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Advancing the Ontario Stroke System



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Health Quality Ontario

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Taking Stroke Best Practices to the Next Level

An Introduction to Quality-Based
Procedures and Health Quality
Ontario's Stroke Clinical Handbook

Pre-presentation Instructions

- Please keep microphone on mute unless you are asking a question
- The ppt is available at www.ontariostrokenetwork.ca
- There will be a question and answer period at the end of the presentation
- Please email info@ontariostrokenetwork.ca with your position title and LHIN/Stroke Region

Speakers & Objectives

- Speakers:
 - Chris O'Callaghan
 - Linda Kelloway
 - Dr. Mark Bayley

- Objectives:
 1. To provide a brief overview of Stroke Care in Ontario and Quality Based Procedures
 2. To provide an overview of the recommended practices and indicators for stroke QBP's
 3. To provide an opportunity for discussion & Q&A

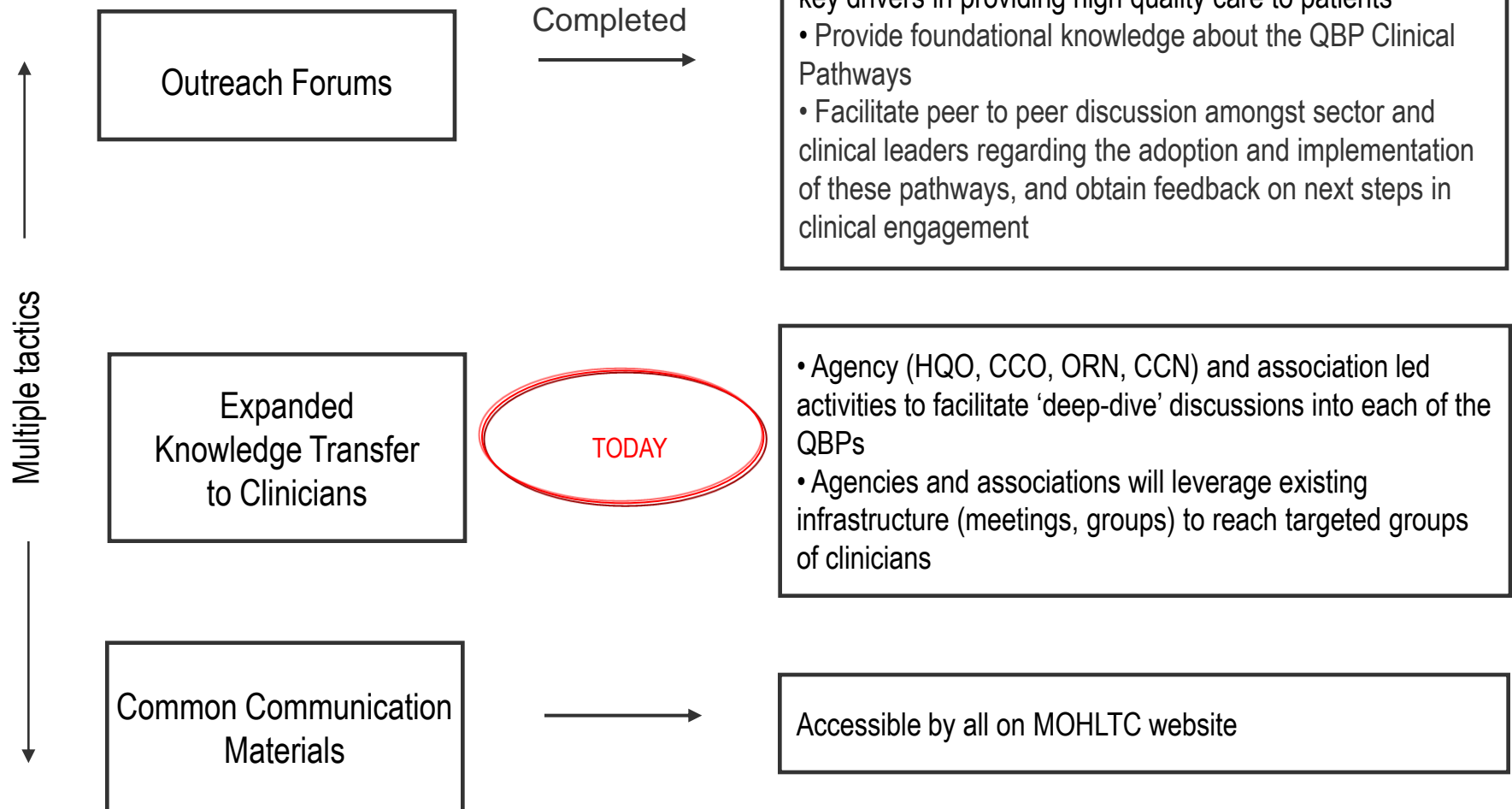
Acknowledgement

- The Health Quality Ontario Stroke Clinical Handbook was developed by Health Quality Ontario on behalf of the Ministry of Health and Long Term Care with the Stroke Episode of Care Provincial Expert Advisory Panel
- The content of this presentation follows the content of the Stroke Clinical Handbook

Expert Panel for Health Quality Ontario: Episode of Care for Stroke

Name	Role	Organization
Dr Mark Bayley	Physiatrist	University Health Network
Christina O’Callaghan	ED	Ontario Stroke Network
Dr Gustavo Saposnik	Stroke Neurologist	St Michael’s Hospital
Dr Richard Swartz	Stroke Neurologist	Sunnybrook Health Sciences
Dr Robert Teasell	Physiatrist	St Joseph’s Health Care
Dr Paul E. Cooper	Neurologist	London Health Sciences Centre
Dr Paul Ellis	Emergency Physician	University Health Network
Dr Andrew Samis	Intensivist	Quinte Healthcare
Dr Dan Brouillard	Stroke Survivor	Kingston
Dr Demetrios Sahlas	Stroke Neurologist	Hamilton Health Sciences
Dr Loch Macdonald	Neurosurgeon	St. Micheal’s Hospital
Dr Moira Kapral	Intensivist	University of Toronto / ICES
Dr Murray Krahn	Director	THETA
Dr Ruth Hall	Evaluation Specialist	ICES / Ontario Stroke Network
Derek Leong	Pharmacist	University Health Network
Jin-Hyeun Huh	Pharmacist	University Health Network
Matthew Meyer	Project Coordinator	Ontario Stroke Network
Deb Willems	Regional Rehab Coordinator	SW Ontario Stroke Network
Holly Sloan	Speech Language Pathologist	Trillium Health Partners
Rebecca Fleck	Regional Education Coordinator	CS Stroke Network
Rhonda Whiteman	Stroke Best Practice Coordinator	Hamilton Health Sciences
Lori Marshall	Executive Vice President	Thunder Bay Regional Health Sciences Centre
Linda Welham	Case Costing	Southlake Regional Health Centre
Kathy Lee	Social Worker	Health Sciences North
Linda Kelloway	Best Practice Leader	Ontario Stroke Network
Peter Biasucci	Manager	Ministry of Health and Long-Term Care
Jason Lian	Senior Methodologist	Ministry of Health and Long-Term Care
Thomas Smith	Acting Program Manager	Ministry of Health and Long-Term Care

QBP Clinical Engagement



- The OSN provides provincial leadership and planning for the Ontario's 11 Regional Stroke Networks (Ontario Stroke System) by:
 - establishing province-wide goals, strategies & programs to implement BP's across the care continuum;
 - leading or facilitating provincial initiatives & aligning regional/LHIN plans
 - evaluating performance, benchmarking & reporting on provincial, LHIN & Regional Stroke Network progress; &
 - Managing the KT program.

