

# BC Stroke Strategy

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## Regional Stroke Action Plan

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### Appendix D – Interior Health Authority



## Acknowledgements & Contributions

At the request of both the Ministry of Health Services and the health authorities, the Heart and Stroke Foundation of BC & Yukon has lead the BC Stroke Strategy (BCSS) initiative over the last five years, working in partnership with agencies and organizations representing those involved in stroke prevention and treatment and advancing the planning and prototyping phases for a number of priority areas, some of which are incorporated in this provincial plan.

The BCSS would like to acknowledge all the organizations and individuals who contributed to this work. Key contributors involved in the development or review of the Stroke Action Plan include but are not limited to the following:

Organization	Representative
Heart and Stroke Foundation of BC & Yukon	<ul style="list-style-type: none"> <li>• Mark Collison – BCSS Lead</li> <li>• Diego Marchese – Executive Advisor</li> </ul>
BCSS Core Team	<ul style="list-style-type: none"> <li>• Diane Layton – BCSS Project Manager</li> <li>• Dr. Allan Holmes – ACVS Medical Consultant</li> <li>• Laura Reeves – ACVS Project Manager</li> <li>• Dr. Hans Krueger – Metrics and Data Modeling</li> <li>• Helen Truran – Telestroke Clinical Lead</li> <li>• Mary Stambulic – BCSS Administrative &amp; TeleLearning Coordinator</li> </ul>
Clinical Experts	<ul style="list-style-type: none"> <li>• Dr. Philip Teal – VCH</li> <li>• Dr. Kennely Ho – FH</li> <li>• Dr. Andrew Penn – VIHA</li> <li>• Dr. Devin Harris – Providence</li> <li>• Dr. Dean Johnston – Providence</li> <li>• Dr. Todd Collier – IH</li> <li>• Dr. Jacqueline Pettersen – NH</li> <li>• Dr. Graydon Meneilly – VCH</li> <li>• Dr. Jennifer Yao – VCH</li> </ul>
Ministry of Health Services – Health Authority Division	<ul style="list-style-type: none"> <li>• Brenda Canitz (CCM / KRA)</li> <li>• Liv Brekke (CCM / KRA)</li> <li>• Leigh Ann Sellers</li> <li>• Munjeet Bhalla</li> <li>• Alex Scheiber</li> </ul>
Ministry of Health Services – Medical Services Division	<ul style="list-style-type: none"> <li>• Dr. Dean Kolodziejczyk</li> </ul>
Ministry of Health Services – Primary & Community Care Division	<ul style="list-style-type: none"> <li>• Val Tregillus</li> <li>• Darcy Eyres</li> </ul>
BC Ambulance Service	<ul style="list-style-type: none"> <li>• Dr. Karen Wanger</li> </ul>
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Vancouver Coastal Health	<ul style="list-style-type: none"> <li>• Dr. Patrick O'Connor – Exec Sponsor</li> <li>• Dr. Jeff Coleman – Exec Sponsor</li> <li>• Donna Stanton – Exec Sponsor</li> <li>• Lisa Hoefer – Stroke Lead until Spring 2010</li> <li>• Dixie Butts – Current Stroke Lead</li> </ul>
Vancouver Island Health	<ul style="list-style-type: none"> <li>• Dr. Allan Meakes – Exec Sponsor</li> <li>• Marilyn Copes – Exec Sponsor</li> <li>• Dr. Wayne Shtybel – Regional Medical Lead</li> <li>• Leighanne Mackenzie – Stroke Lead until summer 2010</li> <li>• Robert Crisp – Current Stroke Lead</li> </ul>
Interior Health	<ul style="list-style-type: none"> <li>• Darlene Arsenaault – Exec Sponsor</li> <li>• Lori Seeley – Current Stroke Lead</li> </ul>
Northern Health	<ul style="list-style-type: none"> <li>• Dr. David Butcher – Exec Sponsor</li> <li>• Ruby Fraser – Exec Sponsor</li> <li>• Rita Sweeney – Current Stroke Lead</li> </ul>
Provincial Health Services (PHSA)	<ul style="list-style-type: none"> <li>• David Babiuk – PHSA</li> <li>• Janis McGladrey – PHSA</li> </ul>

Key messages / products of various working groups of the BCSS have been incorporated into this Provincial Plan. These groups include the following:

- The ACVS Clinical Consensus / Expert Group
- The ACVS Advisory Group
- The joint MoHS / BCSS Measurement & Evaluation Working Group
- The Rehabilitation and Reintegration Expert Advisory Group
- The TIA Rapid Assessment Advisory Group
- The Telestroke Advisory Group

In addition to individuals actively serving on BCSS working groups, numerous clinicians and operations managers at site levels were involved in identifying gaps in care and in strategizing on possible approaches / strategies to address these gaps. The input from these multiple sources is reflected in this Provincial Plan and detailed in the Regional Site Work Plans included in the Appendices. We would like to thank all those persons and organizations that contributed to this collaborative planning work.

Requests regarding access to Regional Appendices or to other documents referenced in this Provincial Stroke Action Plan should be directed to:

Mary Stambulic – BCSS Administrative Coordinator,  
 Telephone 250-595-8074  
 Email: [info@bcstrokestrategy.ca](mailto:info@bcstrokestrategy.ca) or [marystambulic@shaw.ca](mailto:marystambulic@shaw.ca)

Or visit the BC Stroke Strategy Website @ [www.bcstrokestrategy.ca](http://www.bcstrokestrategy.ca)

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# INTERIOR HEALTH

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**Regional Snapshot – March 2010**

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# INTERIOR HEALTH

## SNAPSHOT OF STROKE SERVICES AS OF MARCH 2010

Organizational Commitment to Stroke	Current Structures to Support Stroke	
<p>Inclusion of stroke in recent Ministry Key Results Areas has created considerable momentum in moving organized stroke care forward in Interior Health. Support is present in principle, but operational funding has not followed to create sustained TIA clinics or to finalize adoption of site designations at two Primary Stroke Centres. Regionally-organized stroke care can not be further advanced without operational funding to a Telestroke system of ACVS care and dedicated rehabilitation support.</p> <p>Operational dollars to support stroke strategy though 0.5 funding of Regional Practice Lead position.</p> <p>Recent organizational restructuring has impacted on the profile of membership to Leadership committees and working groups. Executive sponsorship remains consistent.</p>	<p>Regional Stroke Steering Committee and working groups generally mirror those of the Provincial Stroke Strategy</p> <p>Telestroke, Rehab, TIA and ACVS groups are most active. Measurement and evaluation functions are embedded into the work of each working group. Structure of committee and working groups currently under review to support better alignment with new regional management structure.</p> <p>0.30 TIA Project Coordinator supports regional TIA initiatives, including two prototype clinics. Funding only committed to March 2011.</p> <p>Challenges of physician engagement and education in best practices exist for stroke care.</p> <p>Clinical Nurse Specialist could further support work of IH stroke strategies.</p>	
Comprehensive Stroke Centres	Regional Stroke Centres	Primary Stroke Centres
<p><b>Tertiary centre providing a full range of services including neurosurgical/radiological interventions and rehabilitation</b></p> <p>None</p>	<p><b>Regional hospital providing CT, tPA, Telestroke links to Comprehensive Stroke Centre</b></p> <p><b>Kelowna General Hospital (KGH)</b> – currently not able to support 24/7 neurology consult. Efforts underway to establish plan to address schedule gaps for stroke care and other high priority neurological conditions. This site is not currently participating in regional stroke strategy or organized stroke care, and as a result, has not been designated a regional stroke centre, or a primary stroke centre. Thrombolytics continue to be delivered depending on neurology coverage.</p> <p>Neurosurgical and radiological intervention available.</p> <p><b>Royal Inland Hospital (Kamloops)</b> – consistent practice with Regional Stroke Centre designation. Has a model of organized stroke care in place. Neurosurgical and radiological interventions available.</p>	<p><b>Provides CT, tPA and organized emergency care, links to Regional and Comprehensive Stroke Centres</b></p> <p><b>Cariboo Memorial (Williams Lake)</b> – does not currently provide stroke thrombolytics and are designated as a rural/remote site. Links to regional stroke centre limited due to distance. Physician engagement remains a challenge. This site will require Telestroke strategy to move forward with Primary Stroke Centre status.</p> <p><b>Kootenay Boundary (Trail)</b> – links to regional centres limited due to distance. Anticipated transition to thrombolytic centre potentially by the fall. Discussions underway to ensure consistent communication plan for transition to Primary Stroke Centre designation.</p> <p><b>Penticton Regional Hospital</b> – Consistent practice with Primary Stroke Centre designation. Does not have 24/7 thrombolytic capacity due to gaps in specialist coverage (Neurology and</p>

Comprehensive Stroke Centres	Regional Stroke Centres	Primary Stroke Centres
		<p>Geriatrician). Discussions necessary to identify whether IM able to engage and participate.</p> <p><b>Vernon Jubilee Hospital</b> – offers tPA following telephone consult with KGH neurologists. Impact of neurology staffing at KGH will affect their ability to consistently offer this service.</p> <p><b>East Kootenay Regional Hospital (Cranbrook)</b> – consistent practice with Primary Stroke Centre designation, supported by Internal Medicine.</p> <p><b>Shuswap Lake General Hospital (Salmon Arm)</b> – not currently a thrombolytic site, CT not available 24/7). Willing to participate as a thrombolytic centre if CT operational funding secured.</p>

**Current Emergency and Inpatient Focus**

Pre-hospital	Emergency	Inpatient
<p>TIA / Rapid Assessment – support in principle if business case holds up. Anticipate Kamloops clinic will continue and Cranbrook clinic may close when funding runs out.</p> <p>Relationship with BCAS – variable and personality dependent. No consistent framework or relationship.</p>	<p>Kelowna General involved at ED level due to interest of Medical Director.</p> <p>Order sets implemented at all but KGH sites to date. Current audit underway to determine level of integration into routine ED practice.</p> <p>Sites for Telestroke support have been identified. PIA has been initiated.</p>	<p>There is currently an integrated four-bed Stroke Unit at Royal Inland. Inpatient stroke pathway introduced at Royal Inland for several years.</p> <p>Kelowna General disengaged (neurologist staffing issue).</p> <p>Cohorting has been in place at RIH for several months. Cohorting not occurring at other sites. Anticipate review of incidence and capacities at smaller sites.</p> <p>Care Paths and Order Sets – challenged by embedding into practice</p> <p>Strong inpatient rehab network but minimal outpatient / community support in some rural communities. Strong Outpatient Neuro Rehab Programs at both RIH and KGH. Telemedicine rehab support to outlying regions has been expanded and is still anticipating approval of telemedicine fee codes for Physiatry support to be offered in the future.</p>

<b>Current Inpatient Rehabilitation</b>		
<b>Comprehensive Rehab Stroke Centres</b>	<b>Regional Rehab Stroke Centres</b>	<b>Primary Rehab Stroke Centres</b>
<p>Closest Comprehensive Rehab Stroke Centre is:</p> <p><b>G.F. Strong Centre, Vancouver, Acquired Brain Injury Program (ABI)</b></p>	<p><b>Kelowna General Hospital, Kelowna</b> - inpatient general rehab unit, dedicated interdisciplinary team including neuropsychology. No dedicated stroke beds on unit.</p> <p><b>Royal Inland Hospital, Kamloops</b> – 18-bed inpatient general rehab unit, dedicated interdisciplinary team.</p> <p>Neuropsychology access through Hillside Neuropsychiatric Centre being developed. Four-bed acute stroke unit integrated with the rehab unit.</p>	<p><b>NOTE:</b> All communities supported by ABI Case Coordinators for individuals who have experienced stroke, who are between 19 and 65 years of age. ABI – CCs work collaboratively with sites to support discharge and community integration. Caseload demands do often dictate that this service is crisis response driven.</p> <p><b>Kootenay Boundary Hospital, Trail BC</b> – six to eight activation beds on medical unit with non-dedicated interdisciplinary team</p> <p><b>East Kootenay Regional Hospital</b> –no dedicated rehab beds. Six convalescent beds in residential setting with 0.20 PT and 0.50 Rehab Assistant.</p> <p><b>Penticton Regional Hospital, Penticton</b> – 13-bed Inpatient general rehab unit, non-dedicated interdisciplinary team. No designated stroke beds on unit.</p> <p><b>Shuswap Lake General Hospital</b> – No dedicated rehab beds, 1.0 inpatient PT, 1.0 Rehab Assistant, 0.45 inpatient OT. Four bed convalescent unit in residential setting.</p> <p><b>Vernon Jubilee Hospital</b> – 10-bed inpatient general rehab, non-dedicated interdisciplinary team. No designated stroke beds on unit.</p> <p><b>Cariboo Memorial Hospital</b> – no inpatient rehabilitation services available. Community physical therapy and occupational therapy available on a very limited basis.</p>

Stroke Leads / Operations Leads	Medical Leads/Stroke Specialists
<p>Darlene Arsenault – Regional Stroke Operations Lead, Regional Lead Professional Practice Office, Allied Health</p> <p>Lori Seeley – Regional Practice Lead – Stroke/ ABI</p> <p>Thora Barnes – Regional Clinical Lead, Emergency Services</p> <p>Jaymi Chernoff – TIA Rapid Access Project Coordinator.</p> <p>Kathy Doull – Director of Rehabilitation Services</p> <p>Jerry Stanger – Director, Home Health (ABI)</p>	<p><b>Kamloops:</b></p> <p>Dr. Todd Collier (Neurology)</p> <p>Dr. Jennifer Takahashi (Neurology)</p> <p>Dr. Jeff Oyler (Neurology)</p> <p>Dr. Russell Mosewich (Neurology)</p> <p>Dr. Prathap Raghavan (Physiatry)</p> <p><b>Kelowna:</b></p> <p>Dr. Shawn McCann (Physiatry)</p> <p>Dr. Mike Ertel (ERP)</p> <p><b>Cranbrook:</b></p> <p>Dr. Erin Sawatsky (Internal Medicine)</p>

# INTERIOR HEALTH

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## Role Designation / Functional Capacity

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# INTERIOR HEALTH HOSPITAL ROLES AND FUNCTIONAL CAPACITY AS OF SPRING 2010

Note that this grid does not necessarily reflect current capacity at some of the sites but represents the role the hospital could play once all the necessary supports and systems are in place.

Current Hospital / Facility Functional Capacity for Stroke Care							
IHA Hospitals / Facilities	CT	CT Tech	tPA Enabled	Stroke Unit/ Cohorted	Req. Telestroke support	Neurology/ Internal Medicine	Catchment Stroke Center
<b>Level 2: Regional Stroke Centre</b>							
Royal Inland (Kamloops)	Y	Y	Y	Y	N	24/7 Neuro	Y
<b>Level 3: Primary Stroke Centre</b>							
Kelowna General	Y	Y	Y	N	Part-time	Neurology available with some gaps in coverage	N
Cariboo Memorial	Y	Y	N	N	Yes	N	N
East Kootenay Regional	Y	Y	Y	N	Part time	24/7 IM	Y
Kootenay Boundary Regional	Y	Y	Y	N	Full time	24/7 IM	Y
Penticton Regional	Y	Y	Y	N	Part time	24/7 IM Neurology available with some gaps in coverage.	Y
Vernon Jubilee	Y	Y	Y	N	Full time	24/7 IM	Y
Shuswap Lake General	Y	N	N	N	Full time	24/7 IM	N
<b>Level 4: Non-tPA Enabled Site</b>							
Arrow Lakes Hospital	N	N	N	N	NA	N	N
Ashcroft & District General	N	N	N	N	NA	N	N
Boundary Hospital	N	N	N	N	NA	N	N
Castlegar Community HC	N	N	N	N	NA	N	N
Creston Valley	N	N	N	N	NA	N	N
Dr. Helmcken Memorial	N	N	N	N	NA	N	N
100 Mile District Hospital	N	N	N	N	NA	N	N
Elk Valley	N	N	N	N	NA	N	N
Golden & District General	N	N	N	N	NA	N	N
Invermere & District	N	N	N	N	NA	N	N
Kootenay Lake	N	N	N	N	NA	N	N
Lillooet District	N	N	N	N	NA	N	N
Nicola Valley General	N	N	N	N	NA	N	N
Princeton General	N	N	N	N	NA	N	N

Current Hospital / Facility Functional Capacity for Stroke Care							
IHA Hospitals / Facilities	CT	CT Tech	tPA Enabled	Stroke Unit/ Cohorted	Req. Telestroke support	Neurology/ Internal Medicine	Catchment Stroke Center
<b>Level 4: Non-tPA Enabled Site (continued)</b>							
Slocan Valley Hospital	N	N	N	N	NA	N	N
South Okanagan General	N	N	N	N	NA	N	N
Sparwood Health Center	N	N	N	N	NA	N	N
St. Bartholomew's	N	N	N	N	NA	N	N
Summerland Health Center	N	N	N	N	NA	N	N
Kaslo Health Center	N	N	N	N	NA	N	N
Queen Victoria	N	N	N	N	NA	N	N

Stroke Management Criteria	Definitions / Scope
Telestroke	Require telehealth, clinicians and CT-associated network capabilities to support clinical processes across the stroke care continuum.
CT Scan / MRI	Timely neuroimaging
Tech available	Trained techs on site
Stroke Team	Stroke team in ED; protocols for acute stroke in ED; early and appropriate acute stroke care + tPA within 3 hours; non-tPA enabled sites have written protocols to transfer patients in timely way to the appropriate destination.
Neurology / Internal Medicine	Neurology and IM support available to manage acute strokes.
Neurosurgical / Neurointerventional	Medical and Diagnostic Imaging Specialists on site, available by phone or by Telestroke.
tPA enabled	Medical & diagnostic capabilities on site to enable / administer tPA.
Acute stroke pathway	Stroke pathway includes stroke order sets, patient flow processes, time-specific interventions.
Bypass Protocol/Rapid Transfer	EMS transport of suspected stroke patient to most appropriate site within 3.5 hour pre-hospital time window.
Stroke unit/ cohorted beds	Stroke unit or geographically designated beds; evidence-based pathways / protocols to ensure organized interventions, targeting prevention of complications and ensuring early mobilization and rehabilitation.
Catchment stroke center	Facility serves a defined geographic region.
Rehab	Standardized (system) screening evaluation to determine impairments and most appropriate level of rehabilitation; comprehensive rehab plan to initiate early, coordinated multidisciplinary stroke rehab. Recovering movement, daily activities, communication; early discharge planning and smooth transitions.
Secondary stroke prevention clinic	Stroke prevention services in a variety of settings including hospital or community-based settings.
Stroke Care Monitoring and Evaluation	Routine collection of performance measures for stroke care.

# INTERIOR HEALTH

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## Priority Themes

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# INTERIOR HEALTH REGIONAL THEMES / PRIORITIES PRIORITY AREAS OF FOCUS (ONE TO THREE YEARS)

PRIORITY	Action Plans	Major Stakeholders
<b>General</b>	<p>Participate in provincial initiatives and strategies designed to further organized stroke care across the care continuum</p> <p>Reorganize stroke committees and working groups and align with the new program management structure in Interior Health</p> <p>Survey regional neurologists and IM to assess current status of access to neurosurgical consultation (in progress)</p> <p>Conduct needs assessment of current and ongoing education / information needs for delivery through CME processes</p>	<ul style="list-style-type: none"> <li>• IH Stroke Leads (Clinical and Admin)</li> <li>• Neurologists</li> <li>• Internal Medicine Specialists</li> <li>• Diagnosticians</li> <li>• Family Physicians</li> <li>• Allied Health in Stroke Care</li> </ul>
<b>Facility Role Designations</b>	<p>Determine/approve proposed site designation for: Regional Stroke Centers (2: KGH and RIH); Primary Stroke Centers (5) and non-tPA enabled sites (22)</p> <p>Support KGH in working towards its possible role as a regional stroke center</p>	<ul style="list-style-type: none"> <li>• IH Executive Team</li> <li>• HA Stroke Leads</li> <li>• Site Leads</li> <li>• Site physician stakeholders</li> </ul>
<b>Pre-Hospital and Emergency</b>	<p>Implement a BCAS Acute Stroke Guideline for pre-hospital screening</p> <p>Implement provincial transport protocols</p> <p>Introduce Acute Stroke Dispatch Policy to support information and education needs of dispatchers</p>	<ul style="list-style-type: none"> <li>• BCAS Senior Leadership and Personnel</li> <li>• Emergency Dept Personnel post implementation</li> </ul>
<b>Regional Order Sets and Care Paths</b>	<p>Secure local / site level commitment to regional order sets and care pathways</p> <p>Implement standardized stroke order sets consistent with best practice to improve access to urgent / emergency stroke interventions (e.g. thrombolytics)</p> <p>Plan for consistent educational roll-out and implementation</p> <p>Implement a stroke team in eligible hospitals based on site designation</p> <p>Conduct audit of Stroke Order Set implementation to ensure are embedded into ED practice at sites across the region</p>	<ul style="list-style-type: none"> <li>• Clinical Nurse Specialists</li> <li>• Clinical Educators</li> <li>• Physicians</li> </ul>

PRIORITY	Action Plans	Major Stakeholders
<b>Cohorting beds</b>	<p>Develop a regional plan to manage patients in a stroke unit or cohorted beds</p> <p>Implement cohorted bed units in eligible hospitals based on site designation.</p> <p>Completed for Royal Inland Hospital (Kamloops). Requires site engagement to proceed at Kelowna General Hospital. Need to access regional data to determine stroke admission / utilization rates and capacity to support cohorting at the Primary Stroke Centres</p> <p>Incorporate stroke care requirements into formal bed mapping processes</p>	<ul style="list-style-type: none"> <li>• RIH and KGH Stroke Teams</li> <li>• Stroke lead</li> <li>• Stroke lead</li> </ul>
<b>tPA Administration</b>	<p>Adopt a regional tPA plan</p> <p>Ensure all eligible patients receive tPA regardless of geographic location. Dependent upon adoption of site designations at Kootenay Boundary Regional Hospital, Cariboo Memorial Hospital and 24/7 CT coverage and site designation at Shuswap Lake General Hospital (requires operational funding for Telestroke consultation for full implementation)</p> <p>Undertake Privacy Impact Assessment in anticipation of Provincial Telestroke Network</p> <p>Identify Telestroke sites and commence planning for implementation as part of Provincial Telestroke Network</p>	<ul style="list-style-type: none"> <li>• Physician Champions</li> <li>• Site Leads</li> <li>• Regional Telestroke Working Group</li> <li>• Regional Information and Privacy Office</li> </ul>
<b>Secondary Prevention</b>	<p>Determine efficacy of projects implemented (e.g. TIA clinics in Cranbrook and Kamloops) to improve stroke outcomes and reduce stroke incidence</p> <p>Confirm IH models for secondary prevention care. Processes at Cariboo Memorial Hospital (CMH) and Kootenay Boundary Regional Hospital (KBRH) identified as priority. Additional clinics required at Kelowna General Hospital and Shuswap Lake General Hospital (SLH). CMH, East Kootenay Regional Hospital, KBRH and SLH require physician compensation issues to be addressed at the provincial level as they do not qualify for the neurology ACVS fee codes. Operational funding commitments necessary to ensure adequate regional coverage</p> <p>Implement a regional secondary prevention referral network (requires operational funding to sustain current clinics and to expand to current unserved areas)</p> <p>Implement electronic health record management system for TIA rapid access services (CONNEX)</p>	<ul style="list-style-type: none"> <li>• TIA Lead</li> <li>• Clinic staff</li> <li>• Stroke Specialists</li> </ul>

PRIORITY	Action Plans	Major Stakeholders
<b>Secondary Prevention (continued)</b>	<p>Standardize communication processes between clinics and community physicians currently in place in prototype clinics</p> <p>Ensure all eligible patients receive Secondary Prevention Clinic care based on a standard principles but applied in response to local demand and functional capacity</p>	<ul style="list-style-type: none"> <li>• Primary care leads</li> <li>• TIA lead</li> <li>• TIA lead</li> <li>• CONNEX team</li> <li>• Clinic personnel</li> </ul>
<b>Rehabilitation Services</b>	<p>Inventory all rehabilitation programs for stroke care and improve access to stroke rehabilitation</p> <p>Establish regional stroke rehab community of practice, including input from previous Stroke Rehab Working Group</p> <p>Prepare regional rehab plan that reflects current resource challenges and empowers local sites to meet minimum standards (additional funding required to coordinate stroke rehab strategy to meet this objective)</p> <p>Utilize non-traditional resources to provide rehab services when no ability to address local care gaps. Establish protocol for prioritizing Stroke/ ABI videoconference units for use by rehab staff</p> <p>Continue participation in BC Stroke Strategy Rehab Provincial working group activity:</p> <ul style="list-style-type: none"> <li>• Community-based Rehabilitation &amp; Reintegration demonstration project</li> <li>• Rehab &amp; Reintegration Service Delivery Framework</li> </ul>	<ul style="list-style-type: none"> <li>• Rehab Leads</li> <li>▪ Stroke Lead</li> <li>• Stroke Rehab Community of Practice</li> <li>• Stroke Lead</li> <li>• Stroke Lead</li> <li>• Site rehab leads</li> <li>• Community ABI case managers</li> <li>• Operational leads – ABI services</li> <li>• Stroke Lead</li> <li>• Regional reps to BC Stroke Strategy Rehab Provincial Working Group.</li> </ul>

# INTERIOR HEALTH

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## Site Work Plans

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## INTERIOR HEALTH SITE WORK PLANS

Site	TIA Process ID'd	tPA Delivery	Requirements to support 24/7 tPA	Comments
Kelowna General	ED managed, although ER medical director would like organized stroke care process and outpatient management	Yes	Currently gaps in coverage due to limited neurology staffing	Neurologists not currently engaged Stroke care not currently organized Stroke unit not dedicated
Royal Inland Hospital	Prototype Clinic	Yes	In place	Organized stroke care delivery, integrated stroke unit
Cariboo Memorial Hospital	No current process, will refer some clients to Kamloops	Not currently	Site agreement, Telestroke, CT staffing availability (cross training), tPA in formulary	Not amenable to be a tPA-enabled site at this time Distance to nearest tPA enabled site is > 3hours
East Kootenay Regional	Prototype Clinic	Yes - supported by IM	In place	Organized stroke care delivery
Kootenay Boundary	No, development currently stalled	Yes	Telestroke when internist not available, consistent / organized service delivery model	Some reports that process not consistent across all practitioners

