health and Indigenous Wellness Core)	# of interventions developed Projected decrease in Projected Major Adverse Cardiovascular Events (MACE)
Identify opportunities to expand to populations not currently being reached.	Partnerships to extend reach New interventions developed for better reach	New interventions implemented New population segments reached
Model the cost and impact of additional interventions to lower CVD risk for a percentage of the population e.g., lowered low-density lipoprotein (LDL), smoking cessation, physical activity, hypertension, nutrition, and vaccinations.	Feasibility and cost benefit report (population level)	N/A

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Appendix A: Our Successes

CARDIOVASCULAR HEALTH & STROKE

Senior Provincial Director
Shelley Valaire, MA

Senior Medical Directors
Dr. Michael Hill, MD, MSc, FRCPC, University of Calgary (assumed full SMD role in Feb 2021)

Cardiac: **Dr. Michelle Graham,** MD, FRCPC University of Alberta (to Dec 2021)

Scientific Director
Dr. Colleen Norris, PhD, MSc, BScN, RN, University of Alberta

Assistant Scientific Director
Dr. Christiane Job McIntosh, PhD, University of Calgary

Executive Director
Balraj Mann, MS/MBA, RN

SCN Manager
Agnes Lehman, BScOT, MScHP

Key Partners
Campus Alberta Neuroscience

Heart and Stroke Foundation

Hotchkiss Brain Institute [University of Calgary]

Libin Cardiovascular Institute [University of Calgary]

Cardiovascular Research Institute (CVRI) [University of Alberta]

Major initiatives and achievements, 2021-2022

The Cardiovascular Health and Stroke (CvHS) SCN continues to advance care for stroke patients and people with cardiovascular conditions. The SCN is actively engaged in strategic partnerships to optimize cardiovascular and stroke care, prioritize research and mobilize knowledge from clinical trials into practice.

The COVID-19 pandemic continued to impact the CvHS SCN this year and many members were called to increase their service in various capacities. Once again, we would like to acknowledge and thank our front-line clinicians, operational leaders, and patient and family partners who actively served and continue to serve the cardiovascular and stroke communities.

Provincial Clinical Pathways Support Unit (CPSU) supports integrated care for HF/COPD

AHS identified heart failure (HF) and chronic obstructive pulmonary disease (COPD) as priority areas for clinical pathway development given the high cost of clinical variation for these populations. The goal for the CPSU is to improve quality of care by reducing clinical variations, reduce hospital stays, hospital readmissions and emergency room visits, and provide timely follow up with primary/community care.

A focused examination of barriers and facilitators to clinical pathway uptake in 2020 revealed multiple, competing, yet similar provincial priorities and practices that created challenges for our operational partners. In response, CvHS led an exercise across 8 SCNs and Provincial Programs to streamline initiatives to support more efficient uptake and implementation. This work, completed over the past year, integrated 8 separate evidence-based, patient-centred provincial initiatives and clinical pathways into a streamlined bundle of quality initiatives (one for Surgery and one for Medicine) called the **Acute Care Bundle Improvement (ACBI) initiative**.

ACBI is an example of a partnership led by operations and supported by Provincial Teams and SCNs to improve patient outcomes and acute care efficiencies while reducing the operational burden of implementing multiple—and sometimes overlapping—projects, programs, and clinical pathways. This work is provincial in scope and directly supports recommendations in the AHS Performance Review Summary Report (2019).

The Heart Failure and COPD Care Paths, which include comprehensive reporting tools, were launched in Connect Care at multiple sites in March and all Connect Care sites in July. Care Path Educational Tools have been developed for prescribers (physicians, nurse practitioners and pharmacists), nurses and allied health. These tools are aligned with new best practice recommendations and guidelines and will be available on MyLearningLink, including accredited modules for physicians.

Improved screening identifies Albertans at risk of cardiovascular disease

Enhanced lipid reporting provides an opportunity for increased screening and treatment of patients at risk of cardiovascular disease (CVD) by providing primary care physicians with a lab-based screening tool. The lab uses an algorithm to calculate the patient's chance of having a heart attack or stroke in the next 10 years and sends a report to the referring physician that explains the patient's risk score and provides up-to-date treatment guidelines.

The CvHS SCN has secured a Health Innovation, Implementation and Spread (HIIS) grant to support the provincial rollout of the new tool, including strategies to support primary care physicians and patients. As part of the strategies to support patients in CVD screening and prevention, the HIIS-grant team have created a new CVD screening webpage on MyHealth.Alberta.ca with four patient directed videos: What is cardiovascular disease? | Cardiovascular disease risk screening | Reducing your cardiovascular disease risk: Statins & lifestyle changes | Why screen for cardiovascular disease: A patient perspective

Optimizing stroke care and cardiovascular investigations for every Albertan

Endovascular therapy (EVT) is a highly effective treatment for stroke that dramatically reduces death, disability, and long-term care costs. The CvHS SCN continues to build off the positive scientific findings from the ESCAPE clinical trial and has developed comprehensive systems to increase timely, equitable and safe access to EVT for all Albertans. This program of work is known as Endovascular Reperfusion Alberta (ERA).