Regional Stroke Networks

- Ontario's 11 regional stroke networks support the 14 LHINs
- Each stroke network is a collaborative partnership of health care organizations and providers that:
 - span the care continuum from prevention to community re-engagement.
 - develop and implement plans and strategies to achieve equitable access and improve outcomes for stroke survivors and their families through the integration of stroke best practices across the care continuum
 - Will support the LHIN implementation of QBP's



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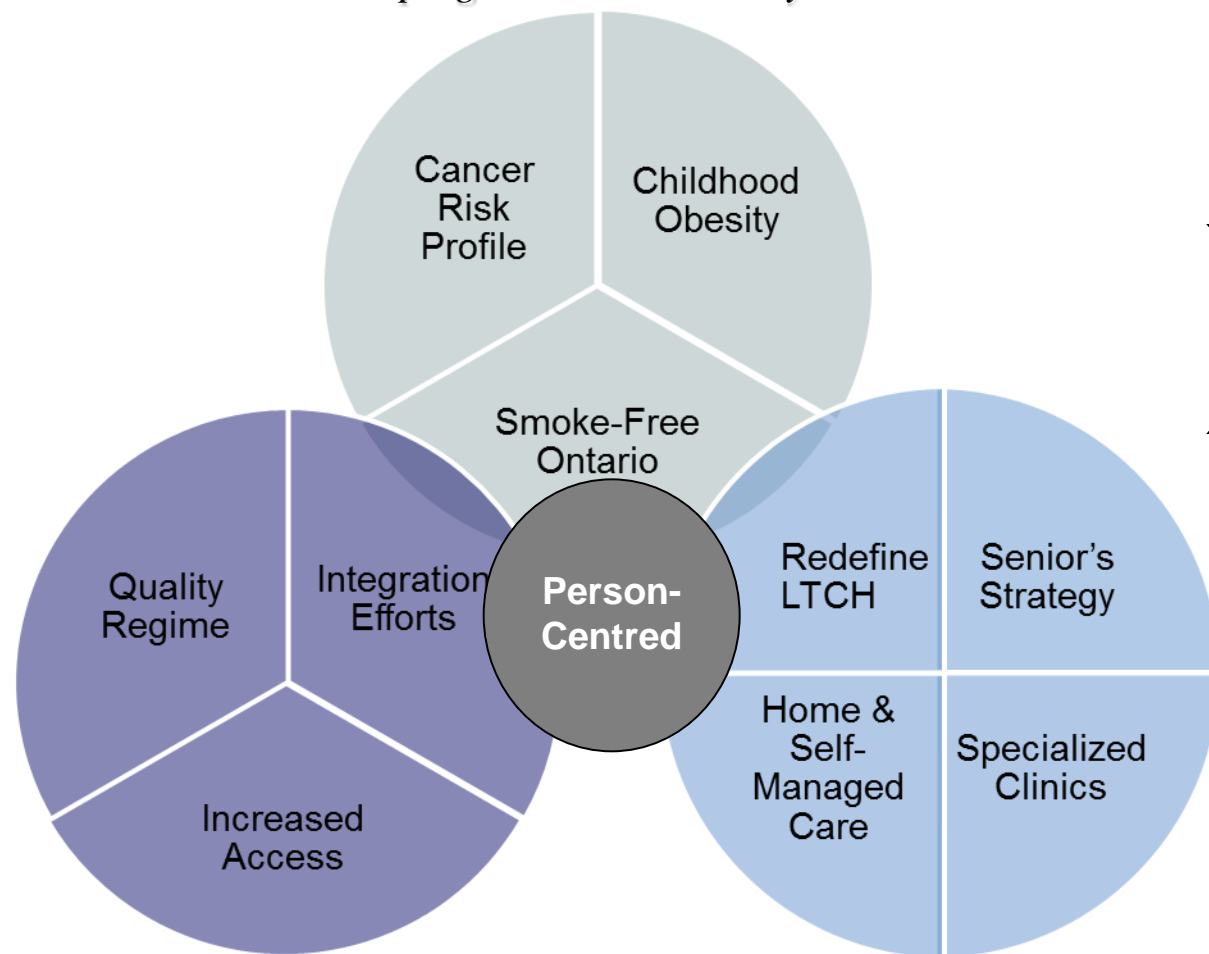
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Quality Based Funding

Ontario's Vision for Health Care - Ontario's Action Plan for Health Care signals positive transformation activity which will require adaptive responses across sectors and organizational levels at a time of accelerated change