Site	TIA Process ID'd	tPA Delivery	Requirements to support 24/7 tPA	Comments
Penticton Regional	Process outside of regional strategy	Yes - intermittent	Select internist support when neurologist not on call Need Telestroke when neurologist and specified IM not available	Some current challenges engaging with neurologists. Processes are in place that they are comfortable with but not participating in regional strategy  Do not have 24/7 coverage for hot stroke management  Geriatrician filling some gaps in hot stroke coverage
Vernon Jubilee	No, identified as low priority site due to physician engagement challenges  Some physicians currently referring to Kamloops TIA clinic	Yes - telephone stroke, though currently impacted by KGH Neurology shortages	Need ER engagement which has been a challenge  Upgrade to Telestroke / agreement with KGH needed  KGH neurology staffing has created gaps in VGH coverage as well	Need audit to determine integration of Stroke Order  Sets into consistent ED practice
Shuswap Lake General	Referral to Kamloops	Not currently	Need site agreement, 24/7 CT staffing availability, tPA in formulary, organized stroke care	CT availability a recent development  IM on site keen to move forward
100 Mile	Referral to Kamloops			
Ashcroft General	Referral to Kamloops			
Arrow Lakes				
Boundary				
Castlegar Health Centre				
Creston Valley	Referral to Cranbrook			

Site	TIA Process ID'd	tPA Delivery	Requirements to support 24/7 tPA	Comments
Dr. Helmcken Memorial	Referral to Kamloops			
Elk Valley	Referral to Cranbrook			
Golden General	Referral to Cranbrook			
Invermere	Referral to Cranbrook			
Kootenay Lake				
Lillooet District Hospital	Referral to Kamloops			
Nicola Valley General	Referral to Kamloops			
Princeton General				
Valley				
South Okanagan General				
Sparwood Health Centre	Referral to Cranbrook			
St. Bartholomew's				
Summerland Health				
Victorian Community HC				
Queen Victoria				

# INTERIOR HEALTH

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## Resource Estimates

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**MODELING RESOURCE INVESTMENT REQUIRED**

<b>Implementing Optimal Stroke Care in Interior Health</b>								
<b>Modeling Estimated Resources Required</b>								
	Year 1 (2011/12)	Year 2 (2012/13)	Year 3 (2013/14)	3-Year Total	Year 4 (2014/15)	Year 5 (2015/16)	Year 6 (2016/17)	Year 7 (2017/18)
<i>Cost estimates identified in this table are order of magnitude estimates based on a number of data modeling assumptions related to moving the BC health system to optimal stroke care over the next seven years, as detailed in the text of the Provincial Plan. Modeling is based on a staged implementation approach. Actual timing of implementation will likely vary for each Health Authority.</i>								
<b>Change Management Resource Requirements</b>								
Provincial				\$0				
Regional	\$606,446	\$621,640	\$637,289	<b>\$1,865,375</b>	\$523,764	\$508,944	\$490,623	\$470,744
<b>Sub-Total Change Management</b>	<b>\$606,446</b>	<b>\$621,640</b>	<b>\$637,289</b>	<b>\$1,865,375</b>	<b>\$523,764</b>	<b>\$508,944</b>	<b>\$490,623</b>	<b>\$470,744</b>
<b>Modeling for Optimal Care - Operational Areas</b>								
<b>TIA Rapid Assessment Services (1)</b>								
Proportion of Patients Receiving Optimal Care	6.1%	25%	40%		60%	80%	80%	80%
Cost Estimate	\$0	\$108,638	\$200,514	<b>\$309,153</b>	\$328,230	\$463,429	\$477,331	\$491,651
<b>Enhanced tPA Utilization / Telestroke (2)</b>								
Activity	<i>Plan for expansion</i>	<i>Implement at 5 consulting sites</i>	<i>Implement at 9 referring sites</i>		<i>Implement at 8 referring sites</i>	<i>Ongoing operational costs</i>	→	
% Receiving tPA (assumption)	4.60%	4.60%	6.00%		8.00%	10.00%	10.00%	10.00%
Cost Estimate	\$202,306	\$291,869	\$655,957	<b>\$1,150,133</b>	\$734,980	\$483,437	\$484,920	\$489,631
<b>Organized Stroke Care (3)</b>								
Proportion of Patients Receiving Optimal Care	1.8%	25%	50%		75%	80%	80%	80%
Cost Estimate	\$0	\$504,630	\$1,079,133	<b>\$1,583,763</b>	\$1,687,651	\$1,856,966	\$1,912,675	\$1,970,055
<b>Early Home Supported Discharge (4)</b>								
Proportion of Patients Receiving Optimal Care	0%	0%	10%		20%	30%	37%	37%
Cost Estimate	\$0	\$0	\$305,584	<b>\$305,584</b>	\$629,503	\$972,583	\$1,235,504	\$1,272,570
<b>Sub-Total Modeling for Optimal Care</b>	<b>\$202,306</b>	<b>\$905,138</b>	<b>\$2,241,189</b>	<b>\$3,348,633</b>	<b>\$3,380,364</b>	<b>\$3,776,414</b>	<b>\$4,110,431</b>	<b>\$4,223,907</b>
Current Funding for the TIA Rapid Assessment Services ending after 2010/11	\$110,000			<b>\$110,000</b>				
Additional Funding to Maintain Current Capacity for the TIA Rapid Assessment Services		\$113,300	\$116,699	<b>\$229,999</b>	\$120,200	\$123,806	\$127,520	\$131,346
<b>Order of Magnitude Estimate</b>	<b>\$918,753</b>	<b>\$1,640,078</b>	<b>\$2,995,177</b>	<b>\$5,554,007</b>	<b>\$4,024,329</b>	<b>\$4,409,165</b>	<b>\$4,728,574</b>	<b>\$4,825,997</b>
<b>Notes:</b>								
(1) Optimal care associated with TIA Rapid Assessment Services is defined as access within 72 hours for 80% of TIA/minor stroke patients in the province. Optimal care is currently being provided to an estimated 6.1% of TIA/minor stroke patients living in the geographic boundaries of IH.								
(2) Optimal care associated with tPA utilization is defined as receipt by a maximum of 10% of incident ischemic stroke patients. tPA is currently being utilized by 4.60% of the incident ischemic stroke patients living within the geographic boundaries of IH.								
(3) Optimal care assumes that 80% of stroke patients admitted to acute care will have access to organized stroke care. An estimated 1.8% of stroke patients living within the geographic boundaries of IH are currently receiving organized stroke care (at Royal Inland Hospital).								
(4) An early home-supported discharge (EHSD) team is comprised of "physiotherapists and occupational therapists supported by speech therapists, physicians, nurses, and social workers whose teamwork is coordinated by regular meetings. Often the EHSD begins with one or more pre-discharge home visits, continues the day of discharge, and goes on with more home sessions per week based on a patient-held recovery plan. [However,] it should be emphasized that EHSD is not considered an alternate to a stroke unit". Larsen T, Olsen TS, Sorensen J. Early home-supported discharge of stroke patients: a health technology assessment. International Journal of Technology Assessment in Health Care. 2006; 22(3): 313-20.								
The literature suggests that an average of 37% of stroke patients admitted to acute care would be eligible for EHSD. Winkel A, Ekdahl C, Gard G. Early discharge to therapy-based rehabilitation at home in patients with stroke: a systematic review. Physical Therapy Reviews. 2008; 13(3): 167-87.								
No patients living within the geographic boundaries are currently receiving EHSD.								
Winkel A, Ekdahl C, Gard G. Early discharge to therapy-based rehabilitation at home in patients with stroke: a systematic review. Physical Therapy Reviews. 2008; 13(3): 167-87.								

# INDICATORS AND METRICS

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**By Health Authority and HSDA**

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## INDICATORS AND METRICS

The BC Stroke Strategy Measurement and Evaluation Working Group have suggested five key indicators for tracking progress on ACVS care in the province as follows:

1. TIA volumes
  - Increase the volume of TIA / non-hospitalized strokes processed in TIA Rapid Assessment Clinics by **50%** between 2009/10 and 2013/14
2. tPA utilization<sup>1</sup>
  - Increase the number of incident ischemic stroke patients appropriately receiving tPA to **10%** between 2008/09 and 2013/14
3. Incidence rate
  - Reduce the age-standardized incidence rate of both ischemic and hemorrhagic stroke by 10% between 2008/09 and 2013/14
4. Acute care days
  - Reduce acute care days for discharges in which an ischemic stroke is the principal diagnosis by **10%** between 2008/09 and 2013/14 (this includes a combination of reduced discharges and reduced average length of stay)
5. Death and dependency
  - Reduce the proportion of patients who die in hospital or are sent to a long-term care facility after being admitted/discharged (principal diagnosis) for ischemic stroke. *If only one composite measure is used to assess progress in stroke care, it would be this overall measure of death and dependency*

The following sections include:

- trend data for Interior Health for each of these five indicators; and
- trend data for three of the five indicators (incidence rate, acute care days, and death and dependency) for
  - East Kootenay HSDA
  - Kootenay Boundary HSDA
  - Okanagan HSDA
  - Thompson Cariboo Shuswap HSDA

The majority of this data is from the updated Acute Cerebrovascular Syndrome (ACVS) Registry, with the exception of data for Indicator #1 which is provided by the health authorities.

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<sup>1</sup> The original goal set prior to information on current results was 5%. Given a provincial average of 4.27%, the goal was reset at 10% in 2008/09.

# INTERIOR HEALTH

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## Indicators and Metrics

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# INTERIOR HEALTH INDICATORS AND METRICS AS OF NOVEMBER 2010

## Acute Cerebrovascular Syndrome Adults\* Residing in the Interior Health Authority 2001/02 to 2008/09

	Fiscal Year								% Change 01/02 to 08/09
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	
<b>Number of Incident ACVS Patients</b>									
Hospitalized Ischemic Stroke	756	712	740	738	729	694	733	695	-8.1%
Hospitalized Hemorrhagic Stroke	141	138	120	125	123	126	130	130	-7.8%
<b>Sub-total</b>	<b>897</b>	<b>850</b>	<b>860</b>	<b>863</b>	<b>852</b>	<b>820</b>	<b>863</b>	<b>825</b>	<b>-8.0%</b>
Hospitalized TIA	243	251	240	290	223	235	238	279	14.8%
Non-hospitalized TIA/Stroke	638	688	788	830	884	821	857	909	42.5%
<b>Sub-total</b>	<b>881</b>	<b>939</b>	<b>1,028</b>	<b>1,120</b>	<b>1,107</b>	<b>1,056</b>	<b>1,095</b>	<b>1,188</b>	<b>34.8%</b>
<b>Number of Prevalent ACVS Patients</b>									
Hospitalized Ischemic Stroke	4,271	4,315	4,461	4,574	4,690	4,767	4,859	4,867	14.0%
Hospitalized Hemorrhagic Stroke	656	707	726	764	791	833	866	898	36.9%
<b>Sub-total</b>	<b>4,927</b>	<b>5,022</b>	<b>5,187</b>	<b>5,338</b>	<b>5,481</b>	<b>5,600</b>	<b>5,725</b>	<b>5,765</b>	<b>17.0%</b>
Hospitalized TIA	1,980	2,033	2,075	2,178	2,200	2,220	2,238	2,323	17.3%
Non-hospitalized TIA/Stroke	3,879	4,179	4,555	4,953	5,412	5,761	6,119	6,496	67.5%
<b>Sub-total</b>	<b>5,859</b>	<b>6,212</b>	<b>6,630</b>	<b>7,131</b>	<b>7,612</b>	<b>7,981</b>	<b>8,357</b>	<b>8,819</b>	<b>50.5%</b>
<b>Age-Standardized Incidence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	0.994	0.911	0.912	0.885	0.849	0.781	0.788	0.732	-26.4%
Hospitalized Hemorrhagic Stroke	0.190	0.176	0.154	0.153	0.148	0.147	0.151	0.149	-21.8%
<b>Sub-total</b>	<b>1.191</b>	<b>1.094</b>	<b>1.072</b>	<b>1.044</b>	<b>1.003</b>	<b>0.934</b>	<b>0.944</b>	<b>0.885</b>	<b>-25.7%</b>
Hospitalized TIA	0.315	0.317	0.292	0.346	0.260	0.257	0.256	0.293	-6.9%
Non-hospitalized TIA/Stroke	0.855	0.901	0.992	1.020	1.065	0.961	0.965	0.995	16.4%
<b>Age-Standardized Prevalence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	5.292	5.194	5.191	5.166	5.138	5.051	4.972	4.824	-8.8%
Hospitalized Hemorrhagic Stroke	0.882	0.922	0.923	0.944	0.953	0.975	0.984	0.989	12.1%
<b>Sub-total</b>	<b>6.175</b>	<b>6.116</b>	<b>6.113</b>	<b>6.110</b>	<b>6.091</b>	<b>6.027</b>	<b>5.956</b>	<b>5.813</b>	<b>-5.9%</b>
Hospitalized TIA	2.445	2.433	2.403	2.447	2.394	2.331	2.271	2.290	-6.3%
Non-hospitalized TIA/Stroke	5.149	5.396	5.695	6.003	6.349	6.552	6.727	6.909	34.2%
<b>Conversion Rate from TIA/Non-hospitalized Stroke to Hospitalized Stroke</b>									
90-Day Conversion Rate	4.10%	3.31%	2.82%	3.04%	3.05%	2.56%	2.47%		-39.6%
365-Day Conversion Rate	6.79%	4.86%	4.43%	4.23%	4.71%	4.04%	5.04%		-25.7%
<b>Utilization of tPA by Incident Acute Ischemic Stroke Patients</b>									
Number Receiving tPA						22	25	32	
Total Number						694	733	695	
Proportion of Incident Hospitalized AIS Patients Receiving tPA						3.17%	3.41%	4.60%	
<b>Utilization of Acute Care by Incident Ischemic Stroke Patients</b>									
Discharges	756	712	740	738	729	694	733	695	-8.1%
ALOS	24.75	19.88	19.92	19.53	18.16	18.44	19.63	16.27	-34.2%
Patient Days	18,711	14,157	14,740	14,411	13,237	12,794	14,386	11,310	-39.6%
<b>Utilization of Acute Care by Incident Hemorrhagic Stroke Patients</b>									
Discharges	141	138	120	125	123	126	130	130	-7.8%
ALOS	24.22	20.78	22.43	15.06	27.39	31.21	21.93	17.40	-28.2%
Patient Days	3,415	2,868	2,691	1,882	3,369	3,933	2,851	2,262	-33.8%
<b>Discharge Disposition following Acute Admissions for Incident Ischemic Stroke Patients</b>									
Died	26.1%	24.6%	23.9%	22.5%	24.3%	23.3%	23.9%	21.7%	-16.6%
Discharged to Home	49.9%	48.5%	51.2%	53.8%	49.8%	47.7%	47.9%	51.9%	4.2%
Home with Support Services	8.6%	10.8%	8.2%	7.5%	7.3%	7.1%	7.8%	8.5%	-1.3%
Continuing Care Facility	11.4%	13.5%	13.1%	12.6%	14.3%	16.3%	16.6%	12.1%	6.2%
Other	4.1%	2.7%	3.5%	3.7%	4.4%	5.6%	3.8%	5.8%	40.4%
<b>Discharge Disposition following Acute Admissions for Incident Hemorrhagic Stroke Patients</b>									
Died	44.0%	50.7%	43.3%	48.0%	43.1%	52.4%	43.8%	38.5%	-12.5%
Discharged to Home	34.0%	33.3%	38.3%	29.6%	36.6%	29.4%	39.2%	40.8%	19.8%
Home with Support Services	7.1%	6.5%	5.0%	3.2%	5.7%	4.0%	6.2%	3.8%	-45.8%
Continuing Care Facility	6.4%	7.2%	8.3%	12.0%	8.9%	9.5%	7.7%	7.7%	20.5%
Other	8.5%	2.2%	5.0%	7.2%	5.7%	4.8%	3.1%	9.2%	8.5%
<b>Mortality Following an Incident Stroke</b>									
<b>Hospitalized Ischemic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	22.6%	20.8%	20.5%	19.2%	21.1%	20.3%	21.3%	19.3%	-14.8%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	19.8%	19.3%	21.1%	18.1%	21.0%	21.2%	23.7%	17.5%	-11.9%
<b>Hospitalized Hemorrhagic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	39.0%	47.1%	39.2%	47.2%	39.8%	47.6%	43.8%	35.4%	-9.3%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	16.3%	19.2%	20.5%	18.2%	14.9%	28.8%	12.3%	22.6%	38.9%

Grey Shading = Not Applicable/Available

\* Age 20 and older

## INTERIOR HEALTH INDICATORS AND METRICS

The BC Stroke Strategy Measurement and Evaluation Working Group have suggested five key indicators for tracking progress on ACVS care in the province. The following includes trend data for **Interior Health** for each of these five indicators. The majority of this data is from the updated Acute Cerebrovascular Syndrome (ACVS) Registry, with the exception of data for Indicator #1 which is provided by the Health Authorities. Note that the geographic location is based on the patient's residence, not necessarily the location of their treatment. The only exception to this is Indicator #1 in which the geographic location is based on the location of the clinic.

The focus of the graphs and charts is on provincial trends for the five key ACVS indicators.

### Indicator #1 – TIA Volumes

Increase the volume of TIA/non-hospitalized strokes processed in TIA Rapid Assessment Clinics by **50%** between 2009/10 and 2013/14 (*data source:* provided by Health Authorities).

<b>TIA Rapid Assessment Clinics In British Columbia by Health Authority 2009/10 Estimated</b>		
	<b>IHA</b>	<b>BC Total</b>
<b>New Patients Seen</b>	144	5,215
<b>TIA/Stroke Patients Seen</b>	104	2,749
<b>Mimic Rate</b>	27.8%	47.3%
<b>Referral Source</b>		
GP/Specialist	47.9%	39.1%
Emergency Department	47.2%	42.9%
Other	4.9%	17.9%
<b>Mean Wait Time</b>		
From Event to 1st Appointment (in days)	3.72	5.26
From Referral to 1st Appointment (in days)	1.38	4.44
# of Patients Seen Within 48 Hours	67	980
% Seen Within 48 Hours	46.8%	18.8%
<i>Note: BC total does not include data from Lions Gate Hospital in Vancouver</i>		

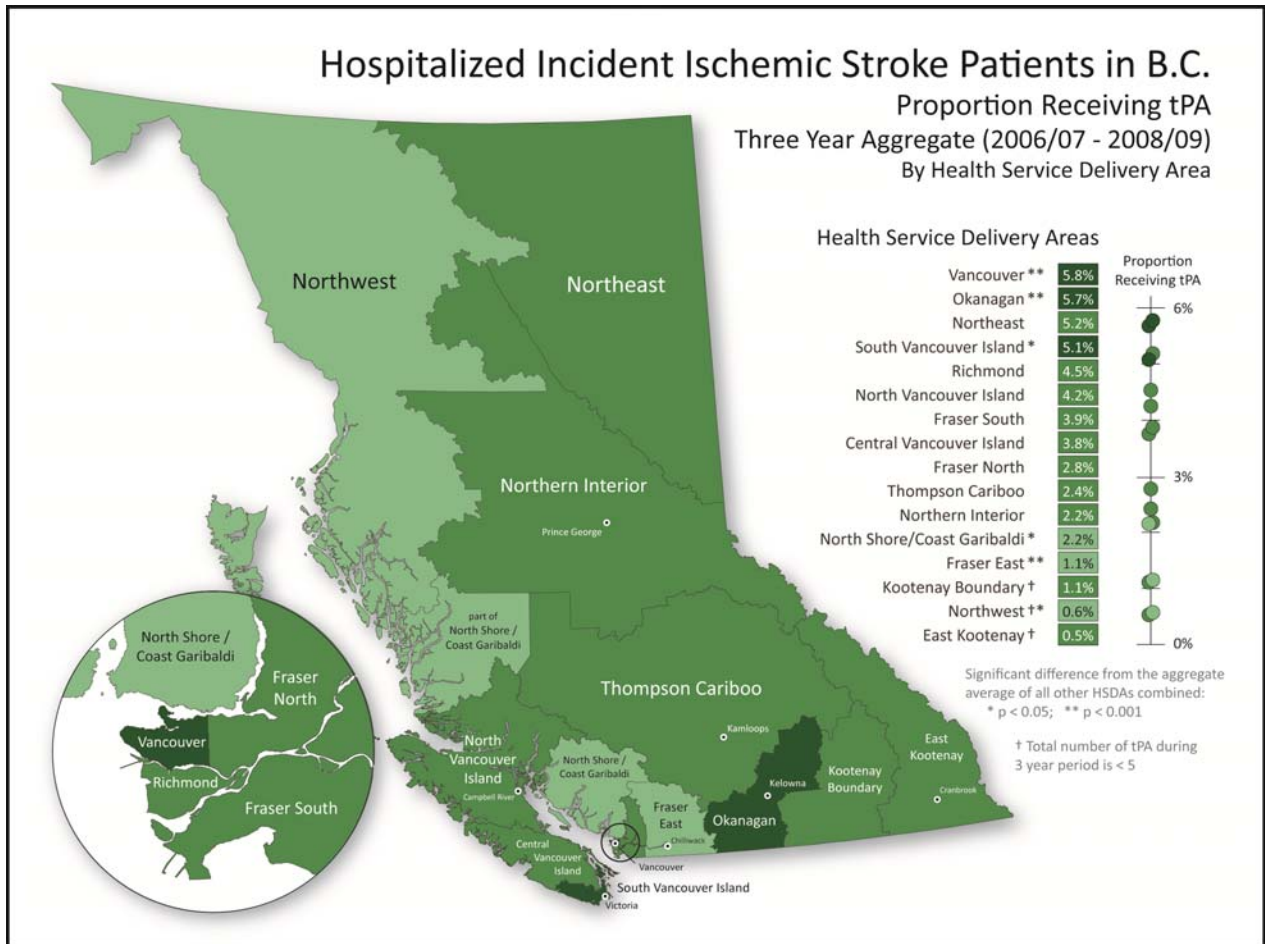
## Indicator #2 – tPA Utilization

Increase the number of incident ischemic stroke patients appropriately receiving tPA to **10%** between 2008/09 and 2013/14. [*Data source:* proportion is based on number of incident hospitalized ischemic stroke patients (based on the updated ACVS Registry definition) with intervention code 1.ZZ.35.HA-C1 (Pharmacotherapy, total body, percutaneous approach, [intramuscular, intravenous, subcutaneous, intradermal] using antithrombotic agent). This use of this code has only been mandatory in BC since 2006/07.]

In Interior Health, utilization of tPA by incident hospitalized acute ischemic stroke (AIS) patients from 2006/07 to 2008/09 is as follows:

- 22 of 694 incident hospitalized AIS patients received tPA or 3.17% in 2006/07
- 25 of 733 incident hospitalized AIS patients received tPA or 3.41% in 2007/08
- 32 of 695 incident hospitalized AIS patients received tPA or 4.60% in 2008/09

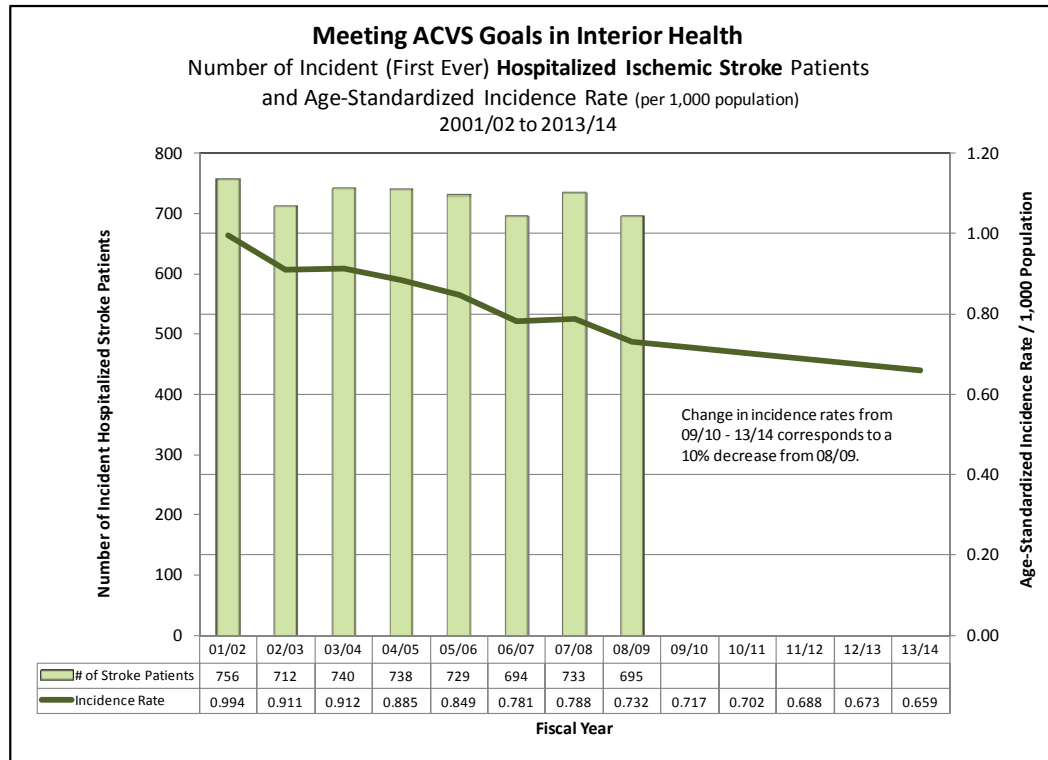
In BC, there is considerable variation in use of tPA at the regional level, with a significantly higher proportion of AIS patients living in Vancouver, Okanagan and South Vancouver Island Health Service Delivery Areas (HSDAs) receiving tPA. Patients with an incident ischemic stroke living in the Fraser East, North Shore/Coast Garibaldi and Northwest HSDAs have a significantly lower probability of receiving tPA (see map below).



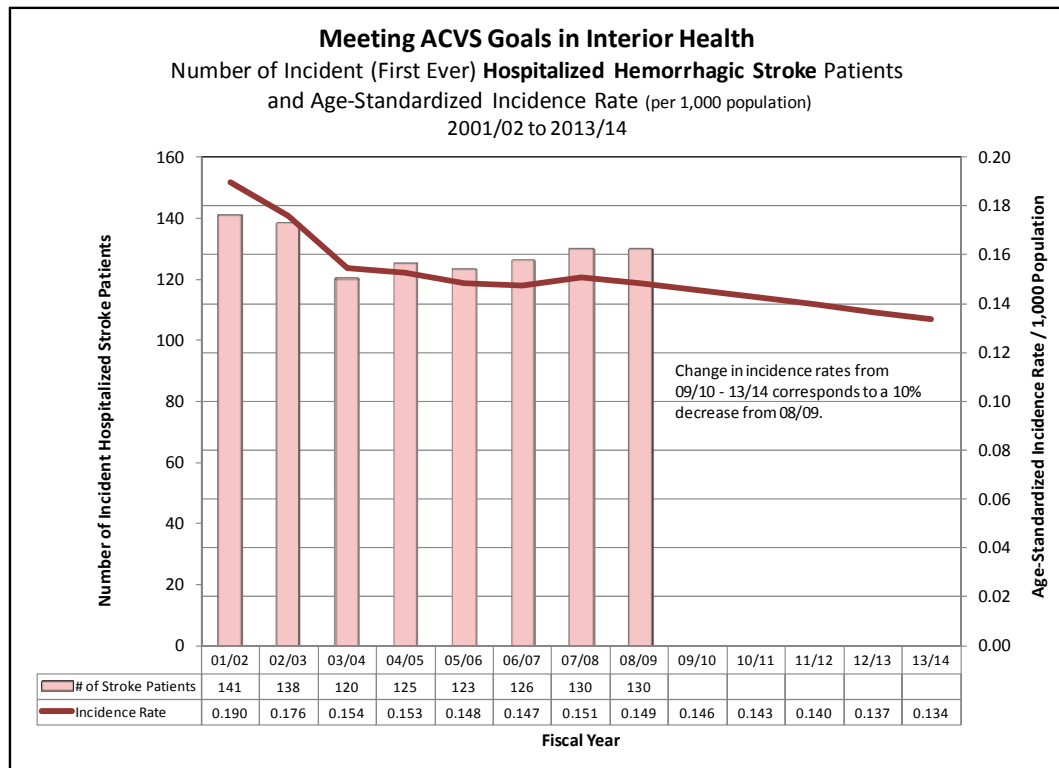
### Indicator #3 – Incidence Rate

Reduce the age-standardized incidence rate of both ischemic and hemorrhagic stroke by **10%** between 2008/09 and 2013/14 (*data source: updated ACVS Registry*).