Through ERA, access to EVT has increased exponentially from a baseline of 206 EVT cases in 2016/17 to 369 procedures in 2021/22. Moreover, access to EVT in rural communities has increased from approximately 17% of patient receiving EVT in 2016/17 to 22.8% in 2021/22. A return on investment (ROI) analysis of EVT in Alberta has been conducted and initial estimates suggest a potential 3:1 ROI for the program (i.e., for every dollar invested in EVT, the healthcare system saves $3.6 dollars).

Inspired by a request for a succinct quarterly report, the CvHS SCN's EVT and DTN Stroke Leadership developed a one-page summary of key metrics and trends for EVT and lytic therapy that is now circulated to AHS executive and zone leadership across the province. Customizable tableau reports were also developed for local stroke teams that provide a more detailed analysis of these processes and are being used to inform local quality improvement work.

Work has also begun with our partners to implement a 24-hour EVT treatment window, an evidence-based shift in practice from the traditional 6-hour treatment window. We are grateful to our colleagues for their continued interest and engagement with this upcoming change despite pandemic pauses. We anticipate significant progress in the coming year for our stroke communities.

Results from the PER DIEM study, a combined cardiac-stroke effort focusing on rhythm detection (Atrial Fibrillation, AF) after stroke, have been used to inform the Canadian Stroke Best Practices Guidelines pertaining to stroke investigations. The PER DIEM study is now complete, but we continue to evolve this work and look for additional opportunities to support research on remote monitoring and recovery after a stroke.

Actions and areas of focus

- Optimizing patient care (reducing low-value activities, improving access, etc.)
- Reducing inequities in care and outcomes
- Enhancing prevention and integration of health promotion and wellness
- Collaborative partnerships, research and innovation to inform decision making
- Development of clinical pathways, guidelines and dashboards
- Vascular risk reduction policies and sustainability
- Surveillance and montioring of risk factors and health system utilization

Impact on health and care

Over the past year, the CvHS SCN has led studies and supported a variety of provincial initiatives that have:

- Advanced knowledge in the area of cardiovascular and stroke care
- Improved access to EVT, particularly for rural Albertans.
- Supported screening and care enhancements, practice change, and improved outcomes for Albertans who experience or are at risk of cardiovascular disease or stroke.
- Contributed to the implementation of care paths and clinical pathways for COPD and HF and development of the ACBI initiative, which are all expected to improve quality of care by reducing clinical variation; hospital stays, readmissions and emergency visits; and improving patient transitions in care and value across the system.

CARDIOVASCULAR HEALTH AND STROKE

Grants and Publications	Engagement	Outcomes and Impact
69 Peer-reviewed Publications	18 Workshops & Presentations	100% of sites that have launched Connect Care are able to access HF/COPD Care Paths and reporting tools
$4.7M Research Grants	184 Research Members	3:1 preliminary estimate of return on investment for ERA program ($)

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Excerpted from 2021-2022 SCN Annual Impact Report

Appendix B: Development of this Transformational Roadmap

Typically, the transformational roadmaps of AHS's SCNs are developed after a lengthy and extensive consultation process. The CvHS SCN has produced this 2023-2026 roadmap using a process that reflects the specific environment in which we find ourselves in the spring of 2023. AHS is emerging from an unprecedented period of focused activity during the COVID-19 pandemic, a time when "business as usual" was not possible. Current priorities to address significant pressures on the system as well as address changes to the system that have arisen in the past three years has limited the availability of many of the Core Committee and Working Group members as well as other partners who typically contribute to TRM development.

To address these operational commitments and time limitations, the CvHS SCN team first engaged Core Committee and Working Group members through a quick email participation survey in February 2023 to gauge the degree to which they felt they could be involved. The majority responded that they wanted to contribute and would prefer a streamlined process. The streamlined process that was developed included drafting a single page TRM summary and distributing it for feedback and input through an online survey. This process was possible because of the current maturity level of the CvHS SCN's work and that the roadmap is a continuation and refinement of the previous roadmap rather than new directions.

Thirty-one individuals responded to the engagement survey in April 2023 and unanimously endorsed the three strategic directions and the three anchors. Suggested priority actions were reflected upon and refined and additional actions were suggested. An obvious benefit of the survey approach is hearing individual voices that may be quiet in group settings. Survey results and TRM draft development were also discussed with the CvHS Core Committee members at a meeting in May 2023 along with next steps for planning actions through engagement. The final TRM draft was sent out to Core Committee members in July 2023.