Keeping Ontarians Healthy



*Faster Access to
Family Care*

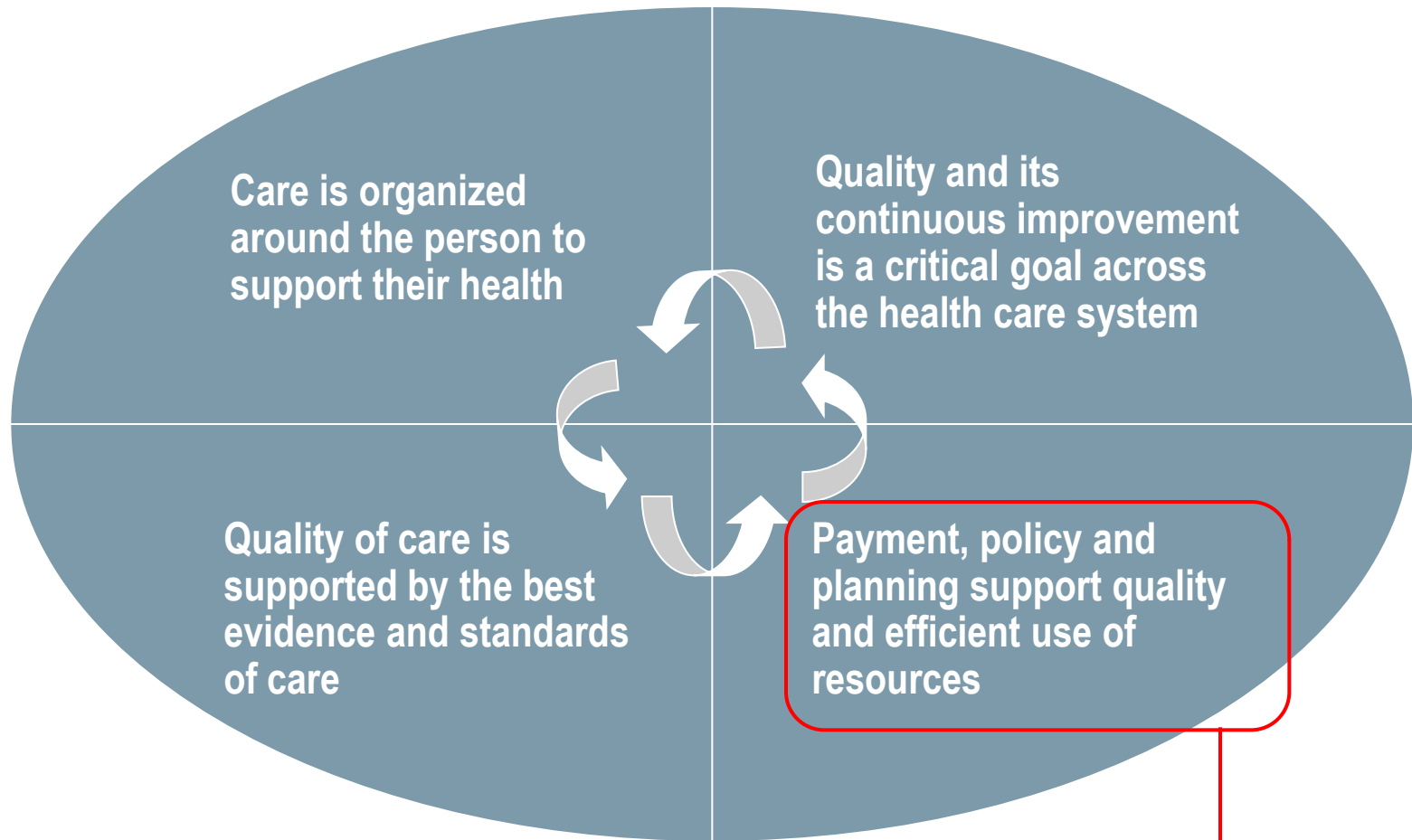
*Right Care, Right Place,
Right Time*



Enablers/Levers

- **Health System Funding Reform**
- Electronic Health Records
- Health Human Resources
- Applied Learning Strategy
- Capital
- Clinical leadership
- Communication
- Measurement
- Incentives

The path forward: The Excellent Care for All Strategy is anchored by principles reflecting *high quality as the primary driver to system solutions...*



Value = Quality/Cost

Health System Funding Reform

The successful transition from the current, 'provider-centered' funding model towards a 'patient-centered model' will be catalyzed by a number of key enablers and field supports

Current

- Based on a lump sum, outdated historical funding
- Fragmented system planning
- Funding not linked to outcomes
- Does not recognize efficiency, standardization and adoption of best practices
- Maintains sector specific silos

Provider - Centric

How do we get there?

Strong Clinical
Engagement

Current Agency
Infrastructure

System Capacity
Building for Change
and Improvement

Knowledge to Action
Toolkits

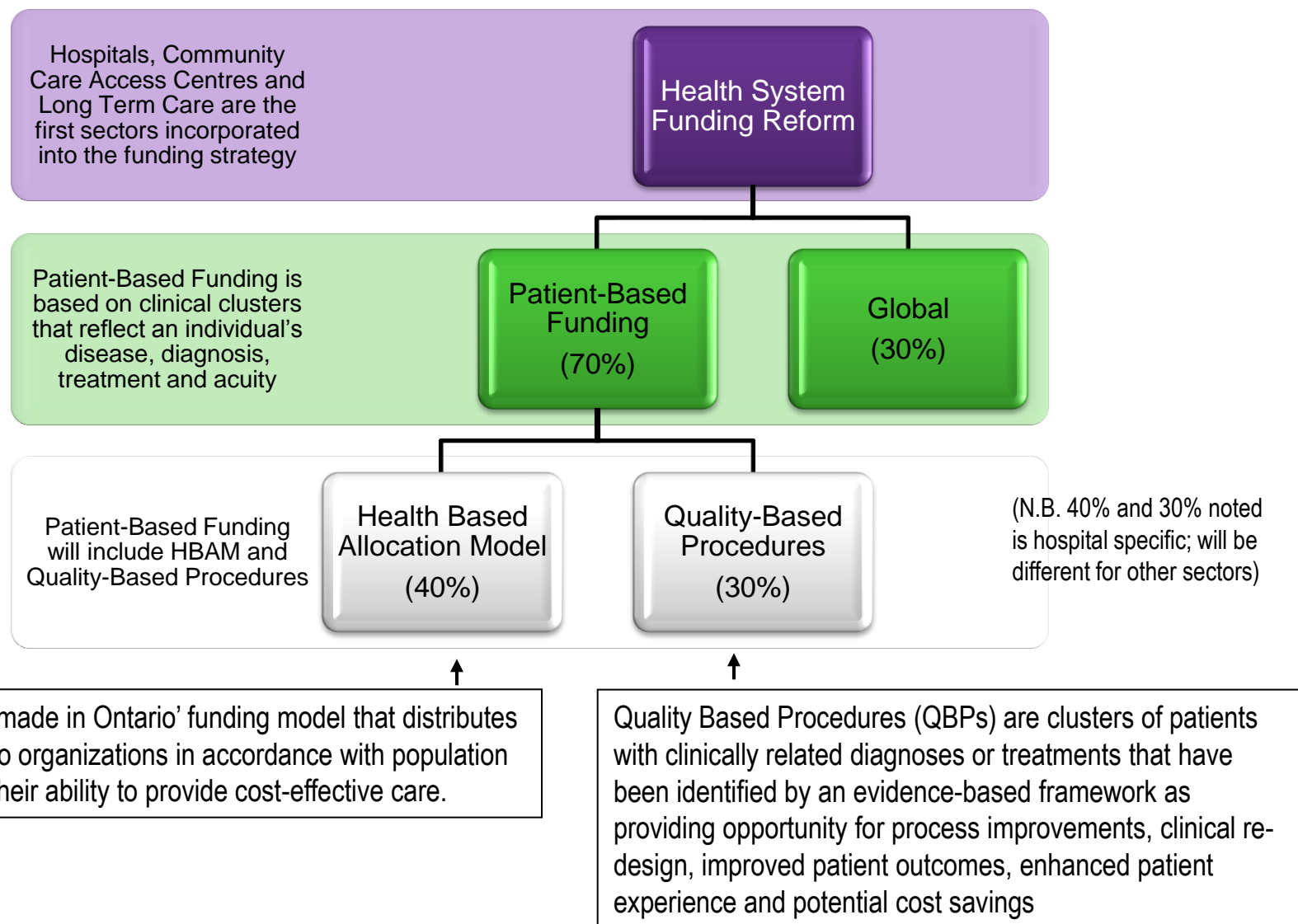
Meaningful
Performance
Evaluation Feedback

Future

- Transparent, evidence-based to better reflect population needs
- Supports system service capacity planning
- Supports quality improvement
- Encourages provider adoption of best practice through linking funding to activity and patient outcomes
- Ontarians will get the right care, at the right place and at the right time

Patient - Centered

The variations in patient care perpetuated by the historical funding approach, warrant the move towards a system where 'money follows the patient'





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Why Stroke as a QBP?