#### Interior Health Authority – Incident Hospitalized Ischemic Stroke Patients



#### Interior Health Authority – Incident Hospitalized Hemorrhagic Stroke Patients

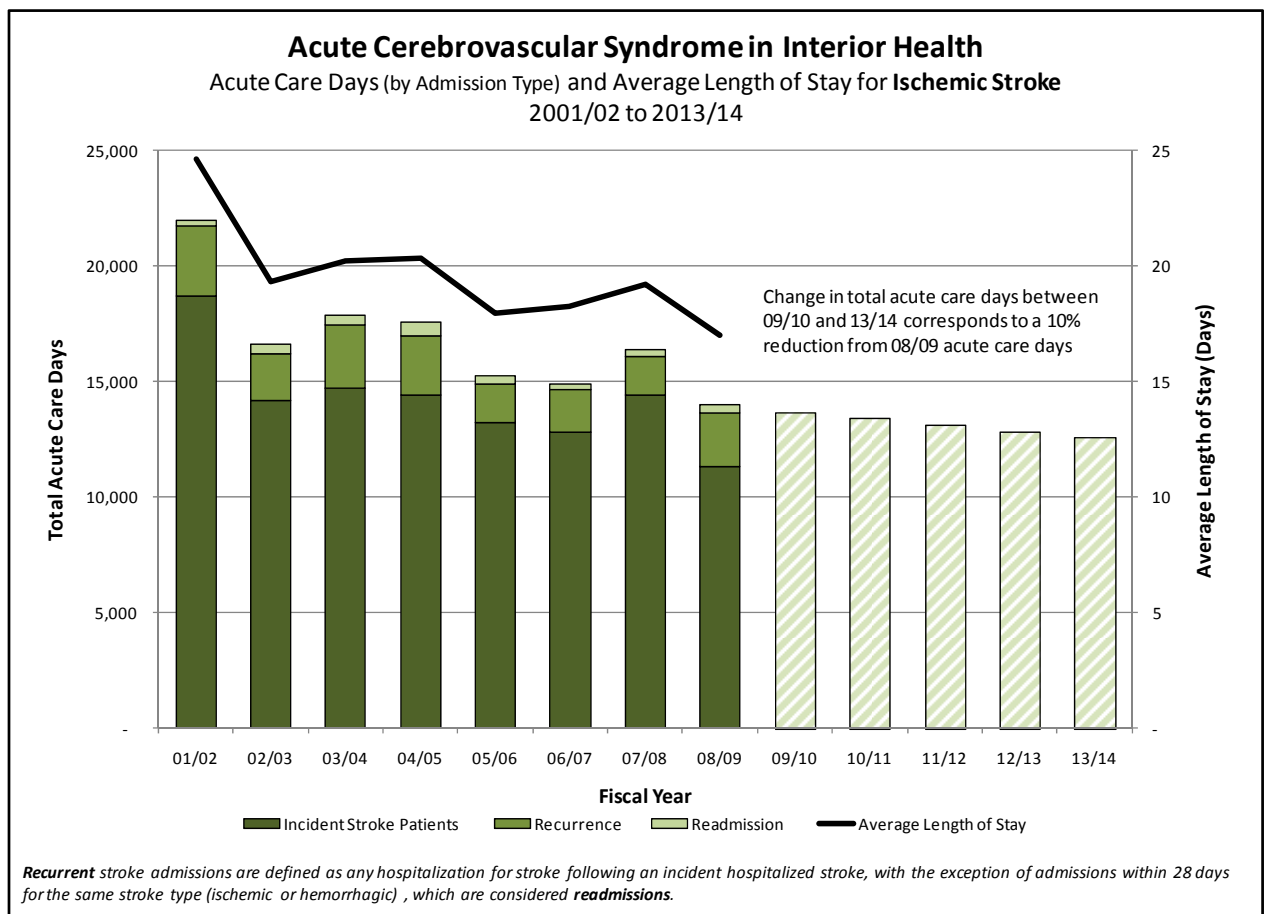


## Indicator #4 – Acute Care Days

Reduce acute care days for discharges in which an ischemic stroke is the principal diagnosis by **10%** between 2008/09 and 2013/14 (this includes a combination of reduced discharges and reduced average length of stay).

*Data Source:* Updated ACVS Registry for incident, re-admit and recurrent ischemic stroke discharges. Link to the Discharge Abstract Database (DAD) for number of hospital days associated with these discharges. **Recurrent** stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered **readmissions**.

### Interior Health Authority – Acute Care Days and ALOS for Ischemic Stroke Patients



## Hospitalization and ALOS for Stroke Adults\* Residing in Interior Health Authority 2001/02 to 2008/09

	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	756	712	740	738	729	694	733	695
Hospitalized Hemorrhagic Stroke	141	138	120	125	123	126	130	130
Readmission								
Hospitalized Ischemic Stroke	17	21	19	20	22	18	13	19
Hospitalized Hemorrhagic Stroke	█	5	█	6	█	█	█	7
Recurrence								
Hospitalized Ischemic Stroke	120	126	125	104	100	102	105	109
Hospitalized Hemorrhagic Stroke	13	7	14	12	9	10	8	18
<b>Total Hospitalized Ischemic Stroke</b>	<b>893</b>	<b>859</b>	<b>884</b>	<b>862</b>	<b>851</b>	<b>814</b>	<b>851</b>	<b>823</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>157</b>	<b>150</b>	<b>137</b>	<b>143</b>	<b>135</b>	<b>140</b>	<b>141</b>	<b>155</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>1,050</b>	<b>1,009</b>	<b>1,021</b>	<b>1,005</b>	<b>986</b>	<b>954</b>	<b>992</b>	<b>978</b>
<b>Average Length of Stay in Acute Care</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke	24.75	19.88	19.92	19.53	18.16	18.44	19.63	16.27
Hospitalized Hemorrhagic Stroke	24.22	20.78	22.43	15.06	27.39	31.21	21.93	17.40
Readmission								
Hospitalized Ischemic Stroke	13.00	18.57	21.21	30.05	17.14	11.50	21.92	16.89
Hospitalized Hemorrhagic Stroke	18.00	15.60	24.33	18.67	10.00	43.75	13.00	34.86
Recurrence								
Hospitalized Ischemic Stroke	25.43	16.45	21.68	24.37	16.57	18.40	16.04	21.53
Hospitalized Hemorrhagic Stroke	15.85	12.29	11.36	15.00	5.89	22.10	11.63	5.83
<b>Total Hospitalized Ischemic Stroke</b>	<b>24.62</b>	<b>19.35</b>	<b>20.20</b>	<b>20.35</b>	<b>17.94</b>	<b>18.28</b>	<b>19.22</b>	<b>16.98</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>23.41</b>	<b>20.21</b>	<b>21.34</b>	<b>15.20</b>	<b>25.57</b>	<b>30.92</b>	<b>21.16</b>	<b>16.85</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>24.44</b>	<b>19.48</b>	<b>20.35</b>	<b>19.62</b>	<b>18.99</b>	<b>20.13</b>	<b>19.49</b>	<b>16.96</b>
<b>Days in Acute Care</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	18,711	14,157	14,740	14,411	13,237	12,794	14,386	11,310
Hospitalized Hemorrhagic Stroke	3,415	2,868	2,691	1,882	3,369	3,933	2,851	2,262
Readmission								
Hospitalized Ischemic Stroke	221	390	403	601	377	207	285	321
Hospitalized Hemorrhagic Stroke	54	78	73	112	30	175	39	244
Recurrence								
Hospitalized Ischemic Stroke	3,051	2,073	2,710	2,534	1,657	1,877	1,684	2,347
Hospitalized Hemorrhagic Stroke	206	86	159	180	53	221	93	105
<b>Total Days - Hospitalized Ischemic Stroke</b>	<b>21,983</b>	<b>16,620</b>	<b>17,853</b>	<b>17,546</b>	<b>15,271</b>	<b>14,878</b>	<b>16,355</b>	<b>13,978</b>
<b>Total Days - Hospitalized Hemorrhagic Stroke</b>	<b>3,675</b>	<b>3,032</b>	<b>2,923</b>	<b>2,174</b>	<b>3,452</b>	<b>4,329</b>	<b>2,983</b>	<b>2,611</b>
<b>Total Days</b>	<b>25,658</b>	<b>19,652</b>	<b>20,776</b>	<b>19,720</b>	<b>18,723</b>	<b>19,207</b>	<b>19,338</b>	<b>16,589</b>

\* Age 20 and older

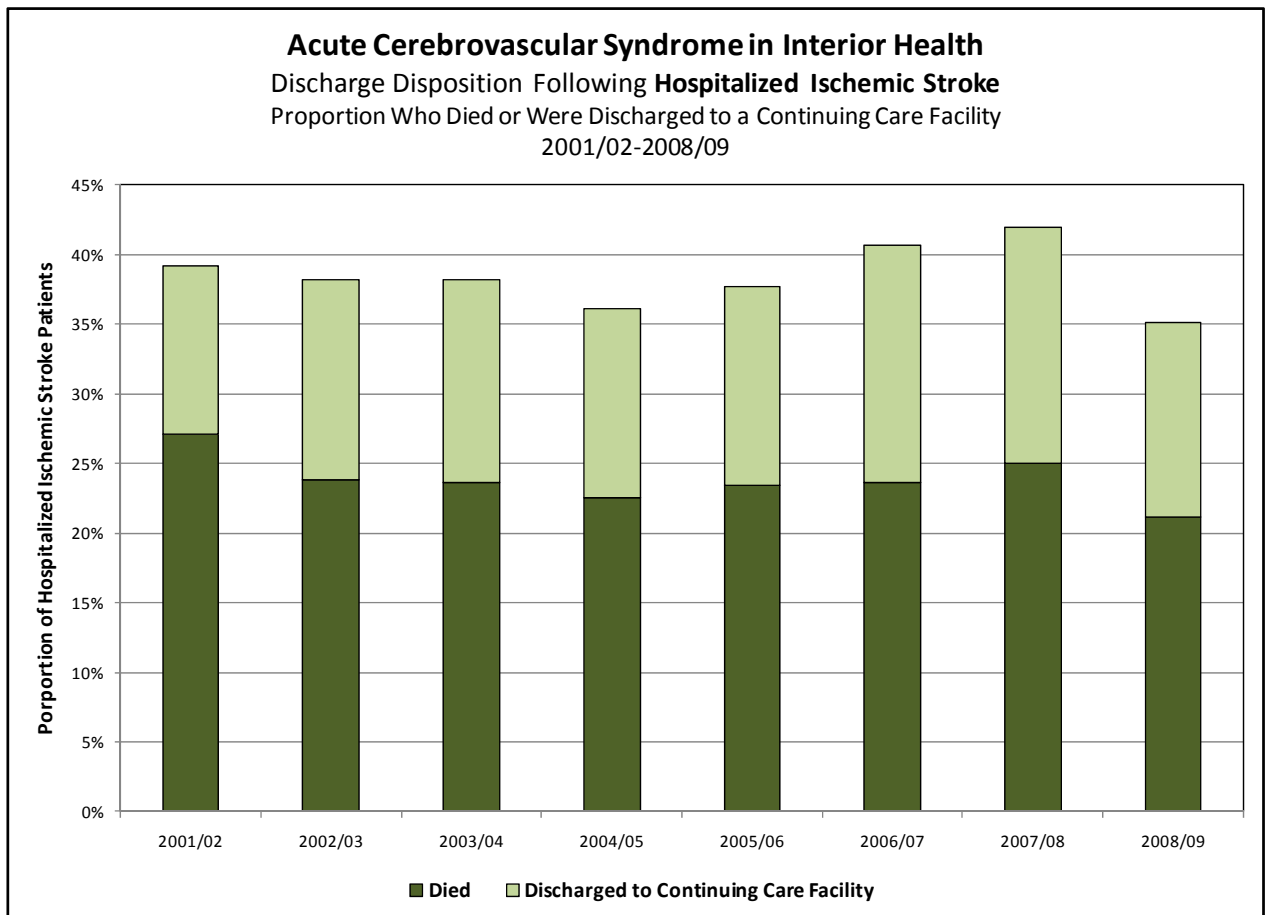
**Recurrent stroke admissions** are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered **readmissions**.

## Indicator #5 – Death and Dependency

Reduce the proportion of patients who die in hospital or are sent to a long-term care facility after being admitted/discharged (principal diagnosis) for ischemic stroke. *If only one composite measure is used to assess progress in stroke care, it would be this overall measure of death and dependency.*

*Data Source:* Updated ACVS Registry for hospitalized (incident, readmission and recurrent) ischemic stroke discharges. Discharge Abstract Database (DAD) for discharge disposition ('died', 'discharged to a Continuing Care Facility').

### Interior Health Authority – Discharge Disposition for Hospitalized Ischemic Stroke



Discharge Disposition Following a Hospitalization for Stroke								
Patient Died or Was Discharged to a Continuing Care Facility								
Adults* Residing in Interior Health Authority								
2001/02 to 2008/09								
Number of Stroke Hospitalizations	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	756	712	740	738	729	694	733	695
Hospitalized Hemorrhagic Stroke	141	138	120	125	123	126	130	130
Readmission								
Hospitalized Ischemic Stroke	17	21	19	20	22	18	13	19
Hospitalized Hemorrhagic Stroke		5		6				7
Recurrence								
Hospitalized Ischemic Stroke	120	126	125	104	100	102	105	109
Hospitalized Hemorrhagic Stroke	13	7	14	12	9	10	8	18
<b>Total Hospitalized Ischemic Stroke</b>	<b>893</b>	<b>859</b>	<b>884</b>	<b>862</b>	<b>851</b>	<b>814</b>	<b>851</b>	<b>823</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>157</b>	<b>150</b>	<b>137</b>	<b>143</b>	<b>135</b>	<b>140</b>	<b>141</b>	<b>155</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>1,050</b>	<b>1,009</b>	<b>1,021</b>	<b>1,005</b>	<b>986</b>	<b>954</b>	<b>992</b>	<b>978</b>
<b>Discharge Disposition - Number</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke								
Died	197	175	177	166	177	162	175	151
Discharged to a Continuing Care Facility	86	96	97	93	104	113	122	84
Hospitalized Hemorrhagic Stroke								
Died	62	70	52	60	53	66	57	50
Discharged to a Continuing Care Facility	9	10	10	15	11	12	10	10
Readmission								
Hospitalized Ischemic Stroke								
Died				7				
Discharged to a Continuing Care Facility			5					
Hospitalized Hemorrhagic Stroke								
Died								
Discharged to a Continuing Care Facility								
Recurrence								
Hospitalized Ischemic Stroke								
Died	41	26	28	21	18	27	36	21
Discharged to a Continuing Care Facility	20	24	27	21	16	23	19	28
Hospitalized Hemorrhagic Stroke								
Died	6		6		5			8
Discharged to a Continuing Care Facility								
<b>Total Hospitalized Ischemic Stroke</b>	<b>242</b>	<b>205</b>	<b>209</b>	<b>194</b>	<b>199</b>	<b>192</b>	<b>213</b>	<b>174</b>
<b>Discharged to a Continuing Care Facility</b>	<b>108</b>	<b>123</b>	<b>129</b>	<b>117</b>	<b>122</b>	<b>139</b>	<b>144</b>	<b>115</b>
<b>Death and Disability</b>	<b>350</b>	<b>328</b>	<b>338</b>	<b>311</b>	<b>321</b>	<b>331</b>	<b>357</b>	<b>289</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>70</b>	<b>72</b>	<b>59</b>	<b>64</b>	<b>59</b>	<b>70</b>	<b>61</b>	<b>60</b>
<b>Discharged to a Continuing Care Facility</b>	<b>12</b>	<b>13</b>	<b>12</b>	<b>17</b>	<b>12</b>	<b>14</b>	<b>11</b>	<b>12</b>
<b>Death and Disability</b>	<b>82</b>	<b>85</b>	<b>71</b>	<b>81</b>	<b>71</b>	<b>84</b>	<b>72</b>	<b>72</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>312</b>	<b>277</b>	<b>268</b>	<b>258</b>	<b>258</b>	<b>262</b>	<b>274</b>	<b>234</b>
<b>Died</b>	<b>120</b>	<b>136</b>	<b>141</b>	<b>134</b>	<b>134</b>	<b>153</b>	<b>155</b>	<b>127</b>
<b>Discharged to a Continuing Care Facility</b>	<b>432</b>	<b>413</b>	<b>409</b>	<b>392</b>	<b>392</b>	<b>415</b>	<b>429</b>	<b>361</b>
<b>Discharge Disposition - Proportion</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke								
Died	26.1%	24.6%	23.9%	22.5%	24.3%	23.3%	23.9%	21.7%
Discharged to a Continuing Care Facility	11.4%	13.5%	13.1%	12.6%	14.3%	16.3%	16.6%	12.1%
Hospitalized Hemorrhagic Stroke								
Died	44.0%	50.7%	43.3%	48.0%	43.1%	52.4%	43.8%	38.5%
Discharged to a Continuing Care Facility	6.4%	7.2%	8.3%	12.0%	8.9%	9.5%	7.7%	7.7%
Readmission								
Hospitalized Ischemic Stroke								
Died	23.5%	19.0%	21.1%	35.0%	18.2%	16.7%	15.4%	10.5%
Discharged to a Continuing Care Facility	11.8%	14.3%	26.3%	15.0%	9.1%	16.7%	23.1%	15.8%
Hospitalized Hemorrhagic Stroke								
Died	66.7%	0.0%	33.3%	50.0%	33.3%	0.0%	0.0%	28.6%
Discharged to a Continuing Care Facility	0.0%	40.0%	33.3%	0.0%	0.0%	25.0%	0.0%	14.3%
Recurrence								
Hospitalized Ischemic Stroke								
Died	34.2%	20.6%	22.4%	20.2%	18.0%	26.5%	34.3%	19.3%
Discharged to a Continuing Care Facility	16.7%	19.0%	21.6%	20.2%	16.0%	22.5%	18.1%	25.7%
Hospitalized Hemorrhagic Stroke								
Died	46.2%	28.6%	42.9%	8.3%	55.6%	40.0%	50.0%	44.4%
Discharged to a Continuing Care Facility	23.1%	14.3%	7.1%	16.7%	11.1%	10.0%	12.5%	5.6%
<b>Total Hospitalized Ischemic Stroke</b>	<b>27.1%</b>	<b>23.9%</b>	<b>23.6%</b>	<b>22.5%</b>	<b>23.4%</b>	<b>23.6%</b>	<b>25.0%</b>	<b>21.1%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>12.1%</b>	<b>14.3%</b>	<b>14.6%</b>	<b>13.6%</b>	<b>14.3%</b>	<b>17.1%</b>	<b>16.9%</b>	<b>14.0%</b>
<b>Death and Disability</b>	<b>39.2%</b>	<b>38.2%</b>	<b>38.2%</b>	<b>36.1%</b>	<b>37.7%</b>	<b>40.7%</b>	<b>42.0%</b>	<b>35.1%</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>44.6%</b>	<b>48.0%</b>	<b>43.1%</b>	<b>44.8%</b>	<b>43.7%</b>	<b>50.0%</b>	<b>43.3%</b>	<b>38.7%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>7.6%</b>	<b>8.7%</b>	<b>8.8%</b>	<b>11.9%</b>	<b>8.9%</b>	<b>10.0%</b>	<b>7.8%</b>	<b>7.7%</b>
<b>Death and Disability</b>	<b>52.2%</b>	<b>56.7%</b>	<b>51.8%</b>	<b>56.6%</b>	<b>52.6%</b>	<b>60.0%</b>	<b>51.1%</b>	<b>46.5%</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>29.7%</b>	<b>27.5%</b>	<b>26.2%</b>	<b>25.7%</b>	<b>26.2%</b>	<b>27.5%</b>	<b>27.6%</b>	<b>23.9%</b>
<b>Died</b>	<b>11.4%</b>	<b>13.5%</b>	<b>13.8%</b>	<b>13.3%</b>	<b>13.6%</b>	<b>16.0%</b>	<b>15.6%</b>	<b>13.0%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>41.1%</b>	<b>40.9%</b>	<b>40.1%</b>	<b>39.0%</b>	<b>39.8%</b>	<b>43.5%</b>	<b>43.2%</b>	<b>36.9%</b>

\* Age 20 and older

Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.

## Indicator #5 – Death and Dependency (continued)

Interior Health  
Authority –  
Discharge Disposition  
Data Trends

# EAST KOOTENAY HSDA

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## Indicators and Metrics

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# EAST KOOTENAY HSDA INDICATORS AND METRICS AS OF NOVEMBER 2010

<b>Acute Cerebrovascular Syndrome</b>									
<b>Adults* Residing in the East Kootenay HSDA</b>									
2001/02 to 2008/09									
	Fiscal Year								% Change 01/02 to 08/09
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	
<b>Number of Incident ACVS Patients</b>									
Hospitalized Ischemic Stroke	85	60	62	79	76	49	75	65	-23.5%
Hospitalized Hemorrhagic Stroke	7	7	16	10	9	4	12	8	14.3%
<b>Sub-total</b>	<b>92</b>	<b>67</b>	<b>78</b>	<b>89</b>	<b>85</b>	<b>53</b>	<b>87</b>	<b>73</b>	<b>-20.7%</b>
Hospitalized TIA	32	33	42	32	27	26	18	27	-15.6%
Non-hospitalized TIA/Stroke	42	47	51	65	53	67	73	83	97.6%
<b>Sub-total</b>	<b>74</b>	<b>80</b>	<b>93</b>	<b>97</b>	<b>80</b>	<b>93</b>	<b>91</b>	<b>110</b>	<b>48.6%</b>
<b>Number of Prevalent ACVS Patients</b>									
Hospitalized Ischemic Stroke	439	431	432	445	456	441	461	451	2.7%
Hospitalized Hemorrhagic Stroke	52	56	64	62	62	60	70	66	26.9%
<b>Sub-total</b>	<b>491</b>	<b>487</b>	<b>496</b>	<b>507</b>	<b>518</b>	<b>501</b>	<b>531</b>	<b>517</b>	<b>5.3%</b>
Hospitalized TIA	235	240	254	254	249	251	240	247	5.1%
Non-hospitalized TIA/Stroke	237	263	292	325	355	394	431	480	102.5%
<b>Sub-total</b>	<b>472</b>	<b>503</b>	<b>546</b>	<b>579</b>	<b>604</b>	<b>645</b>	<b>671</b>	<b>727</b>	<b>54.0%</b>
<b>Age-Standardized Incidence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	1.208	0.821	0.816	1.025	0.941	0.580	0.856	0.717	-40.7%
Hospitalized Hemorrhagic Stroke	0.096	0.095	0.202	0.135	0.116	0.043	0.144	0.088	-8.1%
<b>Sub-total</b>	<b>1.309</b>	<b>0.921</b>	<b>1.028</b>	<b>1.167</b>	<b>1.064</b>	<b>0.628</b>	<b>1.006</b>	<b>0.809</b>	<b>-38.2%</b>
Hospitalized TIA	0.456	0.448	0.552	0.403	0.336	0.304	0.195	0.306	-32.9%
Non-hospitalized TIA/Stroke	0.583	0.626	0.665	0.812	0.680	0.816	0.830	0.914	57.0%
<b>Age-Standardized Prevalence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	5.753	5.472	5.290	5.294	5.236	4.896	4.941	4.674	-18.8%
Hospitalized Hemorrhagic Stroke	0.702	0.737	0.810	0.761	0.748	0.693	0.769	0.700	-0.3%
<b>Sub-total</b>	<b>6.455</b>	<b>6.209</b>	<b>6.101</b>	<b>6.055</b>	<b>5.984</b>	<b>5.589</b>	<b>5.709</b>	<b>5.374</b>	<b>-16.7%</b>
Hospitalized TIA	3.071	3.034	3.109	3.010	2.841	2.749	2.514	2.513	-18.2%
Non-hospitalized TIA/Stroke	3.314	3.553	3.806	4.098	4.383	4.689	4.875	5.231	57.9%
<b>Conversion Rate from TIA/Non-hospitalized Stroke to Hospitalized Stroke</b>									
90-Day Conversion Rate			5.49%				5.56%		
365-Day Conversion Rate	8.33%	6.33%	6.59%				10.00%		
<b>Utilization of tPA by Incident Acute Ischemic Stroke Patients</b>									
Number Receiving tPA						1	-	1	
Total Number						49	75	65	
Proportion of Incident Hospitalized AIS Patients Receiving tPA						<u>2.04%</u>	<u>0.00%</u>	<u>1.54%</u>	
<b>Utilization of Acute Care by Incident Ischemic Stroke Patients</b>									
Discharges	85	60	62	79	76	49	75	65	-23.5%
ALOS	28.49	19.82	27.52	29.15	25.07	20.06	21.77	14.97	-47.5%
Patient Days	2,422	1,189	1,706	2,303	1,905	983	1,633	973	-59.8%
<b>Utilization of Acute Care by Incident Hemorrhagic Stroke Patients</b>									
Discharges	7	7	16	10	9	4	12	8	14.3%
ALOS	60.71	14.14	28.94	9.10	12.89	14.50	19.25	13.13	-78.4%
Patient Days	425	99	463	91	116	58	231	105	-75.3%
<b>Discharge Disposition following Acute Admissions for Incident Ischemic Stroke Patients</b>									
Died	29.4%	28.3%	27.4%	22.8%	32.9%	22.4%	29.3%	30.8%	4.6%
Discharged to Home	50.6%	48.3%	45.2%	54.4%	44.7%	61.2%	52.0%	49.2%	-2.7%
Home with Support Services	<u>2.4%</u>	<u>1.7%</u>	<u>3.2%</u>	<u>3.8%</u>	<u>3.9%</u>	<u>4.1%</u>	<u>4.0%</u>		
Continuing Care Facility	9.4%	15.0%	19.4%	17.7%	13.2%	<u>8.2%</u>	12.0%	9.2%	-1.9%
Other	8.2%	<u>6.7%</u>	<u>4.8%</u>	<u>1.3%</u>	<u>5.3%</u>	<u>4.1%</u>	<u>2.7%</u>	10.8%	30.8%
<b>Discharge Disposition following Acute Admissions for Incident Hemorrhagic Stroke Patients</b>									
Died	<u>14.3%</u>	71.4%	43.8%	50.0%	55.6%	<u>25.0%</u>	41.7%	<u>50.0%</u>	250.0%
Discharged to Home	<u>42.9%</u>	<u>14.3%</u>	25.0%	<u>30.0%</u>	<u>33.3%</u>	<u>50.0%</u>	41.7%	<u>50.0%</u>	16.7%
Home with Support Services	<u>14.3%</u>		<u>12.5%</u>				<u>8.3%</u>		
Continuing Care Facility	<u>14.3%</u>		<u>12.5%</u>		<u>11.1%</u>	<u>25.0%</u>			
Other	<u>14.3%</u>	<u>14.3%</u>	<u>6.3%</u>	<u>20.0%</u>			<u>8.3%</u>		
<b>Mortality Following an Incident Stroke</b>									
<b>Hospitalized Ischemic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	27.1%	26.7%	19.4%	21.5%	30.3%	20.4%	26.7%	27.7%	2.3%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	16.1%	22.7%	28.0%	21.0%	17.0%	23.1%	21.8%	23.4%	45.1%
<b>Hospitalized Hemorrhagic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	<u>14.3%</u>	71.4%	43.8%	<u>40.0%</u>	<u>44.4%</u>	<u>25.0%</u>	41.7%	<u>37.5%</u>	162.5%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	16.7%	50.0%	33.3%	33.3%	20.0%	33.3%	0.0%	20.0%	20.0%

Grey Shading = Not Applicable/Available  
Underlined % are based on a numerator of less than 5  
 \* Age 20 and older

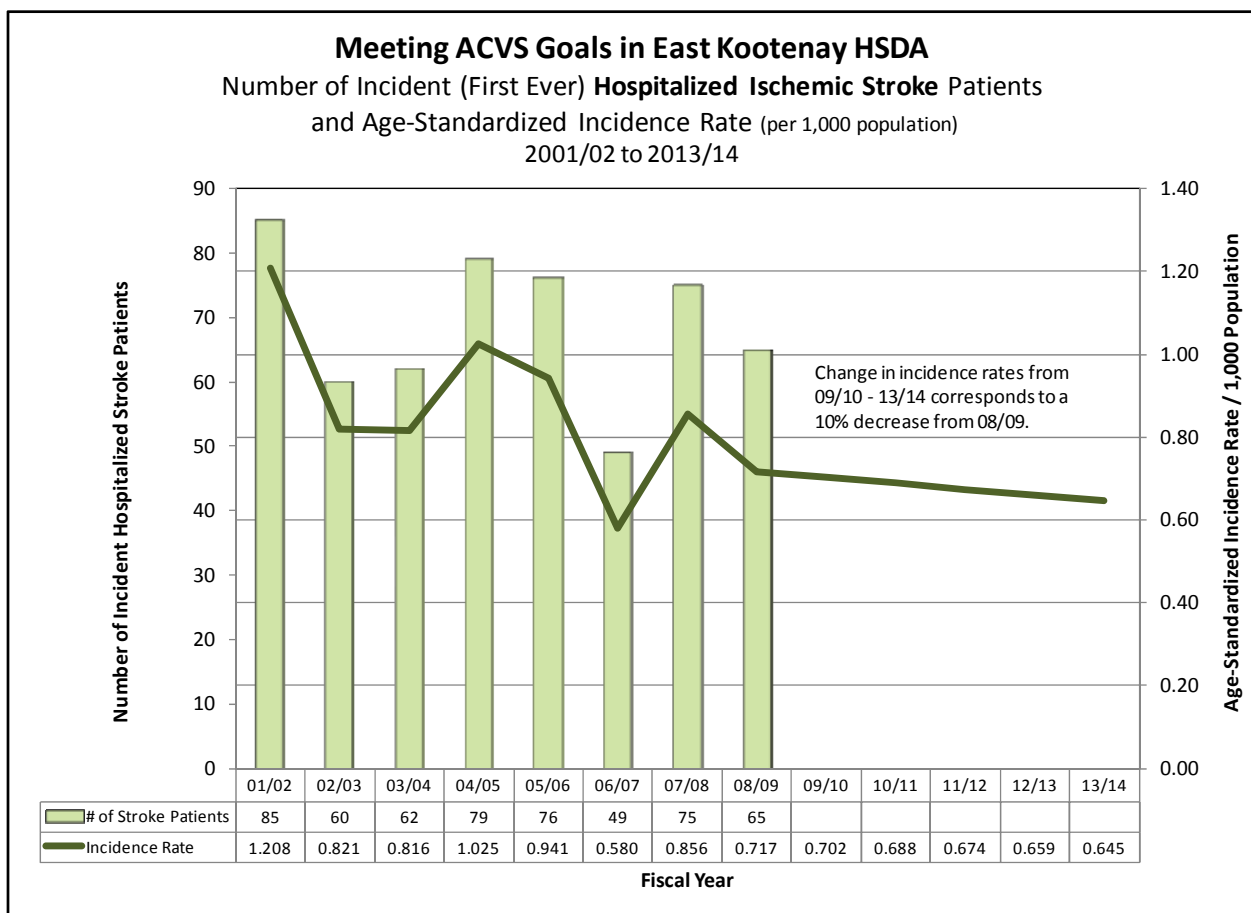
## EAST KOOTENAY HSDA INDICATORS AND METRICS

The BC Stroke Strategy Measurement and Evaluation Working Group have suggested five key indicators for tracking progress on ACVS care in the province. The following charts and tables include trend data for **East Kootenay HSDA** for three of these five indicators. The source of this data is from the updated Acute Cerebrovascular Syndrome (ACVS) Registry. Note that the geographic location is based on the patient's residence, not necessarily the location of their treatment.

### Indicator #3 – Incidence Rate

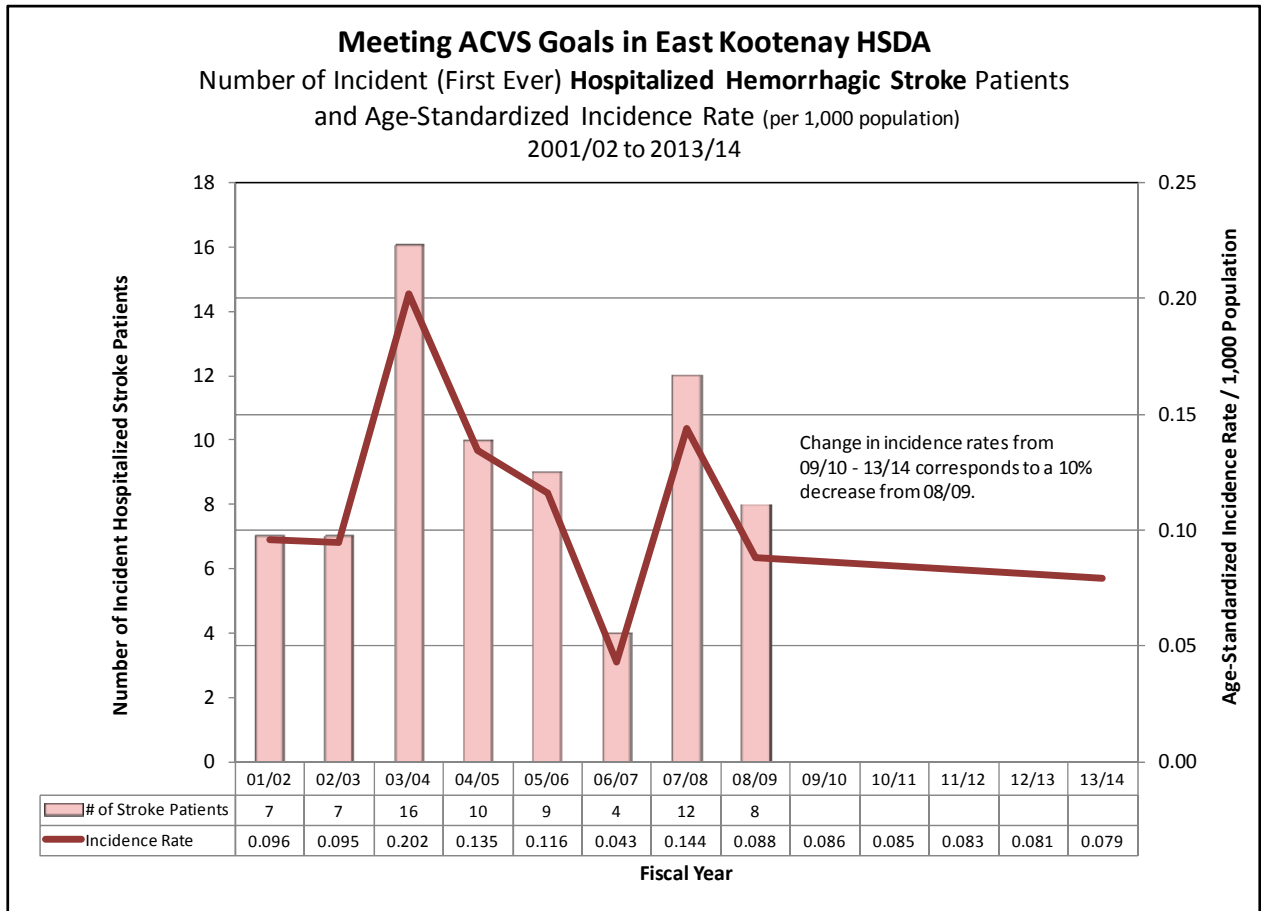
Reduce the age-standardized incidence rate of both ischemic and hemorrhagic stroke by **10%** between 2008/09 and 2013/14 (*data source*: updated ACVS Registry).

#### *East Kootenay HSDA – Incident Hospitalized Ischemic Stroke Patients*



### Indicator #3 - Incidence Rate (continued)

#### East Kootenay HSDA – Incident Hospitalized Hemorrhagic Stroke Patients

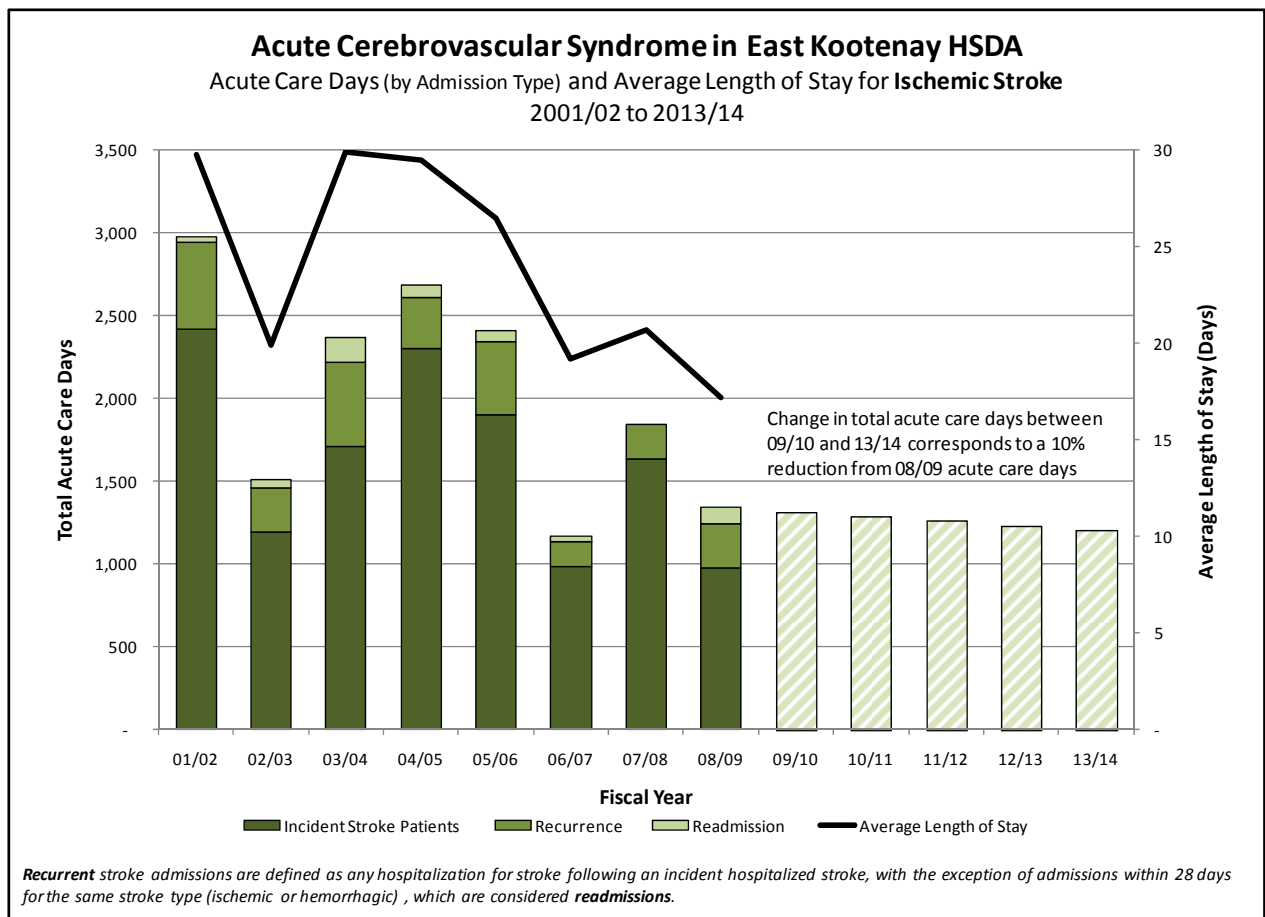


## Indicator #4 – Acute Care Days

Reduce acute care days for discharges in which an ischemic stroke is the principal diagnosis by **10%** between 2008/09 and 2013/14 (this includes a combination of reduced discharges and reduced average length of stay).

*Data Source:* Updated ACVS Registry for incident, re-admit and recurrent ischemic stroke discharges. Link to the Discharge Abstract Database (DAD) for number of hospital days associated with these discharges. **Recurrent** stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered **readmissions**.

### East Kootenay HSDA – Acute Care Days and ALOS for Ischemic Stroke Patients



## Indicator #4 – Acute Care Days (continued)

### East Kootenay HSDA – Hospitalization and ALOS Data Trends

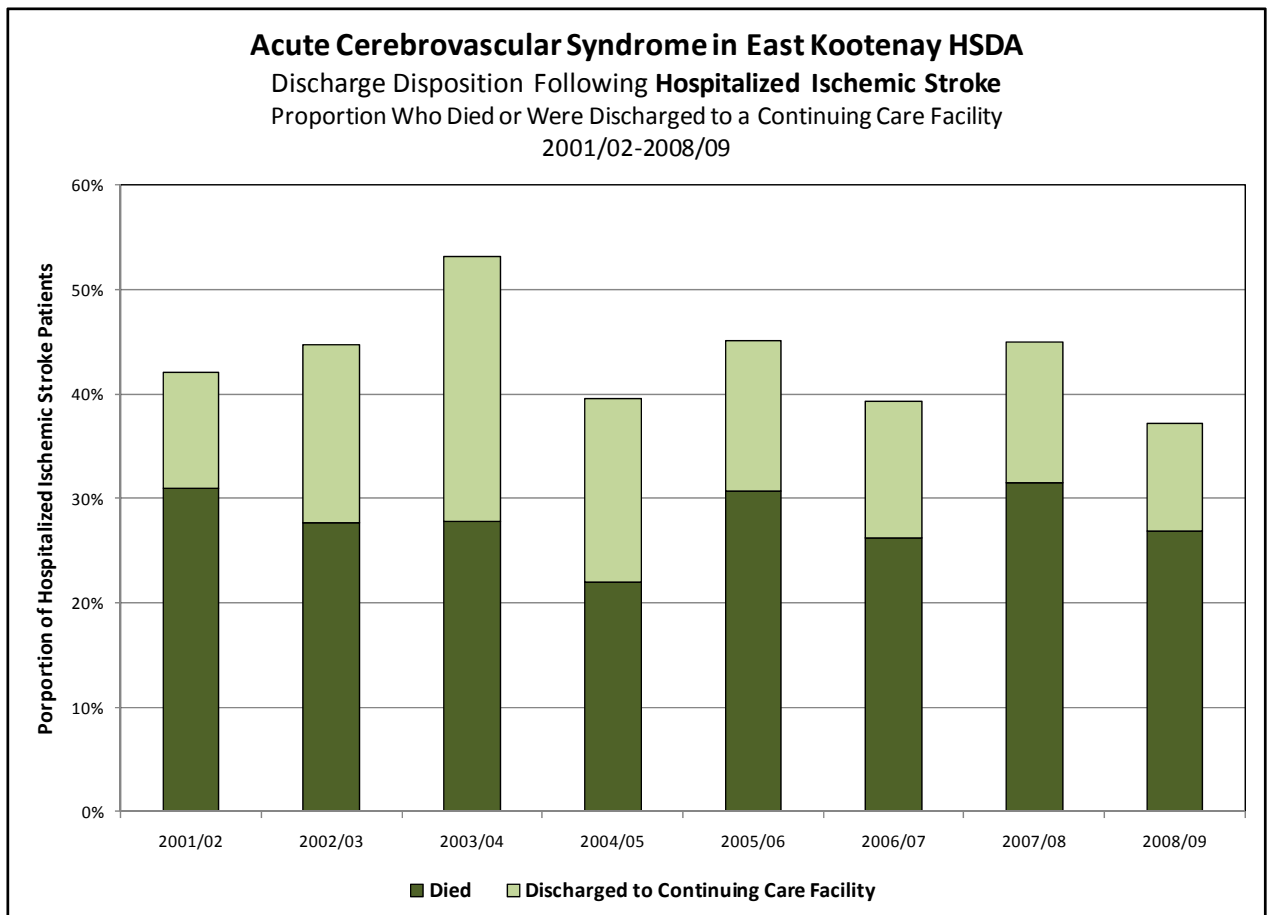
Hospitalization and ALOS for Stroke								
Adults* Residing in East Kootenay HSDA								
2001/02 to 2008/09								
	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	85	60	62	79	76	49	75	65
Hospitalized Hemorrhagic Stroke	7	7	16	10	9	4	12	8
Readmission								
Hospitalized Ischemic Stroke					5			5
Hospitalized Hemorrhagic Stroke								
Recurrence								
Hospitalized Ischemic Stroke	12	14	14	9	10	10	14	8
Hospitalized Hemorrhagic Stroke								
<b>Total Hospitalized Ischemic Stroke</b>	<b>100</b>	<b>76</b>	<b>79</b>	<b>91</b>	<b>91</b>	<b>61</b>	<b>89</b>	<b>78</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>8</b>	<b>8</b>	<b>18</b>	<b>13</b>	<b>9</b>	<b>5</b>	<b>13</b>	<b>9</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>108</b>	<b>84</b>	<b>97</b>	<b>104</b>	<b>100</b>	<b>66</b>	<b>102</b>	<b>87</b>
<b>Average Length of Stay in Acute Care</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke	28.49	19.82	27.52	29.15	25.07	20.06	21.77	14.97
Hospitalized Hemorrhagic Stroke	60.71	14.14	28.94	9.10	12.89	14.50	19.25	13.13
Readmission								
Hospitalized Ischemic Stroke	10.00	27.50	49.00	24.67	13.00	18.50		18.80
Hospitalized Hemorrhagic Stroke		65.00	33.00	24.50				9.00
Recurrence								
Hospitalized Ischemic Stroke	43.67	19.21	36.50	33.78	44.10	15.00	15.07	34.25
Hospitalized Hemorrhagic Stroke	62.00			1.00		36.00	1.00	
<b>Total Hospitalized Ischemic Stroke</b>	<b>29.76</b>	<b>19.91</b>	<b>29.92</b>	<b>29.46</b>	<b>26.49</b>	<b>19.18</b>	<b>20.72</b>	<b>17.19</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>60.88</b>	<b>20.50</b>	<b>29.39</b>	<b>10.85</b>	<b>12.89</b>	<b>18.80</b>	<b>17.85</b>	<b>12.67</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>32.06</b>	<b>19.96</b>	<b>29.82</b>	<b>27.13</b>	<b>25.27</b>	<b>19.15</b>	<b>20.35</b>	<b>16.72</b>
<b>Days in Acute Care</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	2,422	1,189	1,706	2,303	1,905	983	1,633	973
Hospitalized Hemorrhagic Stroke	425	99	463	91	116	58	231	105
Readmission								
Hospitalized Ischemic Stroke	30	55	147	74	65	37	-	94
Hospitalized Hemorrhagic Stroke	-	65	66	49	-	-	-	9
Recurrence								
Hospitalized Ischemic Stroke	524	269	511	304	441	150	211	274
Hospitalized Hemorrhagic Stroke	62	-	-		-	36		-
<b>Total Days - Hospitalized Ischemic Stroke</b>	<b>2,976</b>	<b>1,513</b>	<b>2,364</b>	<b>2,681</b>	<b>2,411</b>	<b>1,170</b>	<b>1,844</b>	<b>1,341</b>
<b>Total Days - Hospitalized Hemorrhagic Stroke</b>	<b>487</b>	<b>164</b>	<b>529</b>	<b>141</b>	<b>116</b>	<b>94</b>	<b>232</b>	<b>114</b>
<b>Total Days</b>	<b>3,463</b>	<b>1,677</b>	<b>2,893</b>	<b>2,822</b>	<b>2,527</b>	<b>1,264</b>	<b>2,076</b>	<b>1,455</b>
* Age 20 and older								
<i>Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.</i>								

## Indicator #5 – Death and Dependency

Reduce the proportion of patients who die in hospital or are sent to a long-term care facility after being admitted/discharged (principal diagnosis) for ischemic stroke. *If only one composite measure is used to assess progress in stroke care, it would be this overall measure of death and dependency.*

*Data Source:* Updated ACVS Registry for hospitalized (incident, readmission and recurrent) ischemic stroke discharges. Discharge Abstract Database (DAD) for discharge disposition ('died', 'discharged to a Continuing Care facility').

### East Kootenay HSDA – Discharge Disposition for Hospitalized Ischemic Stroke



**Discharge Disposition Following a Hospitalization for Stroke**  
**Patient Died or Was Discharged to a Continuing Care Facility**  
**Adults\* Residing in East Kootenay HSDA**  
**2001/02 to 2008/09**

	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	85	60	62	79	76	49	75	65
Hospitalized Hemorrhagic Stroke	7	7	16	10	9	4	12	8
Readmission								
Hospitalized Ischemic Stroke					5			5
Hospitalized Hemorrhagic Stroke								
Recurrence								
Hospitalized Ischemic Stroke	12	14	14	9	10	10	14	8
Hospitalized Hemorrhagic Stroke								
<b>Total Hospitalized Ischemic Stroke</b>	<b>100</b>	<b>76</b>	<b>79</b>	<b>91</b>	<b>91</b>	<b>61</b>	<b>89</b>	<b>78</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>8</b>	<b>8</b>	<b>18</b>	<b>13</b>	<b>9</b>	<b>5</b>	<b>13</b>	<b>9</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>108</b>	<b>84</b>	<b>97</b>	<b>104</b>	<b>100</b>	<b>66</b>	<b>102</b>	<b>87</b>

<b>Discharge Disposition - Number</b>								
<b>Incident Stroke Patients</b>								
Hospitalized Ischemic Stroke								
Died	25	17	17	18	25	11	22	20
Discharged to a Continuing Care Facility	8	9	12	14	10	4	9	6
Hospitalized Hemorrhagic Stroke								
Died		5	7	5	5		5	
Discharged to a Continuing Care Facility								
Readmission								
Hospitalized Ischemic Stroke								
Died								
Discharged to a Continuing Care Facility								
Hospitalized Hemorrhagic Stroke								
Died								
Discharged to a Continuing Care Facility								
Recurrence								
Hospitalized Ischemic Stroke								
Died							6	
Discharged to a Continuing Care Facility			7					
Hospitalized Hemorrhagic Stroke								
Died								
Discharged to a Continuing Care Facility								
<b>Total Hospitalized Ischemic Stroke</b>								
Died	31	21	22	20	28	16	28	21
Discharged to a Continuing Care Facility	11	13	20	16	13	8	12	8
Death and Disability	42	34	42	36	41	24	40	29
<b>Total Hospitalized Hemorrhagic Stroke</b>								
Died		5	8	6	5		6	
Discharged to a Continuing Care Facility								
Death and Disability		6	11	6	6		6	
<b>Total Number of Stroke Hospitalizations</b>								
Died	32	26	30	26	33	18	34	25
Discharged to a Continuing Care Facility	13	14	23	16	14	9	12	8
Death and Disability	45	40	53	42	47	27	46	33

<b>Discharge Disposition - Proportion</b>								
<b>Incident Stroke Patients</b>								
Hospitalized Ischemic Stroke								
Died	29.4%	28.3%	27.4%	22.8%	32.9%	22.4%	29.3%	30.8%
Discharged to a Continuing Care Facility	9.4%	15.0%	19.4%	17.7%	13.2%	8.2%	12.0%	9.2%
Hospitalized Hemorrhagic Stroke								
Died	14.3%	71.4%	43.8%	50.0%	55.6%	25.0%	41.7%	50.0%
Discharged to a Continuing Care Facility	14.3%	0.0%	12.5%	0.0%	11.1%	25.0%	0.0%	0.0%
Readmission								
Hospitalized Ischemic Stroke								
Died	66.7%	100.0%	66.7%	33.3%	20.0%	50.0%		20.0%
Discharged to a Continuing Care Facility	0.0%	0.0%	33.3%	33.3%	20.0%	0.0%		20.0%
Hospitalized Hemorrhagic Stroke								
Died		0.0%	50.0%	50.0%				0.0%
Discharged to a Continuing Care Facility		100.0%	50.0%	0.0%				0.0%
Recurrence								
Hospitalized Ischemic Stroke								
Died	33.3%	14.3%	21.4%	11.1%	20.0%	40.0%	42.9%	0.0%
Discharged to a Continuing Care Facility	25.0%	28.6%	50.0%	11.1%	20.0%	40.0%	21.4%	12.5%
Hospitalized Hemorrhagic Stroke								
Died		0.0%		0.0%	100.0%	100.0%		
Discharged to a Continuing Care Facility		100.0%		0.0%		0.0%		
<b>Total Hospitalized Ischemic Stroke</b>								
Died	31.0%	27.6%	27.8%	22.0%	30.8%	26.2%	31.5%	26.9%
Discharged to a Continuing Care Facility	11.0%	17.1%	25.3%	17.6%	14.3%	13.1%	13.5%	10.3%
Death and Disability	42.0%	44.7%	53.2%	39.6%	45.1%	39.3%	44.9%	37.2%
<b>Total Hospitalized Hemorrhagic Stroke</b>								
Died	12.5%	62.5%	44.4%	46.2%	55.6%	40.0%	46.2%	44.4%
Discharged to a Continuing Care Facility	25.0%	12.5%	16.7%	0.0%	11.1%	20.0%	0.0%	0.0%
Death and Disability	37.5%	75.0%	61.1%	46.2%	66.7%	60.0%	46.2%	44.4%
<b>Total Number of Stroke Hospitalizations</b>								
Died	29.6%	31.0%	30.9%	25.0%	33.0%	27.3%	33.3%	28.7%
Discharged to a Continuing Care Facility	12.0%	16.7%	23.7%	15.4%	14.0%	13.6%	11.8%	9.2%
Death and Disability	41.7%	47.6%	54.6%	40.4%	47.0%	40.9%	45.1%	37.9%