Why was Stroke considered for QBO and evidence based framework for payment?

- Does the clinical group contribute to a significant proportion of total costs?

Cost Impact

- **17,287** annual acute inpatient hospitalizations
- Total acute inpatient cost: **\$191.4 M** (1.36% of global budget), extensive post-acute care costs in rehabilitation, home care and LTC
- **69,093 ALC days** at a cost of **\$41.5 M** in acute days
- **1166 readmissions** within 30 days for a total acute inpatient cost of **\$16.6 M**

Feasibility /Capacity for Change

- Strong stakeholder support and interest for standardizing stroke care
- Researchers developing best practice pathways and quality markers
- Good data availability to establish current costs and the cost to deliver best practices established by OSN
- Standardization around admission and discharge criteria for Stroke Patients

Availability of Evidence

Availability of Evidence

- MAS/OHTAC currently reviewing Stroke to create evidence platform for stroke units
- Canadian best practice guidelines
- Cross provincial panel convened by HQO and OHTAC to develop one set of practice and funding recommendations

Practice Variation

- Wide variation in **acute length of stay** (from mean of **9.1 days to 17.5 days** across LHINs) and **inpatient rehabilitation length of stay** (from mean of **24.8 to 44.5 days** across LHINs),
- **7.9 to 29.4 mean ALC days/patient** across LHINs
- Variation in the use of IP rehab: decrease in rehab for % of severe strokes despite evidence for improved outcomes, % of mild strokes that could be managed in community unchanged
- In-hospital mortality rate following stroke ranges from 9.4% to 17.0% across LHINs

- Is there a clinical evidence base for an established standard of care and/or care pathway? How strong is the evidence?
- Is costing and utilization information available to inform development of **reference costs and pricing?**
- What activities have the potential for bundled payments and integrated care?

Key steps of the process

1. Define patient cohorts and grouping approach

- Disaggregate broad patient population (e.g. stroke) into hospital-based patient groupings with similar clinical and utilization characteristics
- Recommend factors to consider for acuity / severity adjustment (e.g. age, comorbidities, social factors)

2. Develop a pathway model for the episode of care

- What is the index event commencing the episode?
- What are the key phases, branches and decision points within the patient episode of care?
- What proportion of patients proceed down each branch of the pathway?

3. Recommend evidence-based practice throughout the episode

- What are the effective practices that should take place within each component of the episode?
- What is the strength of the evidence supporting each of these practices?
- How often should these practices should be delivered?

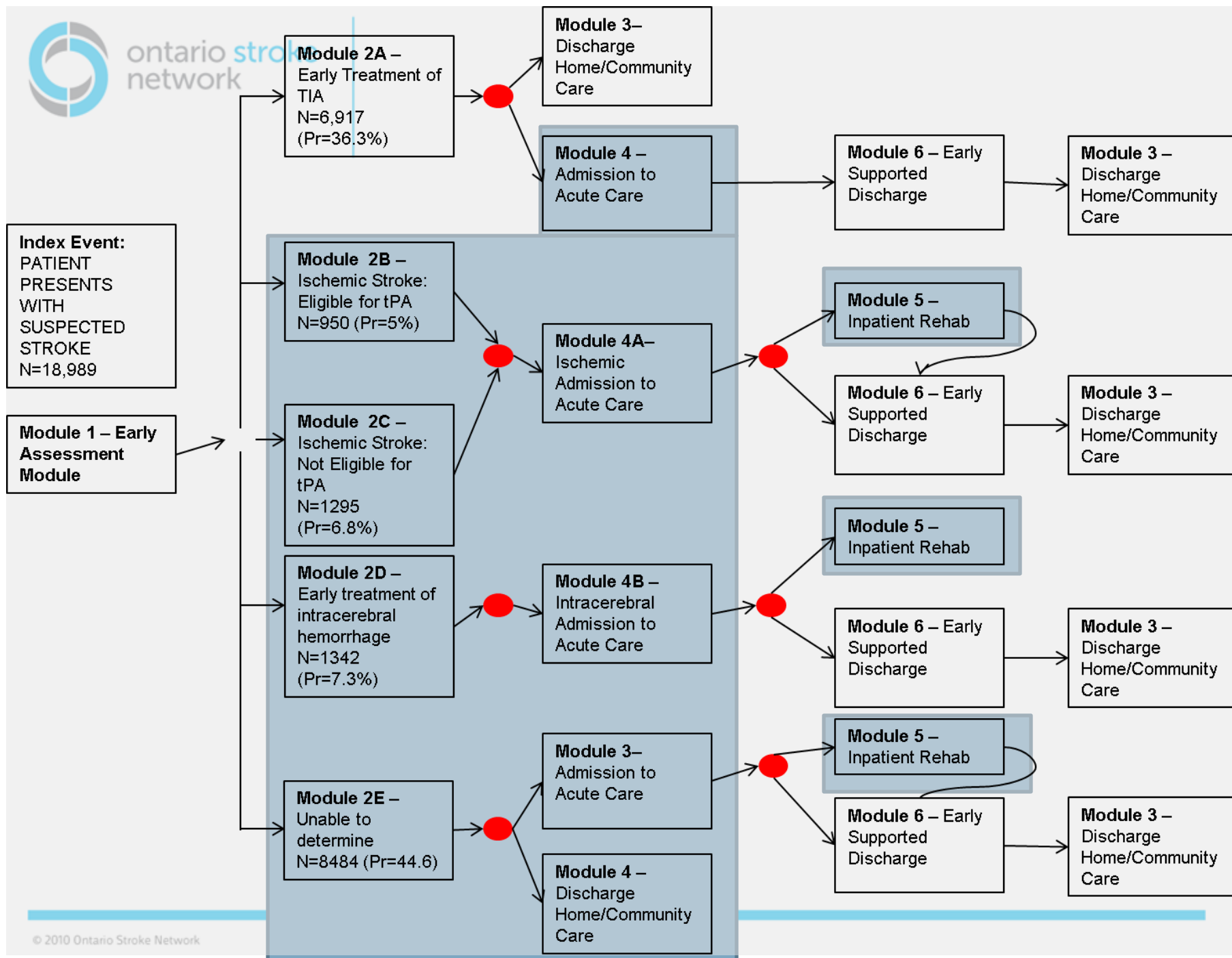
Exclusions

1. Pediatric cases (age < 18)
2. Subarachnoid hemorrhage.
3. In-hospital stroke (Stroke onset after admission to hospital usually for other cause)
4. Intra-arterial thrombolysis and interventions
5. Surgical candidates (Persons with stroke requiring surgical management of stroke)
6. Outpatient/community care settings (in phase 1)