\* Age 20 and older

*Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.*

**Indicator #5 – Death and Dependency (continued)**

*East Kootenay HSDA – Discharge Disposition Data Trends*

# KOOTENAY BOUNDARY HSDA

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## Indicators and Metrics

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# KOOTENAY BOUNDARY HSDA INDICATORS AND METRICS AS OF NOVEMBER 2010

## Acute Cerebrovascular Syndrome Adults\* Residing in the Kootenay Boundary HSDA 2001/02 to 2008/09

	Fiscal Year								% Change 01/02 to 08/09
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	
<b>Number of Incident ACVS Patients</b>									
Hospitalized Ischemic Stroke	107	85	87	102	71	92	92	86	-19.6%
Hospitalized Hemorrhagic Stroke	18	15	14	11	18	17	8	16	-11.1%
<b>Sub-total</b>	<b>125</b>	<b>100</b>	<b>101</b>	<b>113</b>	<b>89</b>	<b>109</b>	<b>100</b>	<b>102</b>	<b>-18.4%</b>
Hospitalized TIA	30	43	30	51	21	23	42	32	6.7%
Non-hospitalized TIA/Stroke	84	84	76	89	99	72	77	91	8.3%
<b>Sub-total</b>	<b>114</b>	<b>127</b>	<b>106</b>	<b>140</b>	<b>120</b>	<b>95</b>	<b>119</b>	<b>123</b>	<b>7.9%</b>
<b>Number of Prevalent ACVS Patients</b>									
Hospitalized Ischemic Stroke	525	520	537	552	548	567	552	558	6.3%
Hospitalized Hemorrhagic Stroke	80	84	92	90	93	98	91	92	15.0%
<b>Sub-total</b>	<b>605</b>	<b>604</b>	<b>629</b>	<b>642</b>	<b>641</b>	<b>665</b>	<b>643</b>	<b>650</b>	<b>7.4%</b>
Hospitalized TIA	282	297	293	317	307	298	310	308	9.2%
Non-hospitalized TIA/Stroke	494	529	556	585	635	651	673	706	42.9%
<b>Sub-total</b>	<b>776</b>	<b>826</b>	<b>849</b>	<b>902</b>	<b>942</b>	<b>949</b>	<b>983</b>	<b>1,014</b>	<b>30.7%</b>
<b>Age-Standardized Incidence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	1.270	0.977	0.977	1.141	0.772	0.971	0.906	0.870	-31.5%
Hospitalized Hemorrhagic Stroke	0.213	0.185	0.160	0.114	0.206	0.179	0.083	0.162	-24.1%
<b>Sub-total</b>	<b>1.490</b>	<b>1.170</b>	<b>1.144</b>	<b>1.263</b>	<b>0.984</b>	<b>1.161</b>	<b>0.994</b>	<b>1.038</b>	<b>-30.3%</b>
Hospitalized TIA	0.358	0.503	0.336	0.576	0.223	0.229	0.435	0.331	-7.7%
Non-hospitalized TIA/Stroke	1.027	1.004	0.884	1.024	1.091	0.772	0.799	0.933	-9.1%
<b>Age-Standardized Prevalence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	5.846	5.658	5.678	5.695	5.513	5.543	5.210	5.108	-12.6%
Hospitalized Hemorrhagic Stroke	0.929	0.961	1.015	0.973	1.006	1.023	0.911	0.886	-4.7%
<b>Sub-total</b>	<b>6.775</b>	<b>6.619</b>	<b>6.693</b>	<b>6.669</b>	<b>6.519</b>	<b>6.566</b>	<b>6.121</b>	<b>5.993</b>	<b>-11.5%</b>
Hospitalized TIA	3.110	3.217	3.098	3.306	3.114	2.919	2.977	2.894	-7.0%
Non-hospitalized TIA/Stroke	5.904	6.235	6.328	6.575	6.867	6.756	6.838	6.996	18.5%
<b>Conversion Rate from TIA/Non-hospitalized Stroke to Hospitalized Stroke</b>									
90-Day Conversion Rate	5.36%	0.00%					0.00%		
365-Day Conversion Rate	7.14%		4.76%	4.55%	5.93%				
<b>Utilization of tPA by Incident Acute Ischemic Stroke Patients</b>									
Number Receiving tPA						2	-	1	
Total Number						92	92	86	
Proportion of Incident Hospitalized AIS Patients Receiving tPA						<u>2.17%</u>	<u>0.00%</u>	<u>1.16%</u>	
<b>Utilization of Acute Care by Incident Ischemic Stroke Patients</b>									
Discharges	107	85	87	102	71	92	92	86	-19.6%
ALOS	31.86	18.84	15.48	18.02	16.97	21.83	28.30	23.26	-27.0%
Patient Days	3,409	1,601	1,347	1,838	1,205	2,008	2,604	2,000	-41.3%
<b>Utilization of Acute Care by Incident Hemorrhagic Stroke Patients</b>									
Discharges	18	15	14	11	18	17	8	16	-11.1%
ALOS	49.56	24.13	31.57	13.00	15.17	16.94	9.00	15.75	-68.2%
Patient Days	892	362	442	143	273	288	72	252	-71.7%
<b>Discharge Disposition following Acute Admissions for Incident Ischemic Stroke Patients</b>									
Died	24.3%	23.5%	31.0%	27.5%	35.2%	29.3%	28.3%	24.4%	0.5%
Discharged to Home	52.3%	54.1%	51.7%	54.9%	50.7%	48.9%	50.0%	55.8%	6.6%
Home with Support Services	7.5%	<u>2.4%</u>	<u>1.1%</u>	<u>2.9%</u>	<u>1.4%</u>		<u>2.2%</u>	<u>4.7%</u>	-37.8%
Continuing Care Facility	10.3%	20.0%	13.8%	10.8%	11.3%	19.6%	15.2%	10.5%	1.8%
Other	5.6%		<u>2.3%</u>	<u>3.9%</u>	<u>1.4%</u>	<u>2.2%</u>	<u>4.3%</u>	<u>4.7%</u>	-17.1%
<b>Discharge Disposition following Acute Admissions for Incident Hemorrhagic Stroke Patients</b>									
Died	38.9%	26.7%	35.7%	72.7%	50.0%	76.5%	87.5%	50.0%	28.6%
Discharged to Home	38.9%	60.0%	<u>28.6%</u>	<u>9.1%</u>	27.8%	<u>17.6%</u>		43.8%	12.5%
Home with Support Services		<u>13.3%</u>			<u>5.6%</u>				
Continuing Care Facility	<u>11.1%</u>		<u>21.4%</u>	<u>9.1%</u>		<u>5.9%</u>	<u>12.5%</u>		
Other	<u>11.1%</u>		<u>14.3%</u>	<u>9.1%</u>	<u>16.7%</u>			<u>6.3%</u>	-43.8%
<b>Mortality Following an Incident Stroke</b>									
<b>Hospitalized Ischemic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	18.7%	20.0%	29.9%	23.5%	31.0%	23.9%	21.7%	19.8%	5.8%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	20.7%	14.7%	19.7%	15.4%	26.5%	28.6%	29.2%	17.4%	-15.9%
<b>Hospitalized Hemorrhagic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	33.3%	<u>26.7%</u>	<u>28.6%</u>	72.7%	38.9%	70.6%	87.5%	43.8%	31.3%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	8.3%	18.2%	30.0%	33.3%	18.2%	20.0%	100.0%	22.2%	166.7%

Grey Shading = Not Applicable/Available

Underlined % are based on a numerator of less than 5

\* Age 20 and older

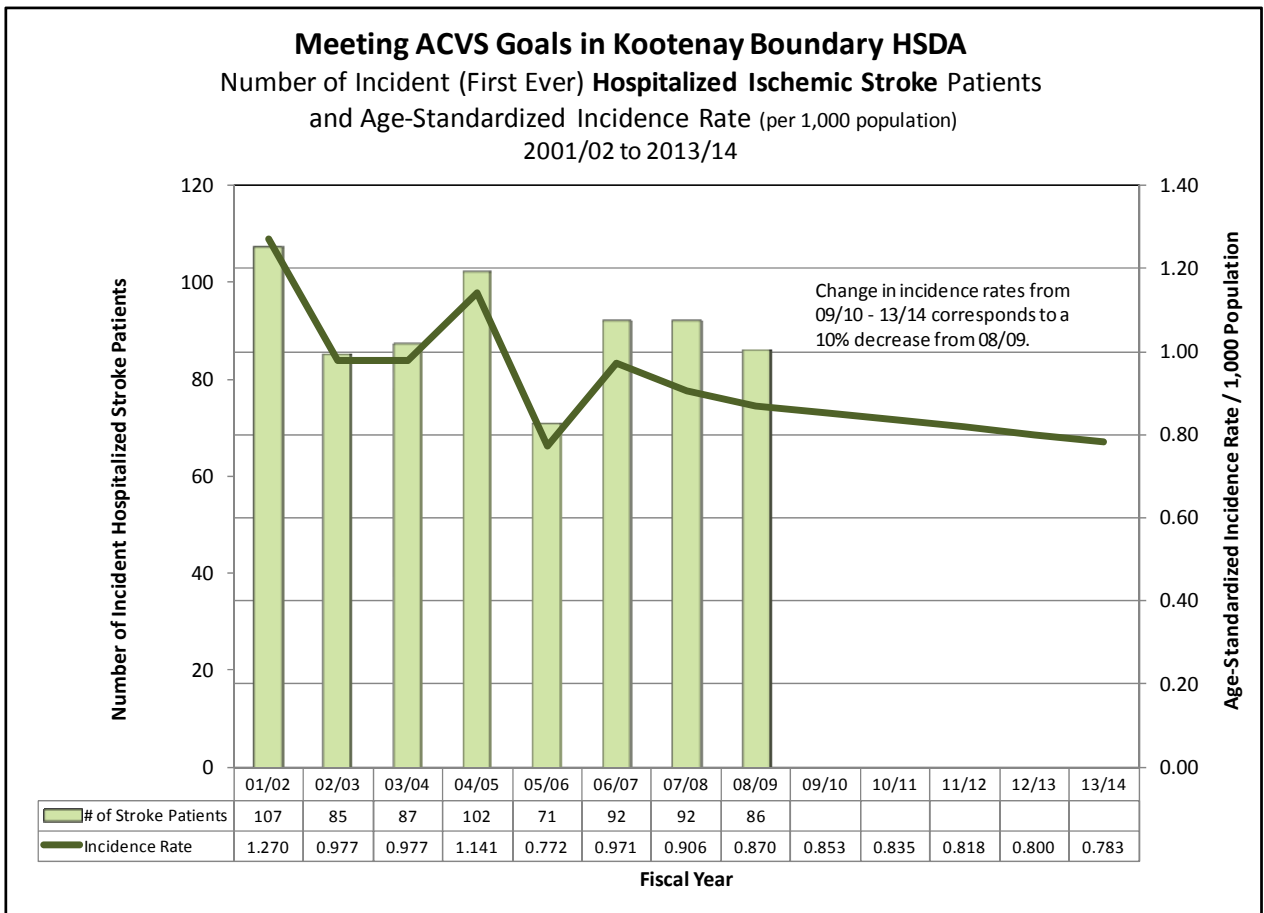
# KOOTENAY BOUNDARY HSDA INDICATORS AND METRICS

The BC Stroke Strategy Measurement and Evaluation Working Group have suggested five key indicators for tracking progress on ACVS care in the province. The following charts and tables include trend data for **Kootenay Boundary HSDA** for three of these five indicators. The source of this data is from the updated Acute Cerebrovascular Syndrome (ACVS) Registry. Note that the geographic location is based on the patient's residence, not necessarily the location of their treatment.

## Indicator #3 – Incidence Rate

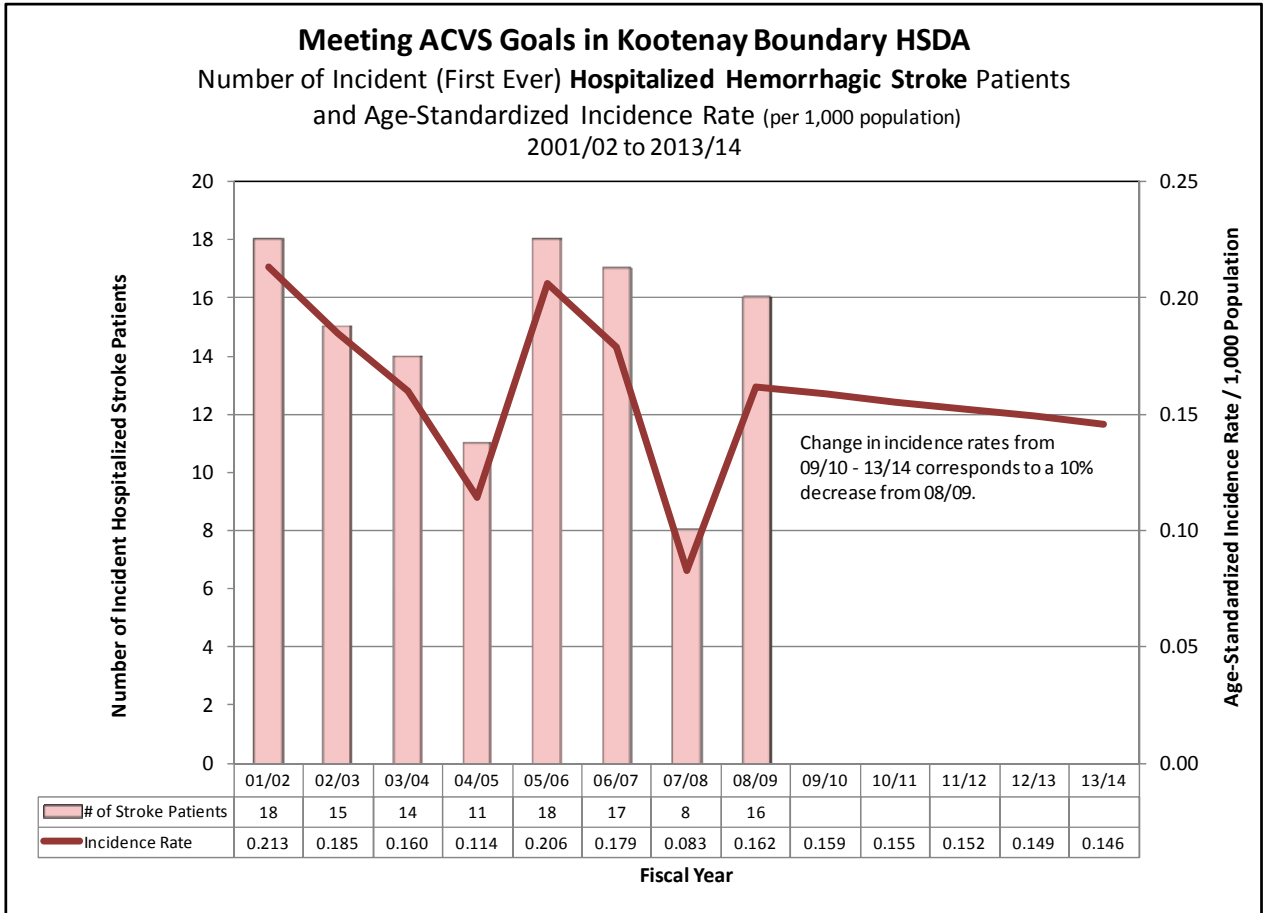
Reduce the age-standardized incidence rate of both ischemic and hemorrhagic stroke by **10%** between 2008/09 and 2013/14 (*data source*: updated ACVS Registry).

### Kootenay Boundary HSDA – Incident Hospitalized Ischemic Stroke Patients



### Indicator #3 – Incidence Rate (continued)

#### Kootenay Boundary HSDA – Incident Hospitalized Hemorrhagic Stroke Patients

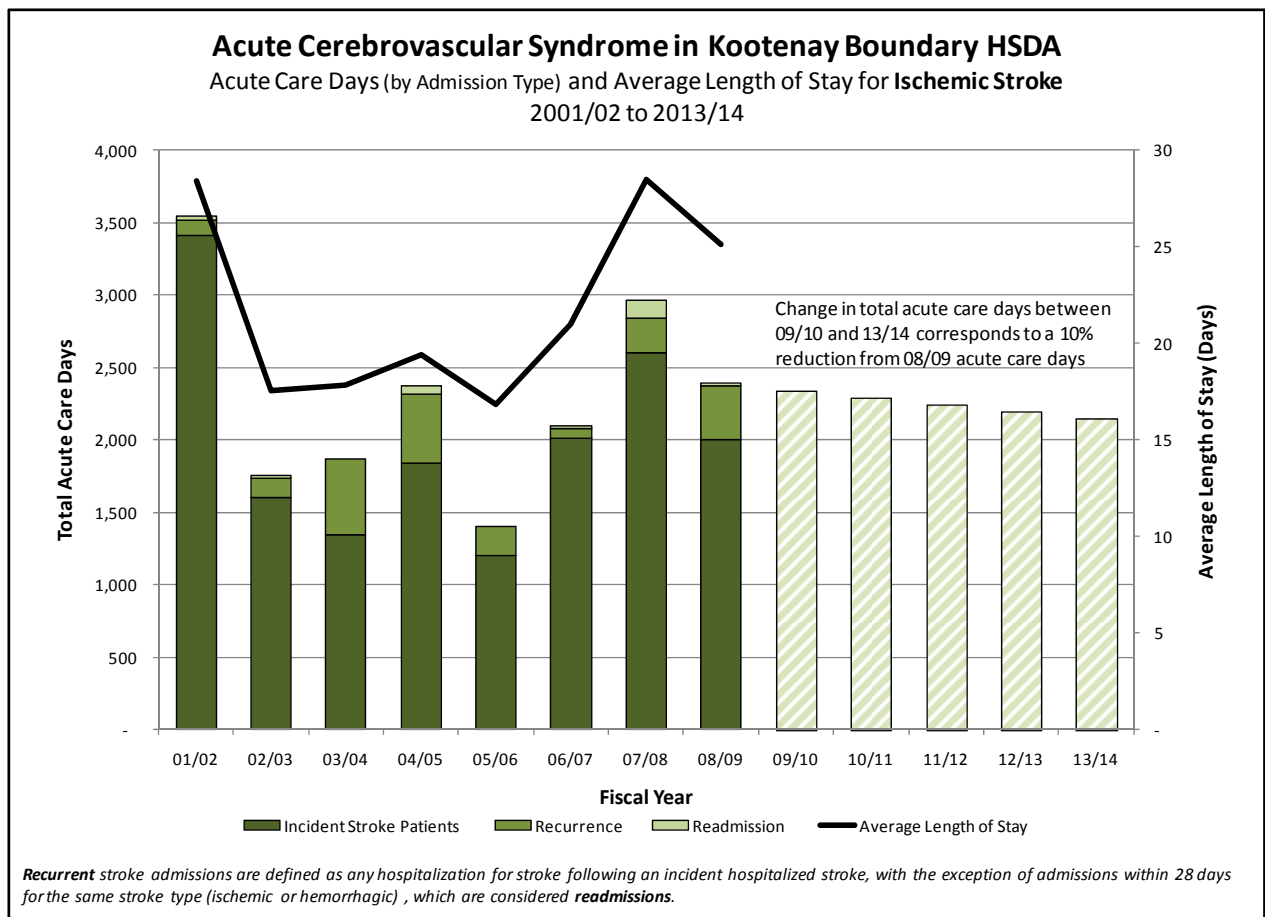


## Indicator #4 – Acute Care Days

Reduce acute care days for discharges in which an ischemic stroke is the principal diagnosis by **10%** between 2008/09 and 2013/14 (this includes a combination of reduced discharges and reduced average length of stay).

*Data Source:* Updated ACVS Registry for incident, re-admit and recurrent ischemic stroke discharges. Link to the Discharge Abstract Database (DAD) for number of hospital days associated with these discharges. **Recurrent** stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered **readmissions**.

### Kootenay Boundary HSDA – Acute Care Days and ALOS for Ischemic Stroke Patients



## Indicator #4 – Acute Care Days (continued)

### Kootenay Boundary HSDA – Hospitalization and ALOS Data Trends

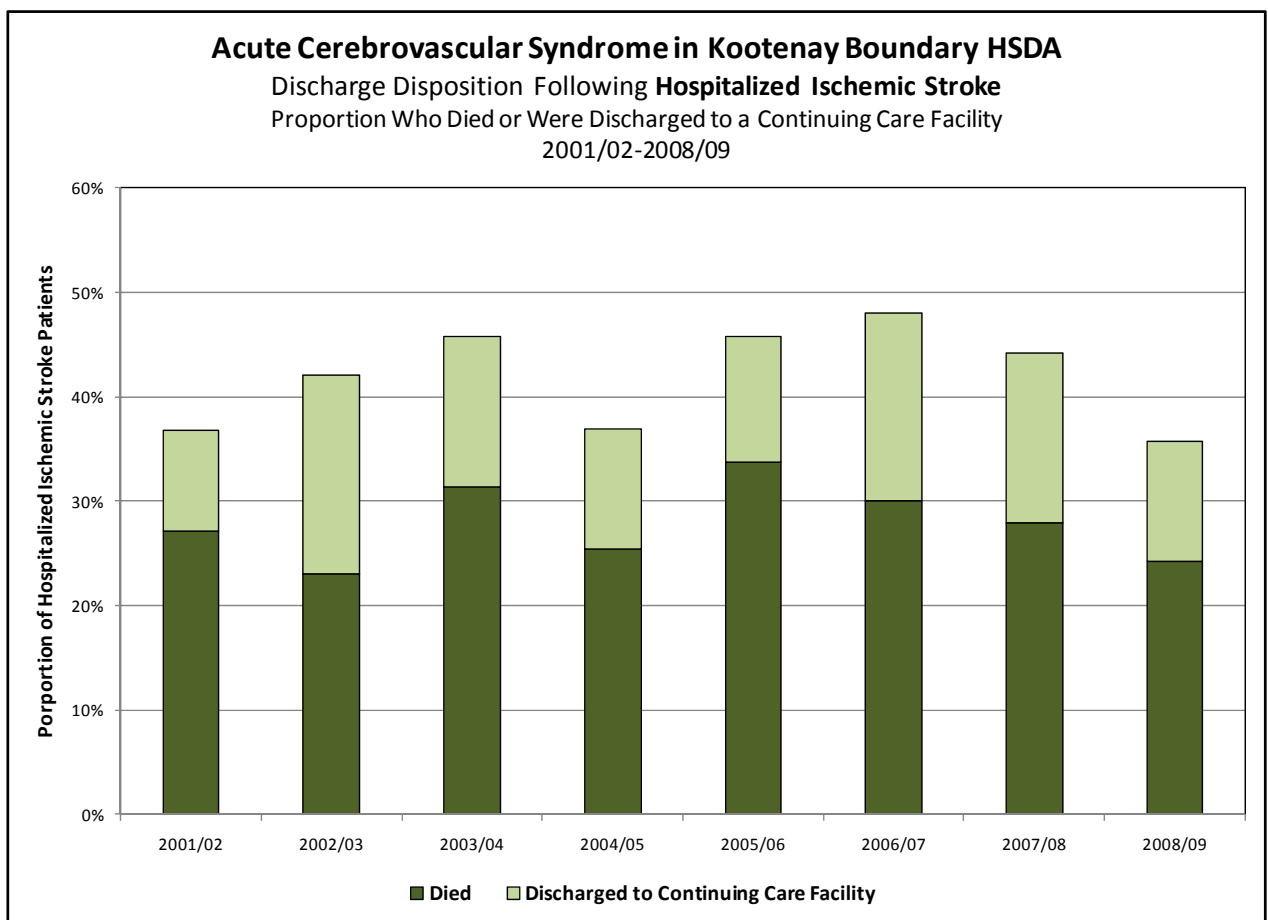
Hospitalization and ALOS for Stroke								
Adults* Residing in Kootenay Boundary HSDA								
2001/02 to 2008/09								
	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	107	85	87	102	71	92	92	86
Hospitalized Hemorrhagic Stroke	18	15	14	11	18	17	8	16
Readmission								
Hospitalized Ischemic Stroke				5	-			
Hospitalized Hemorrhagic Stroke						-	-	
Recurrence								
Hospitalized Ischemic Stroke	16	12	18	15	12	6	9	8
Hospitalized Hemorrhagic Stroke					-	-		
<b>Total Hospitalized Ischemic Stroke</b>	<b>125</b>	<b>100</b>	<b>105</b>	<b>122</b>	<b>83</b>	<b>100</b>	<b>104</b>	<b>95</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>21</b>	<b>20</b>	<b>17</b>	<b>15</b>	<b>19</b>	<b>17</b>	<b>10</b>	<b>22</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>146</b>	<b>120</b>	<b>122</b>	<b>137</b>	<b>102</b>	<b>117</b>	<b>114</b>	<b>117</b>
<b>Average Length of Stay in Acute Care</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke	31.86	18.84	15.48	18.02	16.97	21.83	28.30	23.26
Hospitalized Hemorrhagic Stroke	49.56	24.13	31.57	13.00	15.17	16.94	9.00	15.75
Readmission								
Hospitalized Ischemic Stroke	15.50	4.33		11.20		11.00	42.00	11.00
Hospitalized Hemorrhagic Stroke		3.67		25.00	5.00			57.50
Recurrence								
Hospitalized Ischemic Stroke	6.75	11.50	29.11	31.73	16.08	11.17	25.89	47.13
Hospitalized Hemorrhagic Stroke	15.00	15.00	16.33	11.00			25.50	4.25
<b>Total Hospitalized Ischemic Stroke</b>	<b>28.38</b>	<b>17.52</b>	<b>17.82</b>	<b>19.43</b>	<b>16.84</b>	<b>20.97</b>	<b>28.49</b>	<b>25.14</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>44.62</b>	<b>20.15</b>	<b>28.88</b>	<b>14.33</b>	<b>14.63</b>	<b>16.94</b>	<b>12.30</b>	<b>17.45</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>30.72</b>	<b>17.96</b>	<b>19.36</b>	<b>18.87</b>	<b>16.43</b>	<b>20.38</b>	<b>27.07</b>	<b>23.69</b>
<b>Days in Acute Care</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	3,409	1,601	1,347	1,838	1,205	2,008	2,604	2,000
Hospitalized Hemorrhagic Stroke	892	362	442	143	273	288	72	252
Readmission								
Hospitalized Ischemic Stroke	31	13	-	56	-	22	126	11
Hospitalized Hemorrhagic Stroke	-	11	-	50	5	-	-	115
Recurrence								
Hospitalized Ischemic Stroke	108	138	524	476	193	67	233	377
Hospitalized Hemorrhagic Stroke	45	30	49	22	-	-	51	17
<b>Total Days - Hospitalized Ischemic Stroke</b>	<b>3,548</b>	<b>1,752</b>	<b>1,871</b>	<b>2,370</b>	<b>1,398</b>	<b>2,097</b>	<b>2,963</b>	<b>2,388</b>
<b>Total Days - Hospitalized Hemorrhagic Stroke</b>	<b>937</b>	<b>403</b>	<b>491</b>	<b>215</b>	<b>278</b>	<b>288</b>	<b>123</b>	<b>384</b>
<b>Total Days</b>	<b>4,485</b>	<b>2,155</b>	<b>2,362</b>	<b>2,585</b>	<b>1,676</b>	<b>2,385</b>	<b>3,086</b>	<b>2,772</b>
* Age 20 and older								
<i>Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.</i>								

## Indicator #5 – Death and Dependency

Reduce the proportion of patients who die in hospital or are sent to a long- term care facility after being admitted/discharged (principal diagnosis) for ischemic stroke. *If only one composite measure is used to assess progress in stroke care, it would be this overall measure of death and dependency.*

*Data Source:* Updated ACVS Registry for hospitalized (incident, readmission and recurrent) ischemic stroke discharges. DAD for discharge disposition ('died', 'discharged to a Continuing Care facility').