Health Quality Ontario – Rapid Reviews

- Transient Ischemic Attack: Where Can Patients Receive Optimal Care?
- Effectiveness and Safety of Thrombolytics for the Treatment of Ischemic Stroke:
- Optimized Timing of Thrombolytic Therapy for the Treatment of Stroke
- Relationship of Patient Volume and Stroke Outcomes
- Effectiveness of Increased Intensity of Rehabilitation in Post-Stroke Patients
- Optimal Onset-to-Admission Interval for Inpatient Stroke Rehabilitation:

Access all of HQO's rapid reviews here: www.hqontario.ca/evidence/publications-and-ohtac-recommendations/rapid-reviews



Lessons Learned

- Issue for all 3 expert panels:
 - transitional care to community for assessment, monitoring, rehabilitation etc., influences target lengths of stay.
- Lack of information including:
 - care processes for most team members: nurses, physical & occupational therapists, nutritionists, pharmacists etc.
- BUT great start & lots more to do – extend the process to community care



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Quality-Based Procedures and the Stroke Clinical Handbook

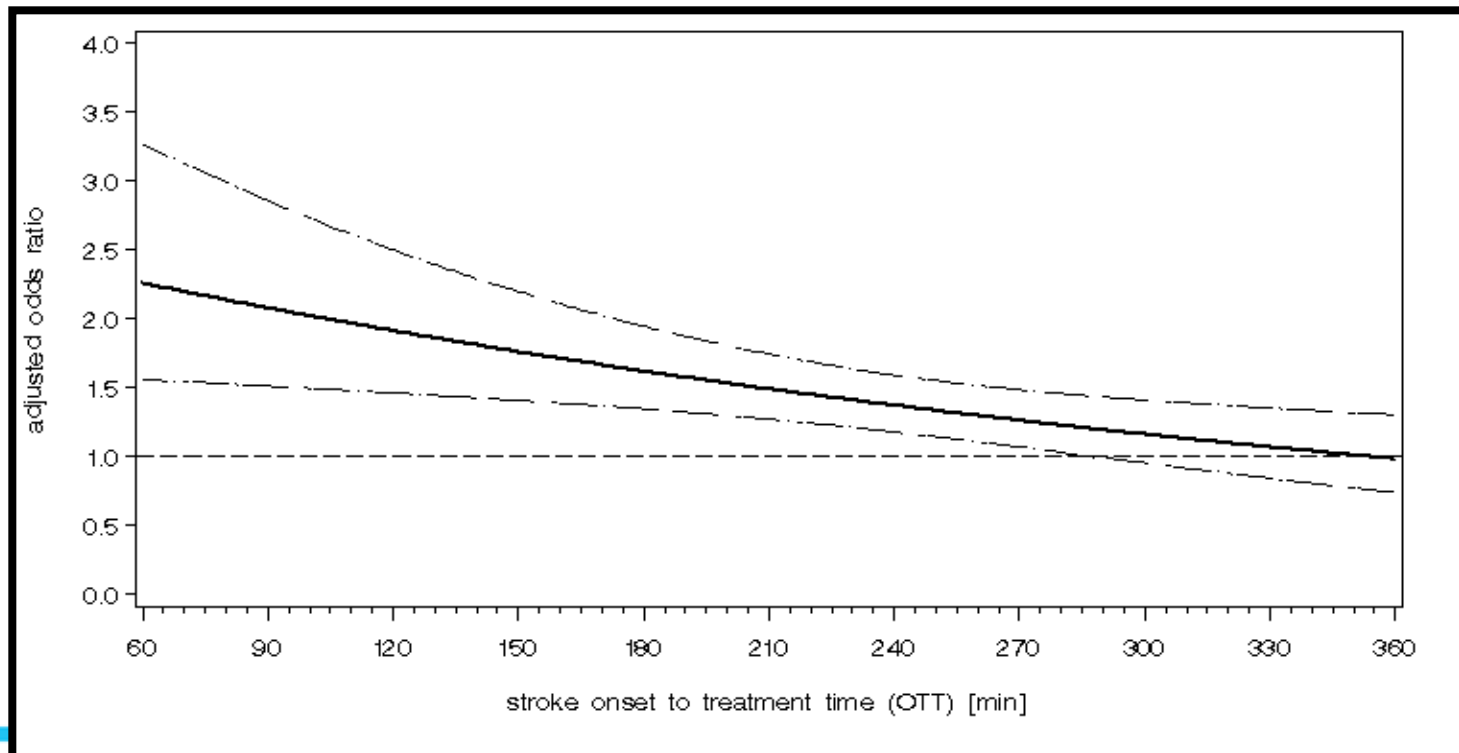
ED & Acute

Importance of early Ax & Rx

Estimated pace of neurologic loss in a typical large-vessel acute ischemic stroke¹

	Neurons	Accelerated aging
Every second	32,000	8.7 hours
Every minute	1.9 million	3.1 weeks
Every hour	120 million	3.6 years
10 hours*	1.2 billion	36 years

Stroke. 2006; 37: 263-266



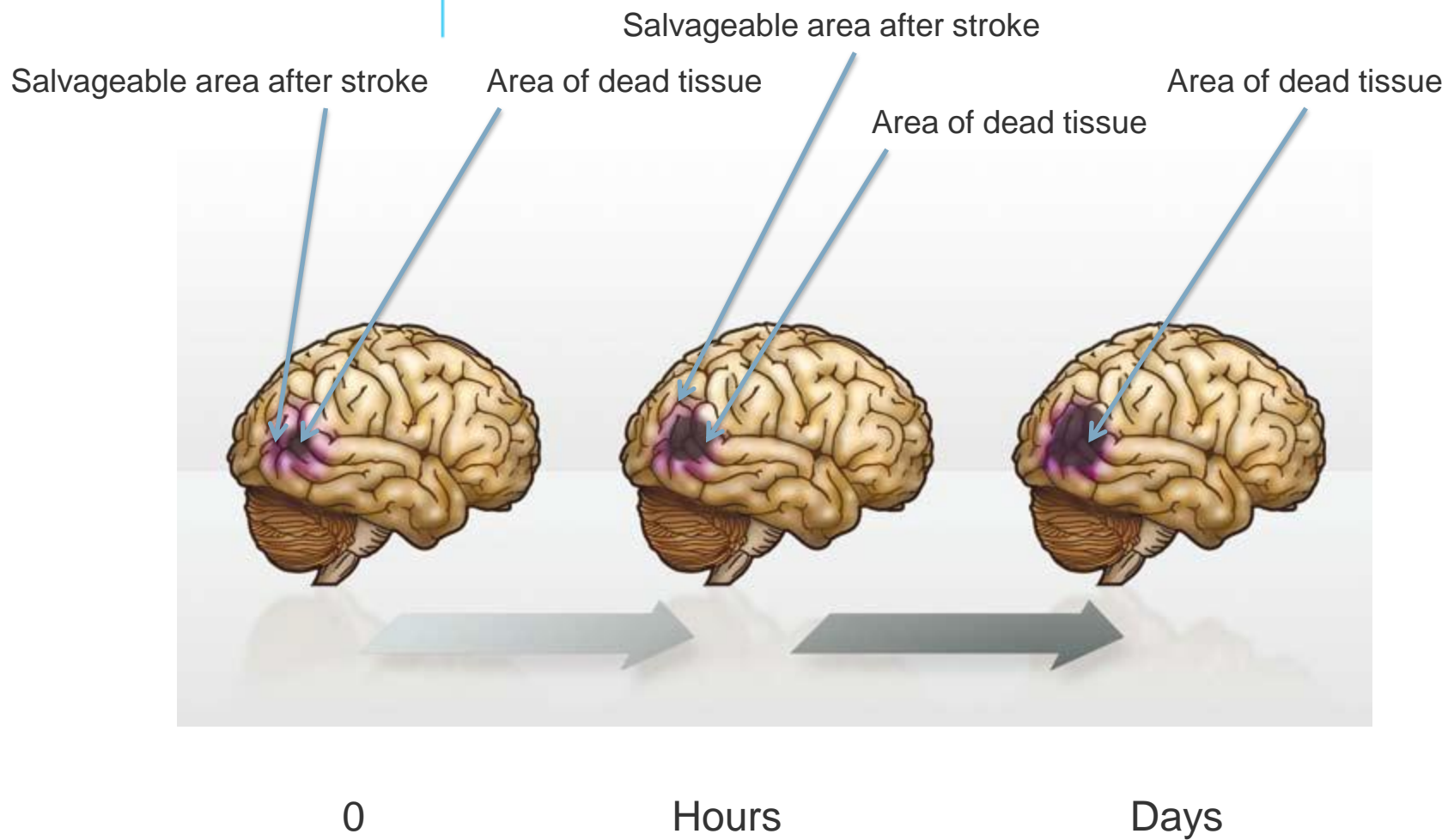
Module 1: Early Assessment

- All patients should undergo a neurological examination to determine focal neurological deficits and assess stroke severity using a **standardized stroke scale** (Evidence Level B)
 - NIHSS
 - CNS
- All patients should undergo **brain imaging** (MRI or CT) immediately and **vascular imaging of the brain and neck arteries as soon as possible** (Evidence Level A)
- All patients presenting within 48 hours of symptom onset or with persistent or fluctuating motor or speech symptoms should undergo **immediate vascular imaging for eligible patients** for revascularization (Evidence Level B)

Module 1: Early Assessment

- For patients not admitted to hospital refer to a designated Stroke Prevention Clinic or stroke specialist for further timely investigations and management (Evidence Level B)





Module 2B: Early Rx of Ischemic Stroke in Pts Eligible for tPA

- All patients with disabling acute ischemic stroke who can be treated within 4.5 hours of symptom onset should be evaluated without delay to determine eligibility for treatment with IV tPA (Evidence Level A)
- Telestroke networks should be implemented wherever acute care facilities do not have on-site stroke care expertise to provide 24/7 acute stroke assessment and treatment with tPA (Evidence Level B) or
 - Standardized protocols should be established to ensure a coordinated and efficient approach to telestroke delivery in the hyperacute phase of stroke to facilitate delivery of tPA in referring sites

Module 2C: Early Rx Ischemic Stroke in Pts not Eligible for tPA

- The best practices for these patients are identical to those of Module 2B **except for the administration of tPA.**

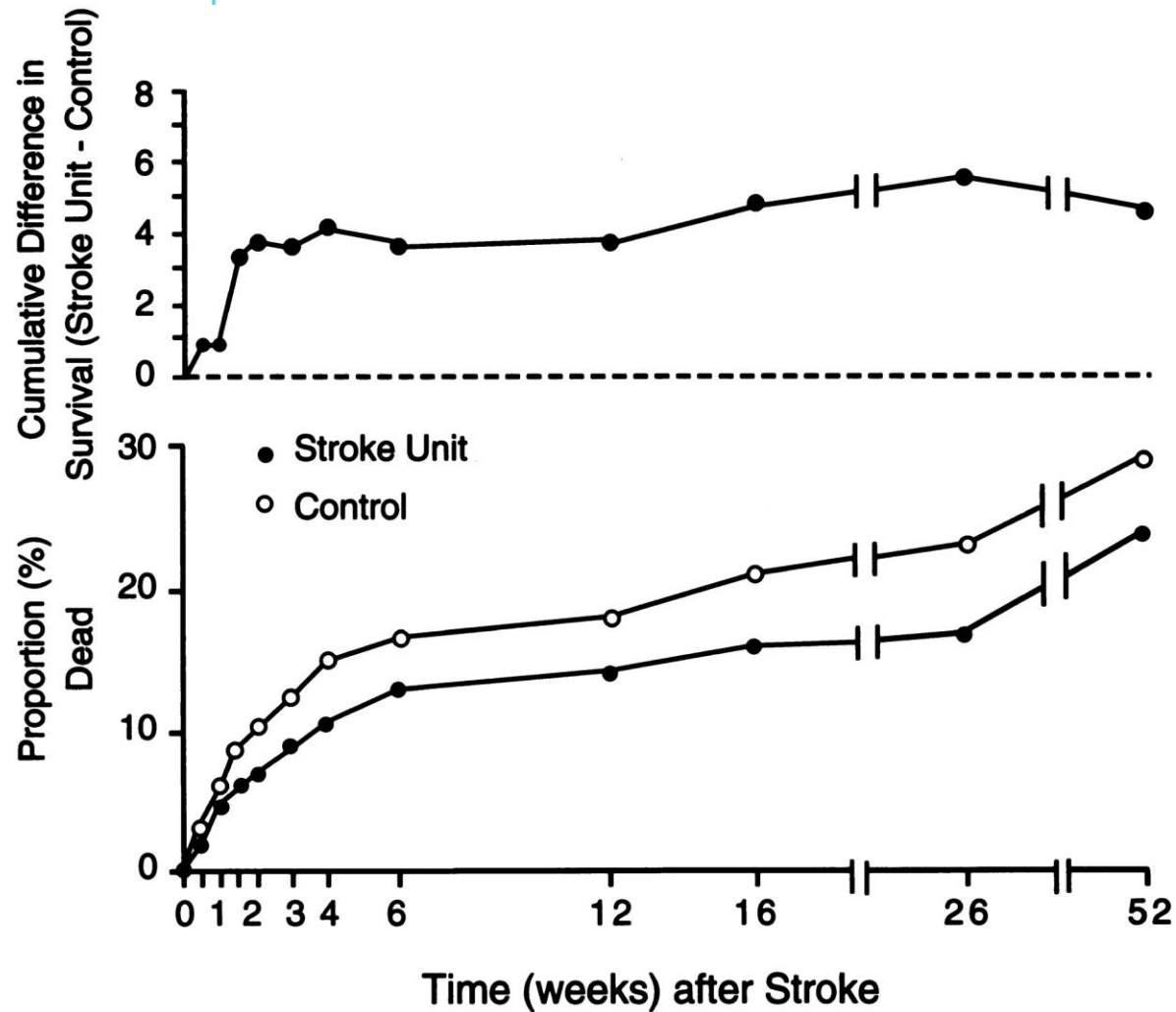
Module 2D: Early Treatment of Intracerebral Hemorrhage