### Kootenay Boundary HSDA – Discharge Disposition for Hospitalized Ischemic Stroke



**Discharge Disposition Following a Hospitalization for Stroke**  
**Patient Died or Was Discharged to a Continuing Care Facility**  
**Adults\* Residing in Kootenay Boundary HSDA**  
**2001/02 to 2008/09**

	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	107	85	87	102	71	92	92	86
Hospitalized Hemorrhagic Stroke	18	15	14	11	18	17	8	16
Readmission								
Hospitalized Ischemic Stroke				5				
Hospitalized Hemorrhagic Stroke								
Recurrence								
Hospitalized Ischemic Stroke	16	12	18	15	12	6	9	8
Hospitalized Hemorrhagic Stroke								
<b>Total Hospitalized Ischemic Stroke</b>	<b>125</b>	<b>100</b>	<b>105</b>	<b>122</b>	<b>83</b>	<b>100</b>	<b>104</b>	<b>95</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>21</b>	<b>20</b>	<b>17</b>	<b>15</b>	<b>19</b>	<b>17</b>	<b>10</b>	<b>22</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>146</b>	<b>120</b>	<b>122</b>	<b>137</b>	<b>102</b>	<b>117</b>	<b>114</b>	<b>117</b>
<b>Discharge Disposition - Number</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke								
Died	26	20	27	28	25	27	26	21
Discharged to a Continuing Care Facility	11	17	12	11	8	18	14	9
Hospitalized Hemorrhagic Stroke								
Died	7		5	8	9	13	7	8
Discharged to a Continuing Care Facility	2							
Readmission								
Hospitalized Ischemic Stroke								
Died								
Discharged to a Continuing Care Facility								
Hospitalized Hemorrhagic Stroke								
Died								
Discharged to a Continuing Care Facility								
Recurrence								
Hospitalized Ischemic Stroke								
Died	8		6					
Discharged to a Continuing Care Facility								
Hospitalized Hemorrhagic Stroke								
Died	1						2	1
Discharged to a Continuing Care Facility								
<b>Total Hospitalized Ischemic Stroke</b>	<b>34</b>	<b>23</b>	<b>33</b>	<b>31</b>	<b>28</b>	<b>30</b>	<b>29</b>	<b>23</b>
<b>Died</b>	<b>12</b>	<b>19</b>	<b>15</b>	<b>14</b>	<b>10</b>	<b>18</b>	<b>17</b>	<b>11</b>
<b>Discharged to a Continuing Care Facility</b>	<b>46</b>	<b>42</b>	<b>48</b>	<b>45</b>	<b>38</b>	<b>48</b>	<b>46</b>	<b>34</b>
<b>Death and Disability</b>	<b>10</b>	<b>5</b>	<b>8</b>	<b>10</b>	<b>9</b>	<b>14</b>	<b>10</b>	<b>10</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>8</b>	<b>5</b>	<b>8</b>	<b>10</b>	<b>9</b>	<b>13</b>	<b>9</b>	<b>10</b>
<b>Died</b>	<b>10</b>	<b>5</b>	<b>8</b>	<b>10</b>	<b>9</b>	<b>14</b>	<b>10</b>	<b>10</b>
<b>Discharged to a Continuing Care Facility</b>	<b>14</b>	<b>20</b>	<b>18</b>	<b>15</b>	<b>10</b>	<b>19</b>	<b>18</b>	<b>11</b>
<b>Death and Disability</b>	<b>56</b>	<b>47</b>	<b>56</b>	<b>55</b>	<b>47</b>	<b>62</b>	<b>56</b>	<b>44</b>
<b>Discharge Disposition - Proportion</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke								
Died	24.3%	23.5%	31.0%	27.5%	35.2%	29.3%	28.3%	24.4%
Discharged to a Continuing Care Facility	10.3%	20.0%	13.8%	10.8%	11.3%	19.6%	15.2%	10.5%
Hospitalized Hemorrhagic Stroke								
Died	38.9%	26.7%	35.7%	72.7%	50.0%	76.5%	87.5%	50.0%
Discharged to a Continuing Care Facility	11.1%	0.0%	21.4%	9.1%	0.0%	5.9%	12.5%	0.0%
Readmission								
Hospitalized Ischemic Stroke								
Died	0.0%	33.3%		40.0%		0.0%	0.0%	0.0%
Discharged to a Continuing Care Facility	50.0%	0.0%		0.0%		0.0%	33.3%	0.0%
Hospitalized Hemorrhagic Stroke								
Died		0.0%		50.0%	0.0%			50.0%
Discharged to a Continuing Care Facility		33.3%		0.0%	0.0%			0.0%
Recurrence								
Hospitalized Ischemic Stroke								
Died	50.0%	16.7%	33.3%	6.7%	25.0%	50.0%	33.3%	25.0%
Discharged to a Continuing Care Facility	0.0%	16.7%	16.7%	20.0%	16.7%	0.0%	22.2%	25.0%
Hospitalized Hemorrhagic Stroke								
Died	33.3%	0.0%	0.0%	0.0%			100.0%	25.0%
Discharged to a Continuing Care Facility	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%
<b>Total Hospitalized Ischemic Stroke</b>	<b>27.2%</b>	<b>23.0%</b>	<b>31.4%</b>	<b>25.4%</b>	<b>33.7%</b>	<b>30.0%</b>	<b>27.9%</b>	<b>24.2%</b>
<b>Died</b>	<b>9.6%</b>	<b>19.0%</b>	<b>14.3%</b>	<b>11.5%</b>	<b>12.0%</b>	<b>18.0%</b>	<b>16.3%</b>	<b>11.6%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>36.8%</b>	<b>42.0%</b>	<b>45.7%</b>	<b>36.9%</b>	<b>45.8%</b>	<b>48.0%</b>	<b>44.2%</b>	<b>35.8%</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>38.1%</b>	<b>20.0%</b>	<b>29.4%</b>	<b>60.0%</b>	<b>47.4%</b>	<b>76.5%</b>	<b>90.0%</b>	<b>45.5%</b>
<b>Died</b>	<b>9.5%</b>	<b>5.0%</b>	<b>17.6%</b>	<b>6.7%</b>	<b>0.0%</b>	<b>5.9%</b>	<b>10.0%</b>	<b>0.0%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>47.6%</b>	<b>25.0%</b>	<b>47.1%</b>	<b>66.7%</b>	<b>47.4%</b>	<b>82.4%</b>	<b>100.0%</b>	<b>45.5%</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>28.8%</b>	<b>22.5%</b>	<b>31.1%</b>	<b>29.2%</b>	<b>36.3%</b>	<b>36.8%</b>	<b>33.3%</b>	<b>28.2%</b>
<b>Died</b>	<b>9.6%</b>	<b>16.7%</b>	<b>14.8%</b>	<b>10.9%</b>	<b>9.8%</b>	<b>16.2%</b>	<b>15.8%</b>	<b>9.4%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>38.4%</b>	<b>39.2%</b>	<b>45.9%</b>	<b>40.1%</b>	<b>46.1%</b>	<b>53.0%</b>	<b>49.1%</b>	<b>37.6%</b>
<b>Death and Disability</b>								

\* Age 20 and older

*Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.*

**Indicator #5 – Death and Dependency (continued)**

*Kootenay Boundary HSDA – Discharge Disposition Data Trends*

# OKANAGAN HSDA

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## Indicators and Metrics

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# OKANAGAN HSDA INDICATORS AND METRICS AS OF NOVEMBER 2010

<b>Acute Cerebrovascular Syndrome Adults* Residing in the Okanagan HSDA 2001/02 to 2008/09</b>									
	Fiscal Year								% Change 01/02 to 08/09
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	
<b>Number of Incident ACVS Patients</b>									
Hospitalized Ischemic Stroke	386	388	399	373	381	357	368	363	-6.0%
Hospitalized Hemorrhagic Stroke	84	69	54	73	69	65	67	53	-36.9%
<b>Sub-total</b>	<b>470</b>	<b>457</b>	<b>453</b>	<b>446</b>	<b>450</b>	<b>422</b>	<b>435</b>	<b>416</b>	<b>-11.5%</b>
Hospitalized TIA	99	107	102	132	107	107	119	159	60.6%
Non-hospitalized TIA/Stroke	334	357	431	452	490	449	460	506	51.5%
<b>Sub-total</b>	<b>433</b>	<b>464</b>	<b>533</b>	<b>584</b>	<b>597</b>	<b>556</b>	<b>579</b>	<b>665</b>	<b>53.6%</b>
<b>Number of Prevalent ACVS Patients</b>									
Hospitalized Ischemic Stroke	2,116	2,175	2,267	2,313	2,388	2,417	2,473	2,471	16.8%
Hospitalized Hemorrhagic Stroke	317	335	337	372	396	412	430	437	37.9%
<b>Sub-total</b>	<b>2,433</b>	<b>2,510</b>	<b>2,604</b>	<b>2,685</b>	<b>2,784</b>	<b>2,829</b>	<b>2,903</b>	<b>2,908</b>	<b>19.5%</b>
Hospitalized TIA	877	892	909	955	984	999	1,017	1,091	24.4%
Non-hospitalized TIA/Stroke	2,064	2,203	2,406	2,628	2,880	3,067	3,254	3,473	68.3%
<b>Sub-total</b>	<b>2,941</b>	<b>3,095</b>	<b>3,315</b>	<b>3,583</b>	<b>3,864</b>	<b>4,066</b>	<b>4,271</b>	<b>4,564</b>	<b>55.2%</b>
<b>Age-Standardized Incidence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	0.925	0.904	0.909	0.826	0.820	0.744	0.743	0.707	-23.5%
Hospitalized Hemorrhagic Stroke	0.217	0.167	0.138	0.169	0.167	0.158	0.151	0.126	-42.2%
<b>Sub-total</b>	<b>1.149</b>	<b>1.077</b>	<b>1.051</b>	<b>1.002</b>	<b>0.993</b>	<b>0.906</b>	<b>0.899</b>	<b>0.837</b>	<b>-27.2%</b>
Hospitalized TIA	0.235	0.252	0.236	0.299	0.240	0.217	0.240	0.308	30.8%
Non-hospitalized TIA/Stroke	0.842	0.893	1.028	1.051	1.121	1.005	0.992	1.053	25.0%
<b>Age-Standardized Prevalence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	4.861	4.846	4.887	4.844	4.846	4.755	4.709	4.588	-5.6%
Hospitalized Hemorrhagic Stroke	0.848	0.871	0.857	0.912	0.952	0.970	0.981	0.972	14.6%
<b>Sub-total</b>	<b>5.709</b>	<b>5.716</b>	<b>5.744</b>	<b>5.756</b>	<b>5.799</b>	<b>5.725</b>	<b>5.690</b>	<b>5.560</b>	<b>-2.6%</b>
Hospitalized TIA	2.004	1.973	1.955	1.990	1.989	1.952	1.918	2.002	-0.1%
Non-hospitalized TIA/Stroke	5.108	5.306	5.620	5.939	6.309	6.546	6.735	6.975	36.6%
<b>Conversion Rate from TIA/Non-hospitalized Stroke to Hospitalized Stroke</b>									
90-Day Conversion Rate	4.98%	3.12%	1.93%	3.30%	4.25%	2.43%	2.34%		
365-Day Conversion Rate	7.58%	4.90%	3.86%	4.87%	5.61%	4.48%	3.60%		
<b>Utilization of tPA by Incident Acute Ischemic Stroke Patients</b>									
Number Receiving tPA						17	18	27	
Total Number						357	368	363	
Proportion of Incident Hospitalized AIS Patients Receiving tPA						4.76%	4.89%	7.44%	
<b>Utilization of Acute Care by Incident Ischemic Stroke Patients</b>									
Discharges	386	388	399	373	381	357	368	363	-6.0%
ALOS	21.27	19.15	19.95	16.95	15.97	16.78	16.14	15.08	-29.1%
Patient Days	8,211	7,432	7,959	6,321	6,086	5,989	5,938	5,473	-33.3%
<b>Utilization of Acute Care by Incident Hemorrhagic Stroke Patients</b>									
Discharges	84	69	54	73	69	65	67	53	-36.9%
ALOS	16.75	15.45	16.67	15.48	33.06	26.26	17.60	14.66	-12.5%
Patient Days	1,407	1,066	900	1,130	2,281	1,707	1,179	777	-44.8%
<b>Discharge Disposition following Acute Admissions for Incident Ischemic Stroke Patients</b>									
Died	26.2%	21.9%	25.1%	19.6%	21.5%	20.7%	21.5%	22.6%	-13.7%
Discharged to Home	46.4%	44.6%	45.6%	52.5%	47.5%	42.6%	44.6%	47.4%	2.2%
Home with Support Services	12.7%	16.5%	12.8%	11.3%	9.2%	11.5%	11.7%	13.8%	8.5%
Continuing Care Facility	12.4%	15.2%	13.3%	12.1%	17.6%	18.8%	19.3%	11.8%	-4.7%
Other	2.3%	1.8%	3.3%	4.6%	4.2%	6.4%	3.0%	4.4%	89.0%
<b>Discharge Disposition following Acute Admissions for Incident Hemorrhagic Stroke Patients</b>									
Died	41.7%	52.2%	44.4%	42.5%	43.5%	49.2%	44.8%	45.3%	8.7%
Discharged to Home	38.1%	33.3%	37.0%	34.2%	34.8%	30.8%	32.8%	28.3%	-25.7%
Home with Support Services	9.5%	7.2%	<u>7.4%</u>	<u>5.5%</u>	<u>5.8%</u>	<u>3.1%</u>	9.0%	<u>5.7%</u>	-40.6%
Continuing Care Facility	6.0%	7.2%	<u>5.6%</u>	11.0%	11.6%	9.2%	10.4%	11.3%	90.2%
Other	<u>4.8%</u>		<u>5.6%</u>	6.8%	4.3%	7.7%	<u>3.0%</u>	9.4%	98.1%
<b>Mortality Following an Incident Stroke</b>									
<b>Hospitalized Ischemic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	23.6%	18.6%	21.6%	16.4%	19.2%	19.0%	19.6%	20.4%	-13.5%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	20.0%	19.9%	22.0%	17.9%	19.5%	20.8%	21.3%	17.6%	-11.8%
<b>Hospitalized Hemorrhagic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	39.3%	50.7%	42.6%	42.5%	43.5%	49.2%	44.8%	45.3%	15.3%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	13.7%	11.8%	16.1%	19.0%	17.9%	21.2%	13.5%	31.0%	126.1%

Grey Shading = Not Applicable/Available

Underlined % are based on a numerator of less than 5

\* Age 20 and older

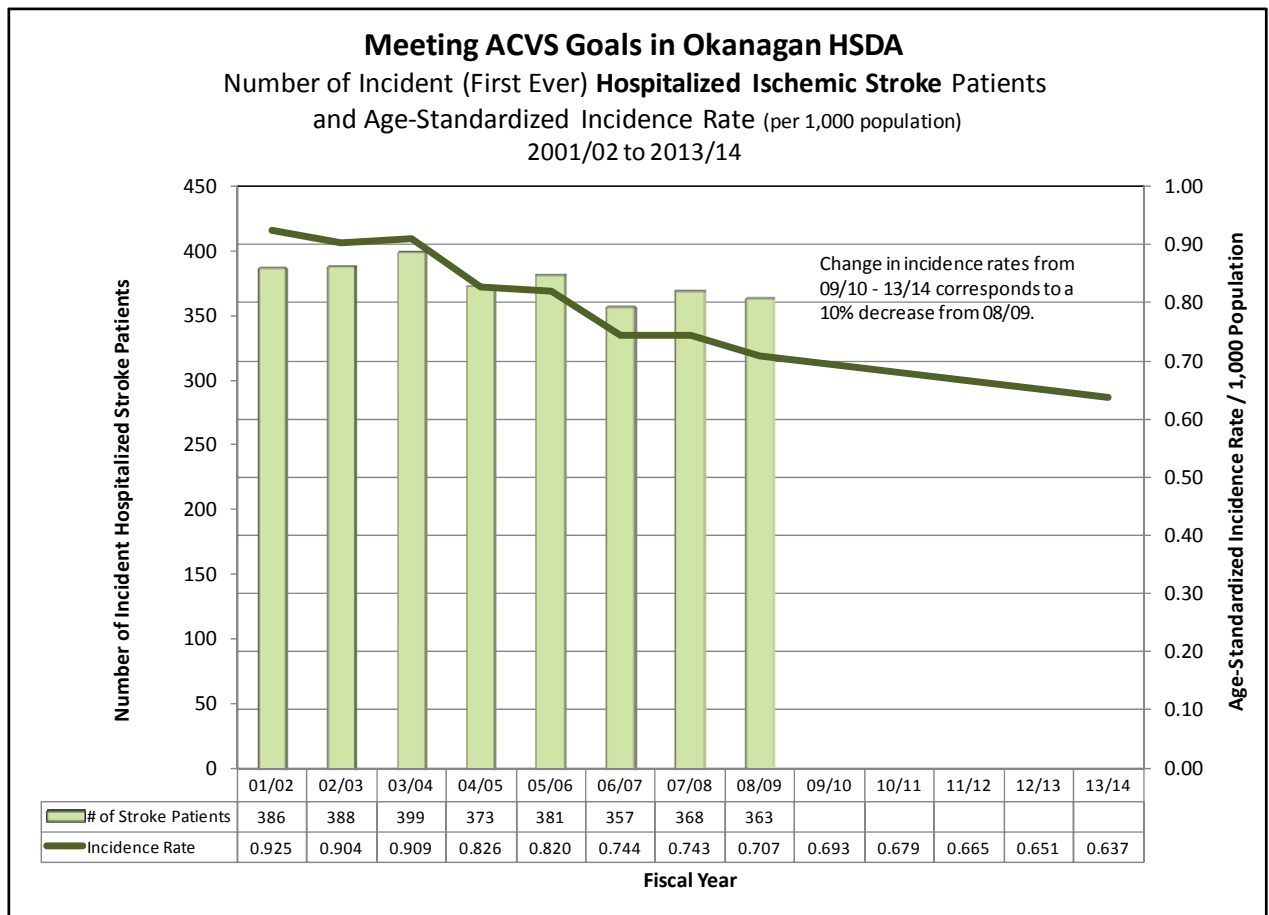
# OKANAGAN HSDA INDICATORS AND METRICS

The BC Stroke Strategy Measurement and Evaluation Working Group have suggested five key indicators for tracking progress on ACVS care in the province. The following charts and tables include trend data for **Okanagan HSDA** for three of these five indicators. The source of this data is from the updated Acute Cerebrovascular Syndrome (ACVS) Registry. Note that the geographic location is based on the patient's residence, not necessarily the location of their treatment.

## Indicator #3 – Incidence Rate

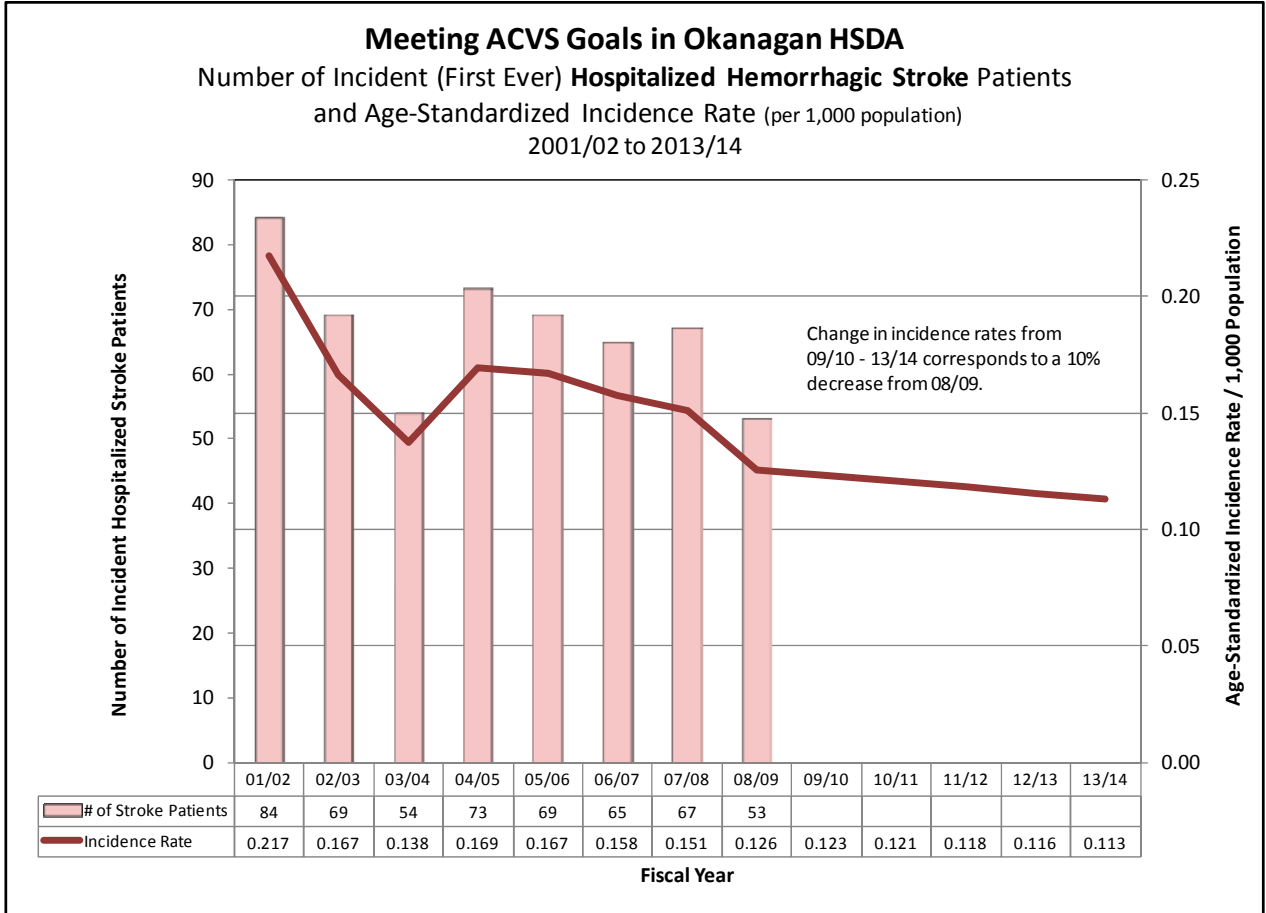
Reduce the age-standardized incidence rate of both ischemic and hemorrhagic stroke by **10%** between 2008/09 and 2013/14 (*data source*: updated ACVS Registry).