- Pts with suspected ICH should undergo a CT or MRI **immediately** to confirm diagnosis, location and extent of hemorrhage if not already done in ED (Evidence Level A)
- Pts with acute ICH should be considered for **CTA** or other imaging modality to exclude an underlying lesion (Evidence Level B)
- Medically stable pts with acute ICH should be admitted to a **stroke unit or neuro/intensive care unit** and undergo interprofessional stroke team assessment to determine **rehab and other care needs** (Evidence Level B)

Module 2E: Unable to Determine

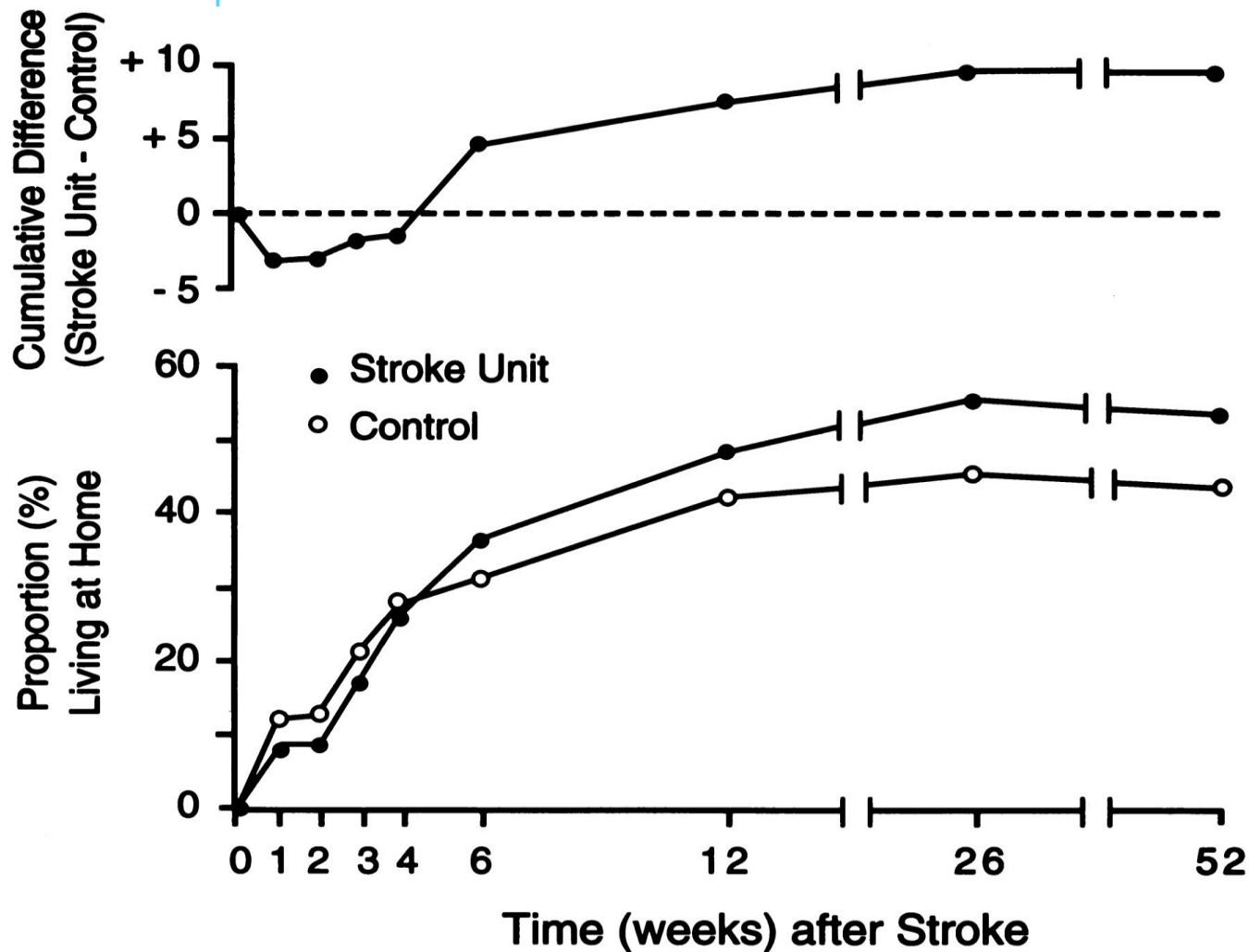
- Not specified as hemorrhagic or ischemic stroke patients that are not eligible for acute thrombolytic therapy
- It is believed that most of these pts have stroke-like symptoms usually due to ischemic stroke that is not evident on the initial CT scan in the ED
- The best practices for these pts are identical to Module 2B except for the administration of tPA

Proportion of patients known to be dead after the index stroke and cumulative difference between stroke unit and control subjects.



Stroke Unit Trialists' Collaboration Stroke 1997;28:2139-2144

Proportion of patients living at home after the index stroke and cumulative difference between stroke unit and control subjects.



Stroke Unit Trialists' Collaboration Stroke 1997;28:2139-2144

Module 4A – Acute IP Admission of Ischemic Stroke Pts

- Patients should be admitted to a **specialized, geographically defined** hospital unit dedicated to the management of stroke patients. (Evidence Level A)
- The core stroke unit team should consist of healthcare professionals with stroke expertise in medicine, nursing, occupational therapy, physiotherapy, speech-language pathology, social work, and clinical nutrition. (Evidence Level A)
- Stroke pts should be **NPO** and have swallowing ability screened using a simple, valid, reliable bedside testing protocol as part of initial assessment **before initiating oral** medications, fluids or food (Evidence Level B)



Module 4A – Acute IP Admission of Ischemic Stroke Pts cont'd

- All stroke patients admitted to hospital with acute stroke should be mobilized early and as frequently as possible and preferably **within 24 hours** of stroke symptom onset unless contraindicated (Evidence Level B)
- Therapy to promote recovery of motor impairments should commence within **48 hours of stroke**
- Alpha FIM® should be completed on **day 3 (OSN Stroke Reference Group)**
- **LOS of 5 days** for ischemic stroke pts is recommended (OSN)
- All stroke pts with vascular risk factors and clinically evident stroke should be considered at high risk of vascular cognitive impairment and screened for cognitive impairment (Evidence Level B)

Module 4B: Acute Inpatient Admission of ICH Pts

- The care of these patients is identical to that for ischemic stroke patients as outlined in Module 4A except for the following:
 - The recommended length of stay is **7 days (OSN)**
 - There is insufficient evidence on the safety and efficacy of anticoagulant deep vein prophylaxis after ICH.
 - Antithrombotics and anticoagulants should be avoided for at least 48 hours after onset