### *Okanagan HSDA – Incident Hospitalized Ischemic Stroke Patients*



### Indicator #3 – Incidence Rate (continued)

#### Okanagan HSDA – Incident Hospitalized Hemorrhagic Stroke Patients

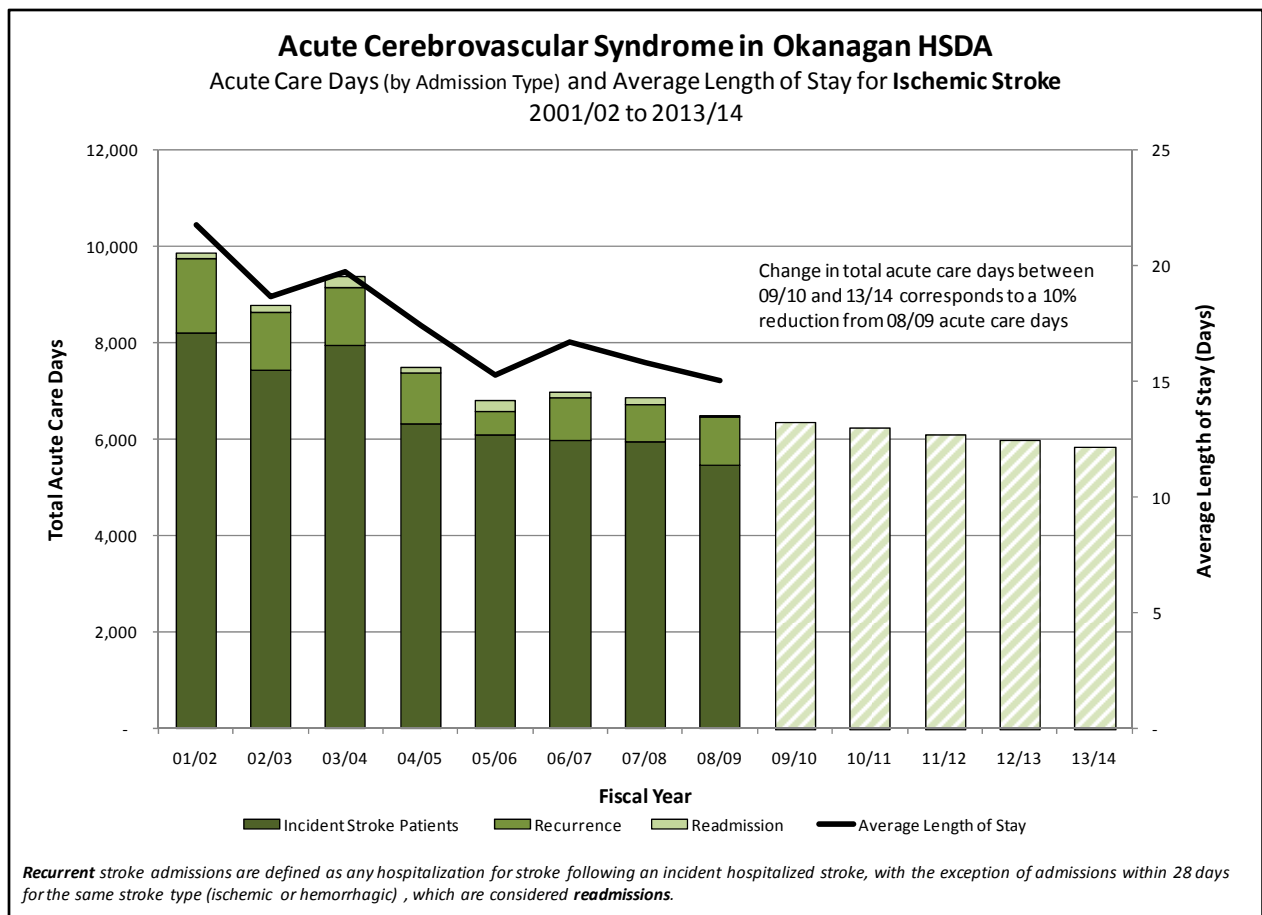


## Indicator #4 – Acute Care Days

Reduce acute care days for discharges in which an ischemic stroke is the principal diagnosis by **10%** between 2008/09 and 2013/14 (this includes a combination of reduced discharges and reduced average length of stay).

*Data Source:* Updated ACVS Registry for incident, re-admit and recurrent ischemic stroke discharges. Link to the Discharge Abstract Database (DAD) for number of hospital days associated with these discharges. **Recurrent** stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered **readmissions**.

### Okanagan HSDA – Acute Care Days and ALOS for Ischemic Stroke Patients



Indicator #4 – Acute Care Days (continued)  
 Okanagan HSDA – Hospitalization and ALOS Data Trends

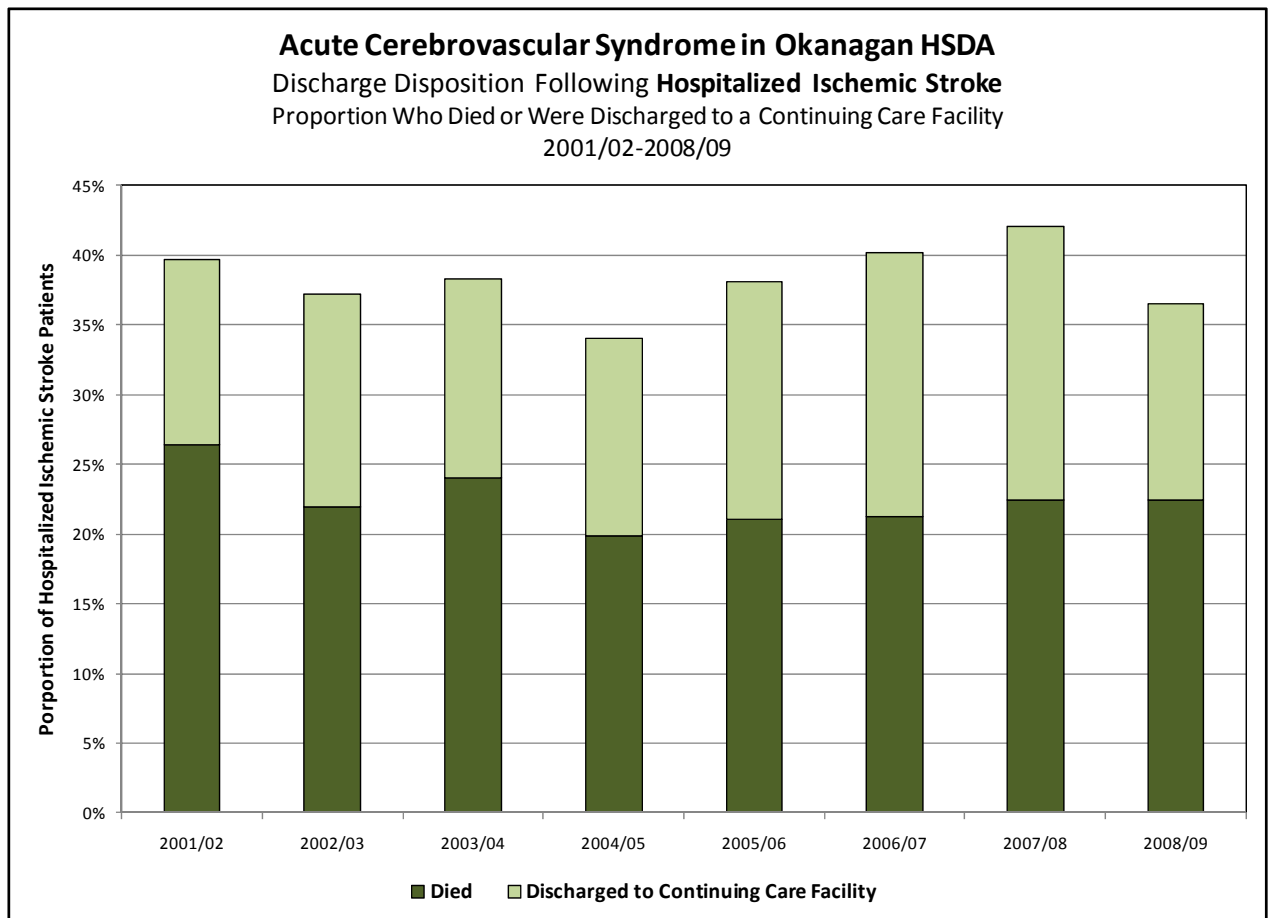
Hospitalization and ALOS for Stroke								
Adults* Residing in Okanagan HSDA								
2001/02 to 2008/09								
	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	386	388	399	373	381	357	368	363
Hospitalized Hemorrhagic Stroke	84	69	54	73	69	65	67	53
Readmission								
Hospitalized Ischemic Stroke	10	11	13	6	11	11	7	8
Hospitalized Hemorrhagic Stroke			-					
Recurrence								
Hospitalized Ischemic Stroke	58	71	63	50	54	50	58	62
Hospitalized Hemorrhagic Stroke	8		7	6	8	6		8
<b>Total Hospitalized Ischemic Stroke</b>	<b>454</b>	<b>470</b>	<b>475</b>	<b>429</b>	<b>446</b>	<b>418</b>	<b>433</b>	<b>433</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>95</b>	<b>73</b>	<b>61</b>	<b>80</b>	<b>79</b>	<b>73</b>	<b>72</b>	<b>63</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>549</b>	<b>543</b>	<b>536</b>	<b>509</b>	<b>525</b>	<b>491</b>	<b>505</b>	<b>496</b>
<b>Average Length of Stay in Acute Care</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke	21.27	19.15	19.95	16.95	15.97	16.78	16.14	15.08
Hospitalized Hemorrhagic Stroke	16.75	15.45	16.67	15.48	33.06	26.26	17.60	14.66
Readmission								
Hospitalized Ischemic Stroke	13.40	12.73	16.46	17.00	19.64	11.91	17.86	4.00
Hospitalized Hemorrhagic Stroke	18.00	2.00		12.00	12.50	74.00	18.50	43.50
Recurrence								
Hospitalized Ischemic Stroke	26.36	16.97	18.98	21.14	9.24	17.22	13.59	16.11
Hospitalized Hemorrhagic Stroke	9.25	16.00	6.14	15.17	6.38	19.17	10.33	6.63
<b>Total Hospitalized Ischemic Stroke</b>	<b>21.75</b>	<b>18.67</b>	<b>19.72</b>	<b>17.44</b>	<b>15.25</b>	<b>16.70</b>	<b>15.82</b>	<b>15.02</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>16.16</b>	<b>15.29</b>	<b>15.46</b>	<b>15.41</b>	<b>29.84</b>	<b>26.99</b>	<b>17.32</b>	<b>14.56</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>20.78</b>	<b>18.22</b>	<b>19.24</b>	<b>17.12</b>	<b>17.44</b>	<b>18.23</b>	<b>16.04</b>	<b>14.96</b>
<b>Days in Acute Care</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	8,211	7,432	7,959	6,321	6,086	5,989	5,938	5,473
Hospitalized Hemorrhagic Stroke	1,407	1,066	900	1,130	2,281	1,707	1,179	777
Readmission								
Hospitalized Ischemic Stroke	134	140	214	102	216	131	125	32
Hospitalized Hemorrhagic Stroke	54		-	12	25	148	37	87
Recurrence								
Hospitalized Ischemic Stroke	1,529	1,205	1,196	1,057	499	861	788	999
Hospitalized Hemorrhagic Stroke	74	48	43	91	51	115	31	53
<b>Total Days - Hospitalized Ischemic Stroke</b>	<b>9,874</b>	<b>8,777</b>	<b>9,369</b>	<b>7,480</b>	<b>6,801</b>	<b>6,981</b>	<b>6,851</b>	<b>6,504</b>
<b>Total Days - Hospitalized Hemorrhagic Stroke</b>	<b>1,535</b>	<b>1,116</b>	<b>943</b>	<b>1,233</b>	<b>2,357</b>	<b>1,970</b>	<b>1,247</b>	<b>917</b>
<b>Total Days</b>	<b>11,409</b>	<b>9,893</b>	<b>10,312</b>	<b>8,713</b>	<b>9,158</b>	<b>8,951</b>	<b>8,098</b>	<b>7,421</b>
* Age 20 and older								
<i>Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.</i>								

## Indicator #5 – Death and Dependency

Reduce the proportion of patients who die in hospital or are sent to a long-term care facility after being admitted/discharged (principal diagnosis) for ischemic stroke. *If only one composite measure is used to assess progress in stroke care, it would be this overall measure of death and dependency.*

*Data Source:* Updated ACVS Registry for hospitalized (incident, readmission and recurrent) ischemic stroke discharges. DAD for discharge disposition ('died', 'discharged to a Continuing Care facility').

### Okanagan HSDA – Discharge Disposition for Hospitalized Ischemic Stroke



**Discharge Disposition Following a Hospitalization for Stroke**  
**Patient Died or Was Discharged to a Continuing Care Facility**  
 Adults\* Residing in Okanagan HSDA  
 2001/02 to 2008/09

	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	386	388	399	373	381	357	368	363
Hospitalized Hemorrhagic Stroke	84	69	54	73	69	65	67	53
Readmission								
Hospitalized Ischemic Stroke	10	11	13	6	11	11	7	8
Hospitalized Hemorrhagic Stroke								
Recurrence								
Hospitalized Ischemic Stroke	58	71	63	50	54	50	58	62
Hospitalized Hemorrhagic Stroke	8		7	6	8	6		8
<b>Total Hospitalized Ischemic Stroke</b>	<b>454</b>	<b>470</b>	<b>475</b>	<b>429</b>	<b>446</b>	<b>418</b>	<b>433</b>	<b>433</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>95</b>	<b>73</b>	<b>61</b>	<b>80</b>	<b>79</b>	<b>73</b>	<b>72</b>	<b>63</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>549</b>	<b>543</b>	<b>536</b>	<b>509</b>	<b>525</b>	<b>491</b>	<b>505</b>	<b>496</b>
<b>Discharge Disposition - Number</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke								
Died	101	85	100	73	82	74	79	82
Discharged to a Continuing Care Facility	48	59	53	45	67	67	71	43
Hospitalized Hemorrhagic Stroke								
Died	35	36	24	31	30	32	30	24
Discharged to a Continuing Care Facility	5	5		8	8	6	7	6
Readmission								
Hospitalized Ischemic Stroke								
Died								
Discharged to a Continuing Care Facility								
Hospitalized Hemorrhagic Stroke								
Died								
Discharged to a Continuing Care Facility								
Recurrence								
Hospitalized Ischemic Stroke								
Died	17	17	13	10	9	14	17	15
Discharged to a Continuing Care Facility	11	12	12	15	8	10	12	18
Hospitalized Hemorrhagic Stroke								
Died	5							
Discharged to a Continuing Care Facility								
<b>Total Hospitalized Ischemic Stroke</b>	<b>120</b>	<b>103</b>	<b>114</b>	<b>85</b>	<b>94</b>	<b>89</b>	<b>97</b>	<b>97</b>
<b>Discharged to a Continuing Care Facility</b>	<b>60</b>	<b>72</b>	<b>68</b>	<b>61</b>	<b>76</b>	<b>79</b>	<b>85</b>	<b>61</b>
<b>Death and Disability</b>	<b>180</b>	<b>175</b>	<b>182</b>	<b>146</b>	<b>170</b>	<b>168</b>	<b>182</b>	<b>158</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>42</b>	<b>37</b>	<b>28</b>	<b>33</b>	<b>35</b>	<b>34</b>	<b>31</b>	<b>28</b>
<b>Discharged to a Continuing Care Facility</b>	<b>6</b>	<b>5</b>		<b>9</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>8</b>
<b>Death and Disability</b>	<b>48</b>	<b>42</b>	<b>31</b>	<b>42</b>	<b>44</b>	<b>42</b>	<b>39</b>	<b>36</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>162</b>	<b>140</b>	<b>142</b>	<b>118</b>	<b>129</b>	<b>123</b>	<b>128</b>	<b>125</b>
<b>Discharged to a Continuing Care Facility</b>	<b>66</b>	<b>77</b>	<b>71</b>	<b>70</b>	<b>85</b>	<b>87</b>	<b>93</b>	<b>69</b>
<b>Death and Disability</b>	<b>228</b>	<b>217</b>	<b>213</b>	<b>188</b>	<b>214</b>	<b>210</b>	<b>221</b>	<b>194</b>
<b>Discharge Disposition - Proportion</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke								
Died	26.2%	21.9%	25.1%	19.6%	21.5%	20.7%	21.5%	22.6%
Discharged to a Continuing Care Facility	12.4%	15.2%	13.3%	12.1%	17.6%	18.8%	19.3%	11.8%
Hospitalized Hemorrhagic Stroke								
Died	41.7%	52.2%	44.4%	42.5%	43.5%	49.2%	44.8%	45.3%
Discharged to a Continuing Care Facility	6.0%	7.2%	5.6%	11.0%	11.6%	9.2%	10.4%	11.3%
Readmission								
Hospitalized Ischemic Stroke								
Died	20.0%	9.1%	7.7%	33.3%	27.3%	9.1%	14.3%	0.0%
Discharged to a Continuing Care Facility	10.0%	9.1%	23.1%	16.7%	9.1%	18.2%	28.6%	0.0%
Hospitalized Hemorrhagic Stroke								
Died	66.7%	0.0%	100.0%	50.0%	0.0%	0.0%	0.0%	50.0%
Discharged to a Continuing Care Facility	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	0.0%	50.0%
Recurrence								
Hospitalized Ischemic Stroke								
Died	29.3%	23.9%	20.6%	20.0%	16.7%	28.0%	29.3%	24.2%
Discharged to a Continuing Care Facility	19.0%	16.9%	19.0%	30.0%	14.8%	20.0%	20.7%	29.0%
Hospitalized Hemorrhagic Stroke								
Died	62.5%	33.3%	57.1%	16.7%	50.0%	33.3%	33.3%	37.5%
Discharged to a Continuing Care Facility	12.5%	0.0%	0.0%	16.7%	12.5%	16.7%	33.3%	12.5%
<b>Total Hospitalized Ischemic Stroke</b>	<b>26.4%</b>	<b>21.9%</b>	<b>24.0%</b>	<b>19.8%</b>	<b>21.1%</b>	<b>21.3%</b>	<b>22.4%</b>	<b>22.4%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>13.2%</b>	<b>15.3%</b>	<b>14.3%</b>	<b>14.2%</b>	<b>17.0%</b>	<b>18.9%</b>	<b>19.6%</b>	<b>14.1%</b>
<b>Death and Disability</b>	<b>39.6%</b>	<b>37.2%</b>	<b>38.3%</b>	<b>34.0%</b>	<b>38.1%</b>	<b>40.2%</b>	<b>42.0%</b>	<b>36.5%</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>44.2%</b>	<b>50.7%</b>	<b>45.9%</b>	<b>41.3%</b>	<b>44.3%</b>	<b>46.6%</b>	<b>43.1%</b>	<b>44.4%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>6.3%</b>	<b>6.8%</b>	<b>4.9%</b>	<b>11.3%</b>	<b>11.4%</b>	<b>11.0%</b>	<b>11.1%</b>	<b>12.7%</b>
<b>Death and Disability</b>	<b>50.5%</b>	<b>57.5%</b>	<b>50.8%</b>	<b>52.5%</b>	<b>55.7%</b>	<b>57.5%</b>	<b>54.2%</b>	<b>57.1%</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>29.5%</b>	<b>25.8%</b>	<b>26.5%</b>	<b>23.2%</b>	<b>24.6%</b>	<b>25.1%</b>	<b>25.3%</b>	<b>25.2%</b>
<b>Discharged to a Continuing Care Facility</b>	<b>12.0%</b>	<b>14.2%</b>	<b>13.2%</b>	<b>13.8%</b>	<b>16.2%</b>	<b>17.7%</b>	<b>18.4%</b>	<b>13.9%</b>
<b>Death and Disability</b>	<b>41.5%</b>	<b>40.0%</b>	<b>39.7%</b>	<b>36.9%</b>	<b>40.8%</b>	<b>42.8%</b>	<b>43.8%</b>	<b>39.1%</b>

\* Age 20 and older

*Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.*

**Indicator #5 – Death and Dependency (continued)**

*Okanagan HSDA – Discharge Disposition Data Trends*

# THOMPSON CARIBOO SHUSWAP HSDA

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## Indicators and Metrics

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# THOMPSON CARIBOO SHUSWAP HSDA INDICATORS AND METRICS AS OF NOVEMBER 2010

## Acute Cerebrovascular Syndrome Adults\* Residing in the Thompson Cariboo HSDA 2001/02 to 2008/09

	Fiscal Year								% Change 01/02 to 08/09
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	
<b>Number of Incident ACVS Patients</b>									
Hospitalized Ischemic Stroke	178	179	192	184	201	196	198	181	1.7%
Hospitalized Hemorrhagic Stroke	32	47	36	31	27	40	43	53	65.6%
<b>Sub-total</b>	<b>210</b>	<b>226</b>	<b>228</b>	<b>215</b>	<b>228</b>	<b>236</b>	<b>241</b>	<b>234</b>	<b>11.4%</b>
Hospitalized TIA	82	68	66	75	68	79	59	61	-25.6%
Non-hospitalized TIA/Stroke	178	200	230	224	242	233	247	229	28.7%
<b>Sub-total</b>	<b>260</b>	<b>268</b>	<b>296</b>	<b>299</b>	<b>310</b>	<b>312</b>	<b>306</b>	<b>290</b>	<b>11.5%</b>
<b>Number of Prevalent ACVS Patients</b>									
Hospitalized Ischemic Stroke	1,191	1,189	1,225	1,264	1,298	1,342	1,373	1,387	16.5%
Hospitalized Hemorrhagic Stroke	207	232	233	240	240	263	275	303	46.4%
<b>Sub-total</b>	<b>1,398</b>	<b>1,421</b>	<b>1,458</b>	<b>1,504</b>	<b>1,538</b>	<b>1,605</b>	<b>1,648</b>	<b>1,690</b>	<b>20.9%</b>
Hospitalized TIA	586	604	619	652	660	672	671	677	15.5%
Non-hospitalized TIA/Stroke	1,084	1,184	1,301	1,415	1,542	1,649	1,761	1,837	69.5%
<b>Sub-total</b>	<b>1,670</b>	<b>1,788</b>	<b>1,920</b>	<b>2,067</b>	<b>2,202</b>	<b>2,321</b>	<b>2,432</b>	<b>2,514</b>	<b>50.5%</b>
<b>Age-Standardized Incidence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	0.927	0.906	0.923	0.863	0.916	0.849	0.817	0.722	-22.1%
Hospitalized Hemorrhagic Stroke	0.157	0.224	0.170	0.139	0.115	0.163	0.179	0.207	31.7%
<b>Sub-total</b>	<b>1.090</b>	<b>1.140</b>	<b>1.099</b>	<b>1.008</b>	<b>1.038</b>	<b>1.019</b>	<b>1.003</b>	<b>0.935</b>	<b>-14.3%</b>
Hospitalized TIA	0.408	0.334	0.307	0.339	0.293	0.320	0.238	0.238	-41.6%
Non-hospitalized TIA/Stroke	0.896	0.979	1.079	1.026	1.093	1.006	1.021	0.927	3.4%
<b>Age-Standardized Prevalence / 1,000 Population</b>									
Hospitalized Ischemic Stroke	5.787	5.594	5.556	5.548	5.520	5.492	5.411	5.237	-9.5%
Hospitalized Hemorrhagic Stroke	0.977	1.069	1.045	1.048	1.013	1.078	1.104	1.169	19.6%
<b>Sub-total</b>	<b>6.764</b>	<b>6.663</b>	<b>6.601</b>	<b>6.596</b>	<b>6.533</b>	<b>6.570</b>	<b>6.515</b>	<b>6.406</b>	<b>-5.3%</b>
Hospitalized TIA	2.827	2.821	2.783	2.832	2.774	2.702	2.605	2.536	-10.3%
Non-hospitalized TIA/Stroke	5.549	5.868	6.246	6.564	6.928	7.147	7.326	7.334	32.2%
<b>Conversion Rate from TIA/Non-hospitalized Stroke to Hospitalized Stroke</b>									
90-Day Conversion Rate	2.42%	4.67%	3.58%	2.08%		2.71%	2.72%		
365-Day Conversion Rate	4.84%	5.84%	4.66%	2.78%	2.33%	3.05%	6.80%		
<b>Utilization of tPA by Incident Acute Ischemic Stroke Patients</b>									
Number Receiving tPA						2	7	3	
Total Number						196	198	181	
Proportion of Incident Hospitalized AIS Patients Receiving tPA						<u>1.02%</u>	3.54%	<u>1.66%</u>	
<b>Utilization of Acute Care by Incident Ischemic Stroke Patients</b>									
Discharges	178	179	192	184	201	196	198	181	1.7%
ALOS	26.23	21.98	19.42	21.46	20.10	19.46	21.27	15.82	-39.7%
Patient Days	4,669	3,935	3,728	3,949	4,041	3,814	4,211	2,864	-38.7%
<b>Utilization of Acute Care by Incident Hemorrhagic Stroke Patients</b>									
Discharges	32	47	36	31	27	40	43	53	65.6%
ALOS	21.59	28.53	24.61	16.71	25.89	47.00	31.84	21.28	-1.4%
Patient Days	691	1,341	886	518	699	1,880	1,369	1,128	63.2%
<b>Discharge Disposition following Acute Admissions for Incident Ischemic Stroke Patients</b>									
Died	25.3%	29.6%	17.2%	25.5%	22.4%	25.5%	24.2%	15.5%	-38.8%
Discharged to Home	55.6%	54.2%	64.6%	55.4%	55.7%	53.1%	51.5%	60.2%	8.3%
Home with Support Services	3.4%	5.6%	3.6%	3.8%	7.0%	3.1%	4.5%	2.8%	-18.0%
Continuing Care Facility	10.7%	6.1%	10.4%	12.5%	9.5%	12.2%	14.1%	14.4%	34.6%
Other	5.1%	4.5%	4.2%	2.7%	5.5%	6.1%	5.6%	7.2%	42.1%
<b>Discharge Disposition following Acute Admissions for Incident Hemorrhagic Stroke Patients</b>									
Died	59.4%	53.2%	44.4%	51.6%	33.3%	50.0%	34.9%	26.4%	-55.5%
Discharged to Home	18.8%	27.7%	50.0%	25.8%	48.1%	30.0%	55.8%	50.9%	171.7%
Home with Support Services	<u>3.1%</u>	<u>4.3%</u>			<u>7.4%</u>	<u>7.5%</u>	<u>2.3%</u>	<u>3.8%</u>	20.8%
Continuing Care Facility	<u>3.1%</u>	10.6%	<u>5.6%</u>	19.4%	<u>7.4%</u>	<u>10.0%</u>	<u>4.7%</u>	<u>7.5%</u>	141.5%
Other	15.6%	<u>4.3%</u>		<u>3.2%</u>	<u>3.7%</u>	<u>2.5%</u>	<u>2.3%</u>	11.3%	-27.5%
<b>Mortality Following an Incident Stroke</b>									
<b>Hospitalized Ischemic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	20.8%	24.0%	14.6%	21.7%	17.9%	20.9%	22.2%	13.8%	-33.6%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	20.6%	19.1%	17.7%	18.8%	23.6%	18.1%	26.6%	15.4%	-25.2%
<b>Hospitalized Hemorrhagic Stroke</b>									
Crude 30-day In-hospital Mortality Rate	46.9%	44.7%	36.1%	51.6%	29.6%	37.5%	34.9%	22.6%	-51.7%
Crude 31-365 Day Mortality Rate in 30-day In-hospital Survivors	29.4%	26.9%	17.4%	6.7%	5.3%	40.0%	10.7%	17.1%	-42.0%

Grey Shading = Not Applicable/Available

Underlined % are based on a numerator of less than 5

\* Age 20 and older

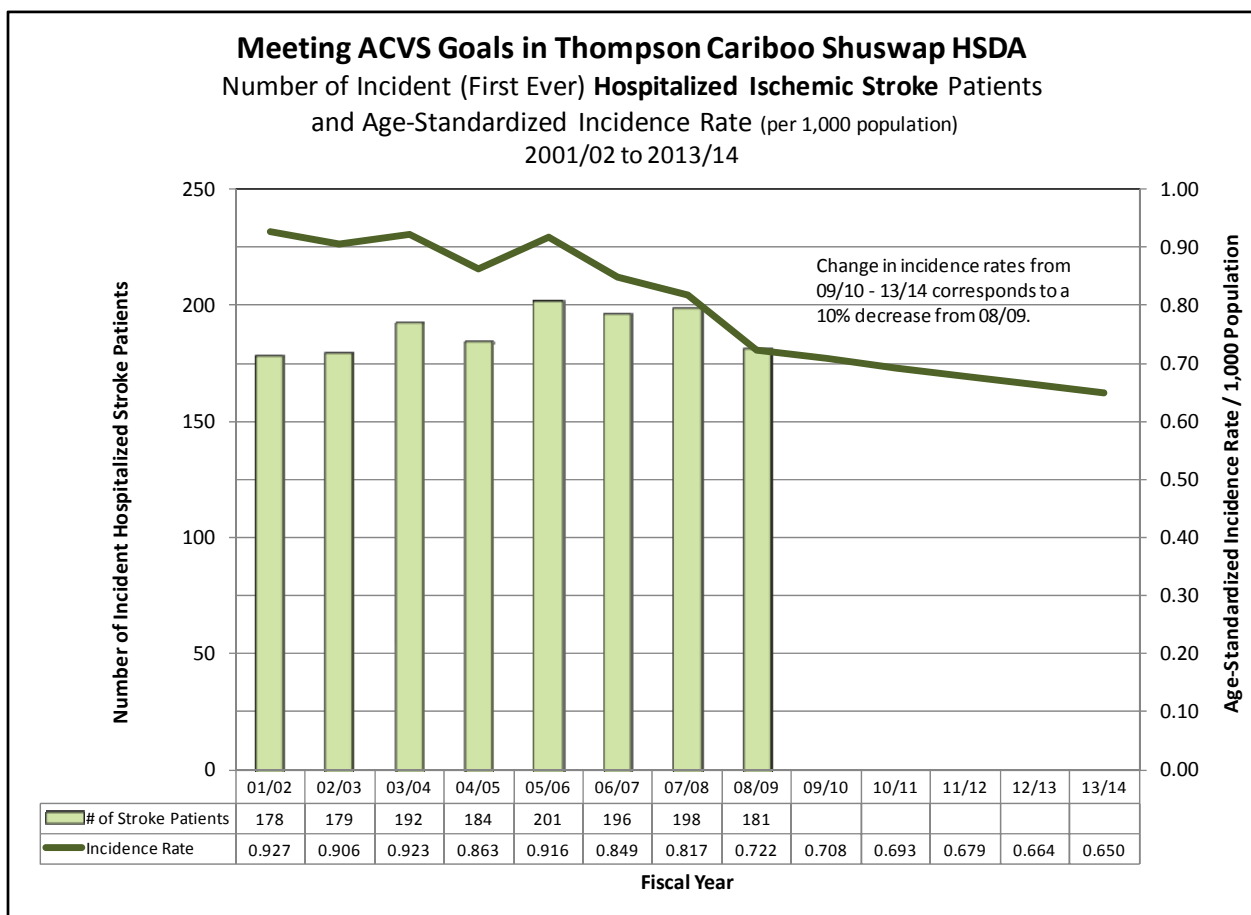
# THOMPSON CARIBOO SHUSWAP HSDA INDICATORS AND METRICS

The BC Stroke Strategy Measurement and Evaluation Working Group have suggested five key indicators for tracking progress on ACVS care in the province. The following charts and tables include trend data for **Thompson Cariboo Shuswap HSDA** for three of these five indicators. The source of this data is from the updated Acute Cerebrovascular Syndrome (ACVS) Registry. Note that the geographic location is based on the patient's residence, not necessarily the location of their treatment.

## Indicator #3 – Incidence Rate

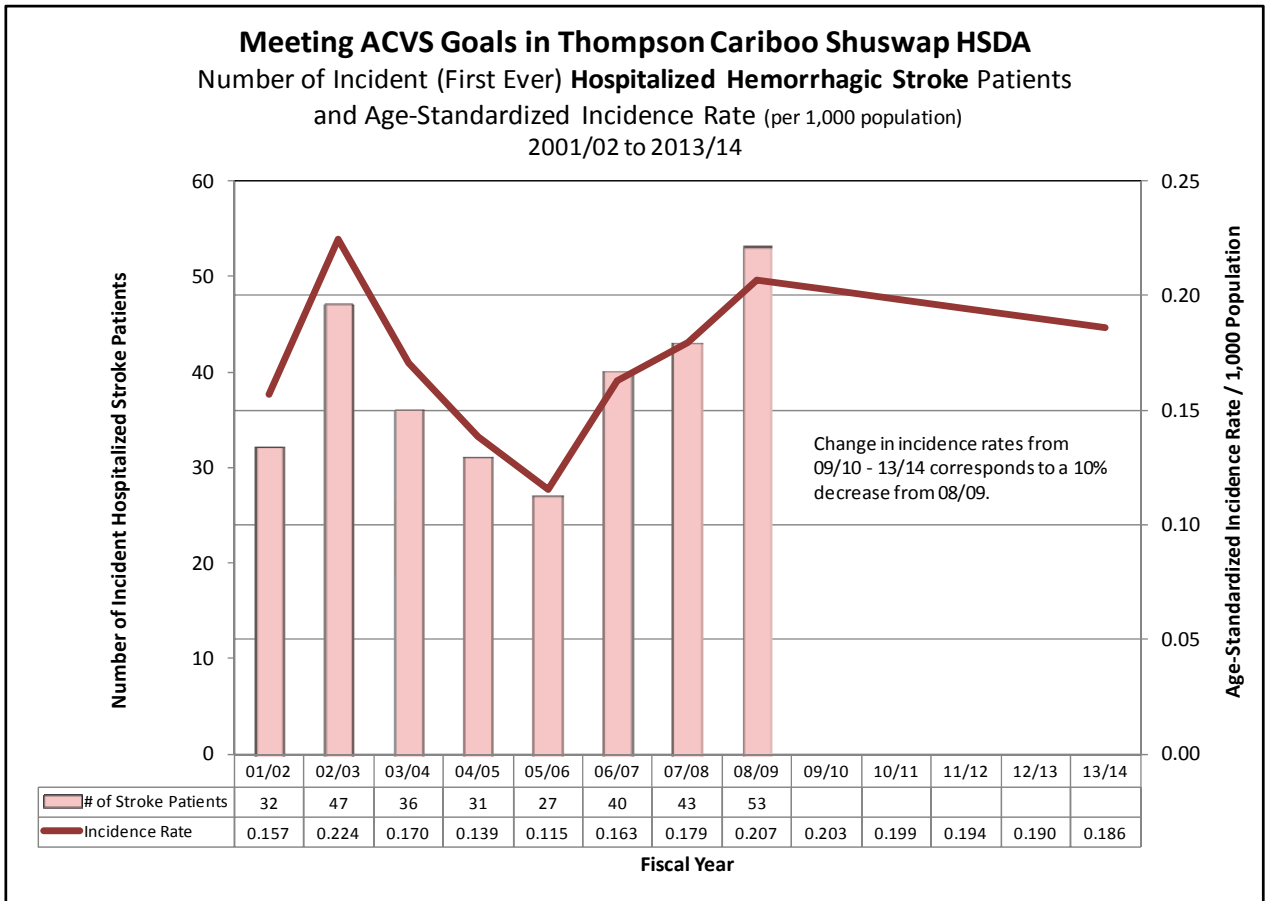
Reduce the age-standardized incidence rate of both ischemic and hemorrhagic stroke by **10%** between 2008/09 and 2013/14 (*data source*: updated ACVS Registry).

### Thompson Cariboo Shuswap HSDA – Incident Hospitalized Ischemic Stroke Patients



### Indicator #3 – Incidence Rate (continued)

#### Thompson Cariboo Shuswap HSDA – Incident Hospitalized Hemorrhagic Stroke Patients

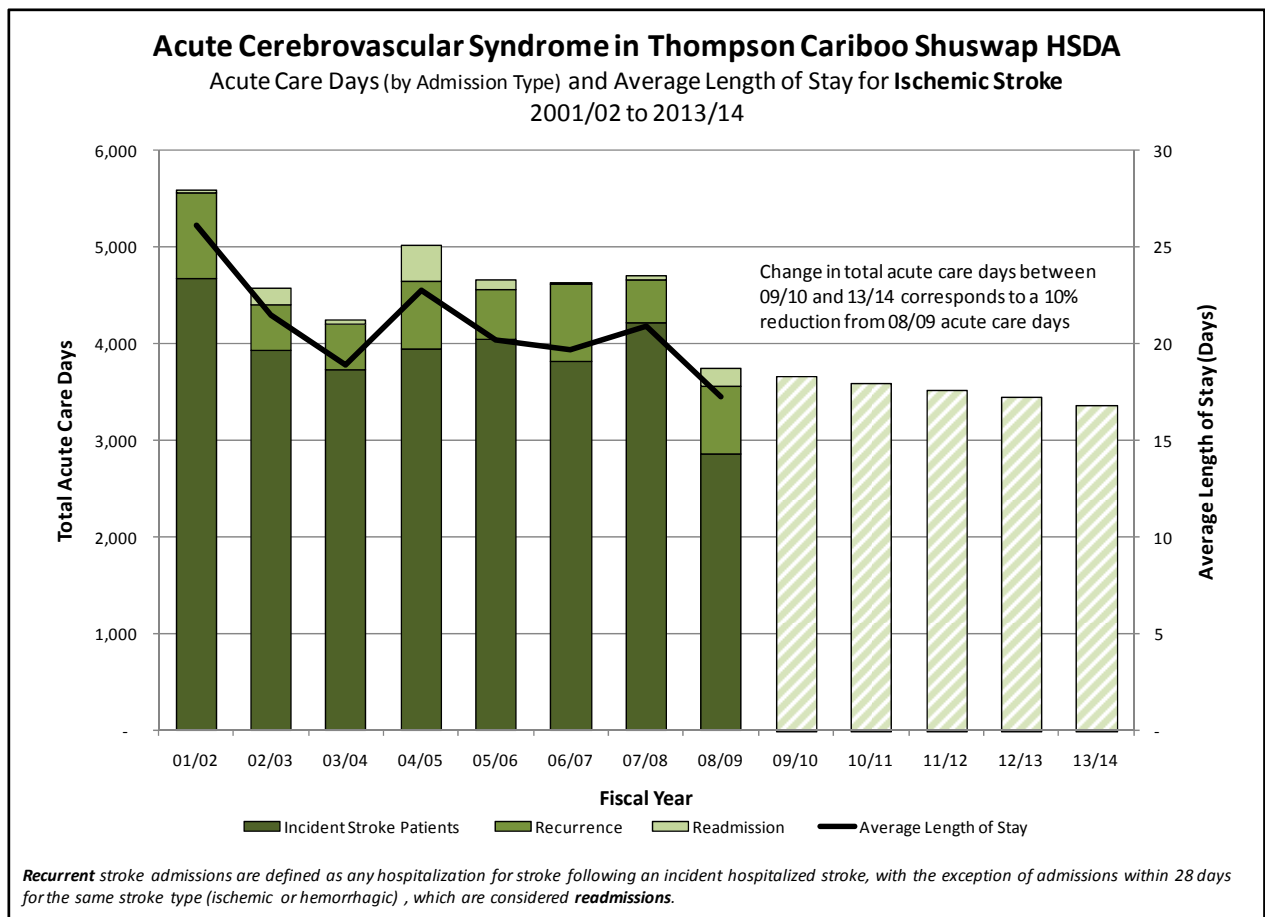


## Indicator #4 – Acute Care Days

Reduce acute care days for discharges in which an ischemic stroke is the principal diagnosis by **10%** between 2008/09 and 2013/14 (this includes a combination of reduced discharges and reduced average length of stay).

*Data Source:* Updated ACVS Registry for incident, re-admit and recurrent ischemic stroke discharges. Link to the Discharge Abstract Database (DAD) for number of hospital days associated with these discharges. **Recurrent** stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered **readmissions**.

### Thompson Cariboo Shuswap HSDA – Acute Care Days and ALOS for Ischemic Stroke Patients



## Indicator #4 – Acute Care Days (continued)

Thompson Cariboo Shuswap HSDA – Hospitalization and ALOS Data Trends

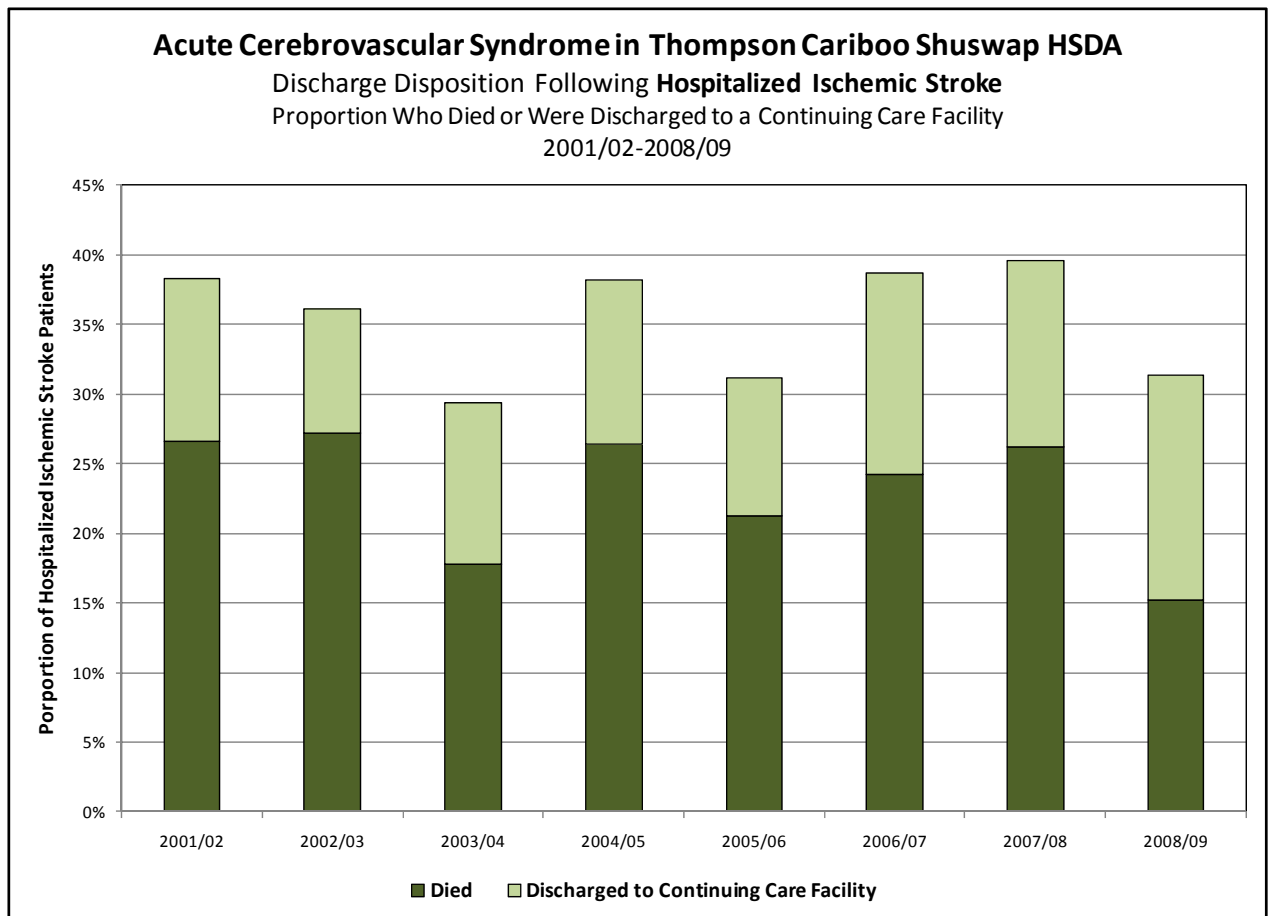
Hospitalization and ALOS for Stroke								
Adults* Residing in Thompson Cariboo Shuswap HSDA								
2001/02 to 2008/09								
	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	178	179	192	184	201	196	198	181
Hospitalized Hemorrhagic Stroke	32	47	36	31	27	40	43	53
Readmission								
Hospitalized Ischemic Stroke		5		6	6			5
Hospitalized Hemorrhagic Stroke	-	-			-			
Recurrence								
Hospitalized Ischemic Stroke	34	29	30	30	24	36	24	31
Hospitalized Hemorrhagic Stroke								6
<b>Total Hospitalized Ischemic Stroke</b>	<b>214</b>	<b>213</b>	<b>225</b>	<b>220</b>	<b>231</b>	<b>235</b>	<b>225</b>	<b>217</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>33</b>	<b>49</b>	<b>41</b>	<b>35</b>	<b>28</b>	<b>45</b>	<b>46</b>	<b>61</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>247</b>	<b>262</b>	<b>266</b>	<b>255</b>	<b>259</b>	<b>280</b>	<b>271</b>	<b>278</b>
<b>Average Length of Stay in Acute Care</b>								
Incident Stroke Patients								
Hospitalized Ischemic Stroke	26.23	21.98	19.42	21.46	20.10	19.46	21.27	15.82
Hospitalized Hemorrhagic Stroke	21.59	28.53	24.61	16.71	25.89	47.00	31.84	21.28
Readmission								
Hospitalized Ischemic Stroke	13.00	36.40	14.00	61.50	16.00	5.67	11.33	36.80
Hospitalized Hemorrhagic Stroke			7.00	1.00		13.50	2.00	16.50
Recurrence								
Hospitalized Ischemic Stroke	26.18	15.90	15.97	23.23	21.83	22.19	18.83	22.48
Hospitalized Hemorrhagic Stroke	25.00	4.00	16.75	22.00	2.00	23.33	5.00	5.83
<b>Total Hospitalized Ischemic Stroke</b>	<b>26.10</b>	<b>21.49</b>	<b>18.88</b>	<b>22.80</b>	<b>20.18</b>	<b>19.70</b>	<b>20.88</b>	<b>17.26</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>21.70</b>	<b>27.53</b>	<b>23.41</b>	<b>16.71</b>	<b>25.04</b>	<b>43.93</b>	<b>30.02</b>	<b>19.61</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>25.51</b>	<b>22.62</b>	<b>19.58</b>	<b>21.96</b>	<b>20.70</b>	<b>23.60</b>	<b>22.43</b>	<b>17.77</b>
<b>Days in Acute Care</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	4,669	3,935	3,728	3,949	4,041	3,814	4,211	2,864
Hospitalized Hemorrhagic Stroke	691	1,341	886	518	699	1,880	1,369	1,128
Readmission								
Hospitalized Ischemic Stroke	26	182	42	369	96	17	34	184
Hospitalized Hemorrhagic Stroke	-	-	7		-	27		33
Recurrence								
Hospitalized Ischemic Stroke	890	461	479	697	524	799	452	697
Hospitalized Hemorrhagic Stroke	25	8	67	66		70	10	35
<b>Total Days - Hospitalized Ischemic Stroke</b>	<b>5,585</b>	<b>4,578</b>	<b>4,249</b>	<b>5,015</b>	<b>4,661</b>	<b>4,630</b>	<b>4,697</b>	<b>3,745</b>
<b>Total Days - Hospitalized Hemorrhagic Stroke</b>	<b>716</b>	<b>1,349</b>	<b>960</b>	<b>585</b>	<b>701</b>	<b>1,977</b>	<b>1,381</b>	<b>1,196</b>
<b>Total Days</b>	<b>6,301</b>	<b>5,927</b>	<b>5,209</b>	<b>5,600</b>	<b>5,362</b>	<b>6,607</b>	<b>6,078</b>	<b>4,941</b>
* Age 20 and older								
<i>Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.</i>								

## Indicator #5 – Death and Dependency

Reduce the proportion of patients who die in hospital or are sent to a long-term care facility after being admitted/discharged (principal diagnosis) for ischemic stroke. *If only one composite measure is used to assess progress in stroke care, it would be this overall measure of death and dependency.*

*Data Source:* Updated ACVS Registry for hospitalized (incident, readmission and recurrent) ischemic stroke discharges. DAD for discharge disposition ('died', 'discharged to a Continuing Care facility').

### Thompson Cariboo Shuswap HSDA – Discharge Disposition for Hospitalized Ischemic Stroke



**Discharge Disposition Following a Hospitalization for Stroke**  
**Patient Died or Was Discharged to a Continuing Care Facility**  
**Adults\* Residing in Thompson Cariboo Shuswap HSDA**  
**2001/02 to 2008/09**

	Fiscal Year							
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09
<b>Number of Stroke Hospitalizations</b>								
Number of Incident Stroke Patients								
Hospitalized Ischemic Stroke	178	179	192	184	201	196	198	181
Hospitalized Hemorrhagic Stroke	32	47	36	31	27	40	43	53
Readmission								
Hospitalized Ischemic Stroke		5		6	6			5
Hospitalized Hemorrhagic Stroke	-	-						
Recurrence								
Hospitalized Ischemic Stroke	34	29	30	30	24	36	24	31
Hospitalized Hemorrhagic Stroke								6
<b>Total Hospitalized Ischemic Stroke</b>	<b>214</b>	<b>213</b>	<b>225</b>	<b>220</b>	<b>231</b>	<b>235</b>	<b>225</b>	<b>217</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>	<b>33</b>	<b>49</b>	<b>41</b>	<b>35</b>	<b>28</b>	<b>45</b>	<b>46</b>	<b>61</b>
<b>Total Number of Stroke Hospitalizations</b>	<b>247</b>	<b>262</b>	<b>266</b>	<b>255</b>	<b>259</b>	<b>280</b>	<b>271</b>	<b>278</b>

<b>Discharge Disposition - Number</b>								
<b>Incident Stroke Patients</b>								
Hospitalized Ischemic Stroke								
Died	45	53	33	47	45	50	48	28
Discharged to a Continuing Care Facility	19	11	20	23	19	24	28	26
Hospitalized Hemorrhagic Stroke								
Died	19	25	16	16	9	20	15	14
Discharged to a Continuing Care Facility		5						
Readmission								
Hospitalized Ischemic Stroke								
Died	-	-						
Discharged to a Continuing Care Facility	-							
Hospitalized Hemorrhagic Stroke								
Died	-	-	-	-	-	-	-	-
Discharged to a Continuing Care Facility	-	-	-	-	-	-	-	-
Recurrence								
Hospitalized Ischemic Stroke								
Died	12	5	6	9		6	10	
Discharged to a Continuing Care Facility	6	6	5			9		7
Hospitalized Hemorrhagic Stroke								
Died								
Discharged to a Continuing Care Facility								
<b>Total Hospitalized Ischemic Stroke</b>								
Died	57	58	40	58	49	57	59	33
Discharged to a Continuing Care Facility	25	19	26	26	23	34	30	35
<b>Death and Disability</b>	<b>82</b>	<b>77</b>	<b>66</b>	<b>84</b>	<b>72</b>	<b>91</b>	<b>89</b>	<b>68</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>								
Died	19	26	18	16	10	21	15	18
Discharged to a Continuing Care Facility		6		7				
<b>Death and Disability</b>	<b>21</b>	<b>32</b>	<b>21</b>	<b>23</b>	<b>12</b>	<b>25</b>	<b>17</b>	<b>22</b>
<b>Total Number of Stroke Hospitalizations</b>								
Died	76	84	58	74	59	78	74	51
Discharged to a Continuing Care Facility	27	25	29	33	25	38	32	39
<b>Death and Disability</b>	<b>103</b>	<b>109</b>	<b>87</b>	<b>107</b>	<b>84</b>	<b>116</b>	<b>106</b>	<b>90</b>

<b>Discharge Disposition - Proportion</b>								
<b>Incident Stroke Patients</b>								
Hospitalized Ischemic Stroke								
Died	25.3%	29.6%	17.2%	25.5%	22.4%	25.5%	24.2%	15.5%
Discharged to a Continuing Care Facility	10.7%	6.1%	10.4%	12.5%	9.5%	12.2%	14.1%	14.4%
Hospitalized Hemorrhagic Stroke								
Died	59.4%	53.2%	44.4%	51.6%	33.3%	50.0%	34.9%	26.4%
Discharged to a Continuing Care Facility	3.1%	10.6%	5.6%	19.4%	7.4%	10.0%	4.7%	7.5%
Readmission								
Hospitalized Ischemic Stroke								
Died	0.0%	0.0%	33.3%	33.3%	0.0%	33.3%	33.3%	20.0%
Discharged to a Continuing Care Facility	0.0%	40.0%	33.3%	16.7%	0.0%	33.3%	0.0%	40.0%
Hospitalized Hemorrhagic Stroke								
Died			0.0%	0.0%		0.0%	0.0%	0.0%
Discharged to a Continuing Care Facility			0.0%	0.0%		0.0%	0.0%	0.0%
Recurrence								
Hospitalized Ischemic Stroke								
Died	35.3%	17.2%	20.0%	30.0%	16.7%	16.7%	41.7%	12.9%
Discharged to a Continuing Care Facility	17.6%	20.7%	16.7%	6.7%	16.7%	25.0%	8.3%	22.6%
Hospitalized Hemorrhagic Stroke								
Died	0.0%	50.0%	50.0%	0.0%	100.0%	33.3%	0.0%	66.7%
Discharged to a Continuing Care Facility	100.0%	50.0%	25.0%	33.3%	0.0%	0.0%	0.0%	0.0%
<b>Total Hospitalized Ischemic Stroke</b>								
Died	26.6%	27.2%	17.8%	26.4%	21.2%	24.3%	26.2%	15.2%
Discharged to a Continuing Care Facility	11.7%	8.9%	11.6%	11.8%	10.0%	14.5%	13.3%	16.1%
<b>Death and Disability</b>	<b>38.3%</b>	<b>36.2%</b>	<b>29.3%</b>	<b>38.2%</b>	<b>31.2%</b>	<b>38.7%</b>	<b>39.6%</b>	<b>31.3%</b>
<b>Total Hospitalized Hemorrhagic Stroke</b>								
Died	57.6%	53.1%	43.9%	45.7%	35.7%	46.7%	32.6%	29.5%
Discharged to a Continuing Care Facility	6.1%	12.2%	7.3%	20.0%	7.1%	8.9%	4.3%	6.6%
<b>Death and Disability</b>	<b>63.6%</b>	<b>65.3%</b>	<b>51.2%</b>	<b>65.7%</b>	<b>42.9%</b>	<b>55.6%</b>	<b>37.0%</b>	<b>36.1%</b>
<b>Total Number of Stroke Hospitalizations</b>								
Died	30.8%	32.1%	21.8%	29.0%	22.8%	27.9%	27.3%	18.3%
Discharged to a Continuing Care Facility	10.9%	9.5%	10.9%	12.9%	9.7%	13.6%	11.8%	14.0%
<b>Death and Disability</b>	<b>41.7%</b>	<b>41.6%</b>	<b>32.7%</b>	<b>42.0%</b>	<b>32.4%</b>	<b>41.4%</b>	<b>39.1%</b>	<b>32.4%</b>

\* Age 20 and older

*Recurrent stroke admissions are defined as any hospitalization for stroke following an incident hospitalized stroke, with the exception of admissions within 28 days for the same stroke type (ischemic or hemorrhagic), which are considered readmissions.*

**Indicator #5 – Death and Dependency (continued)**

*Thompson Cariboo Shuswap HSDA – Discharge Disposition Data Trends*