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Inpatient Rehabilitation Modules

“Time is Function”

- Brain is “primed” to “recover” early post-stroke
- Delays in starting rehab are detrimental to recovery (Biernaskie et al., 2004)
 - Day 5 admission = marked improvement
 - Day 14 admission = moderate improvement
 - Day 30 admission = no improvement vs. controls
- A single day delay in starting neuro-rehabilitation affects the functional prognosis of patients at discharge. This delay is also associated with increased rates of institutionalization at discharge. (Neurología. 2012;27: 197—201)

Therapy is Cheap; LOS is Not

- Outpatient therapy improves short-term functional outcomes
- It is relatively inexpensive (1 PT/1 OT/0.5 SLP/0.5 SW = cost of 1 inpatient rehab bed)
- Reduces re-hospitalization and allows earlier discharge home
- Estimated savings is \$2 for every \$1 spent on outpatient therapies
- **Only 3% of stroke rehab referrals from acute care were sent to day hospital / ambulatory care***

*E-Stroke data 2009/2010

Module 5: Admission to Inpatient Rehabilitation

- This module identifies best practices for inpatient rehabilitation of stroke pts.
- In general, these are pts with AlphaFIM® score of 40-80. Age, availability of a caregiver, severity of cognitive/perceptual needs, severe aphasia/dysphagia and profound inattention/neglect are other considerations

Module 5: Admission to Inpatient Rehabilitation

- All pts who require rehabilitation should be referred to a specialist rehab team in a geographically defined unit as soon as possible after admission (Evidence Level A)
- Procedures should enable **admission 7 days/week** (OSN)
- The interprofessional rehab team should consist of:
 - physician, nurse, PT, OT, SLP, psychologist, SW, recreation therapist, pharmacist, pt and caregivers (Evidence Level A)
- Recommended staffing ratios: (OSN)
 - PT/OT: **1 each per 6 inpt beds**
 - SLP: **1:12***

Module 5: Admission to Inpatient Rehabilitation

- Stroke pts should receive at least **3 hours of direct** task-specific therapy per day (Evidence Level A) at **least 6 days a week** (OSN)
- The FIM tool should be used as the standard assessment tool (OSN)
- Pts with **moderate or severe** stroke who are rehab ready and have rehab goals should be given the opportunity (Evidence Level A)



Module 6 & 7: Early Supported D/C & Outpatient/Community Rehabilitation

- These modules will be developed as part of the ongoing phase 2 work of the Expert Panel



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Indicators and Performance Measurement

Indicators & Performance Measurement

- Intent is for alignment with recommended practices
- Allows MoH to measure changes in clinical practices resulting from the QBP funding model
- MoH has proposed an “Integrated Scorecard” to gather similar indicators from each QBP clinical area
- Recommendations for indicators were made a very “high” level and draw on existing Ontario stroke performance work
 - Ontario Stroke Audit
 - Ontario Stroke Evaluation Report and scorecard
 - 11/13 indicators potentially feasible to measure short-term
 - 7 currently measured/reported by OSN

Recommended Stroke Performance Indicators

Proposed Indicator	Current Performance	Target Performance
Percentage of stroke/TIA pts admitted to a LTC facility within 1 year of stroke/TIA inpatient hospitalization	N/A	3.2%
30 day stroke/TIA risk-adjusted mortality	12.2%	Provincial rate
90 day stroke/TIA readmission rate following hospitalization for stroke/TIA	6.2%	Provincial rate
Proportion of pts with an AlphaFIM® (target completion day 3) of 40-80 d/c to inpt rehab and > 80 d/c to outpatient/community rehab	N/A	TBD
Discharge disposition of TIA / stroke patients from acute care:	41% home w/o services 14% home w/ services 24% IP rehabilitation 13% CCC / LTC	TBD TBD 43% (excludes TIA) 3.7%
% of RPG 1150, 1160 (mild) and moderate and severe stroke patients (RPG 1120,30,40 and RPG 1100,1110, respectively) receiving inpatient rehab	Mild – 19% Moderate – 47% Severe - 34%	49% (severe)

Recommended Stroke Performance Indicators

Proposed Indicator	Current Performance	Target Performance
Hours of rehab therapy provided in IP rehab	N/A	3hrs/day
% of inpatient rehabilitation patients achieving target RPG LOS	RPG 1160 - 0% RPG 1150 – 12% RPG 1140 – 26% RPG 1130 – 43% RPG 1120 – 63% RPG 1110 – 55% RPG 1100 – 49%	RPG 1160 – 0 days RPG 1150 – 8 RPG 1140 – 14 RPG 1130 - 25 RPG 1120 – 36 RPG 1110 – 42 RPG 1100 - 49
% of TIA / stroke patients treated on a stroke unit (including neuro/ICU) for at least 80% of their LOS	38%	87%
Proportion of ischemic stroke pts arriving in ED within 3.5 hours who are eligible & received TPA	32%	61%
% of Stroke/TIA D/C'd on anti-thrombotics	94%	98%
Proportion of IS/ TIA pts who received brain imaging within 24 hours of ED arrival or proportion of pts with ischemic stroke with anterior circulation event who received Doppler US or CT Angiography, or MRA within 24 hrs of admission	90% (neuroimaging) 75% (carotid Imaging)	98% (neuroimaging) 90% (carotid Imaging)



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Next Steps and Implementation Considerations

QBP Current Status and Next Steps

- Working with Ministry on pricing and implementation
- Start work on phase 2 (outpatient/community)
- Keep the Regional Stroke Networks informed on progress – will disseminate to stakeholders

Implementation Considerations

Critical Mass of Stroke Units - Consider Consolidation

- Stroke volumes should be at least 165 ischemic stroke patients per year per organization.
- Greater volumes are likely to confer additional benefits
- Analysis of the Discharge Abstract Database, 2002–2009 in the recent 7 years of Ontario DAD data show that hospitals admitting < 130 ischemic stroke patients/year had 38% higher odds of a 30-day mortality compared to hospitals admitting 205–470 ischemic stroke patients/year.

So what does this mean for me?

- Are the best practices in place?
- If not get started don't wait for pricing. If yes help others.
- Use your centers/regional data to model what will happen after implementation of QBP. e.g.
 - how many bed days will you have if you continued to care for same volumes at 5 and 7 days in Acute care. With 92% occupancy how many beds do you need to operate daily?
 - Rehab- with shorter LOS and same volumes how many beds will you operate?

So what does this mean for me?

- Discuss with your LHIN what should happen regionally
- Reach out to your Regional Stroke Network
- Network &/or plan with colleagues/leading centres
 - N.B.- Toronto, Waterloo Wellington, HNHB, North Simcoe Muskoka LHINS are all considering/implementing some form of stroke care consolidation
- Access on-line resources



Canadian **Best Practice**
Recommendations for
Stroke Care



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RECOMMENDATIONS:

- Overview
- Methods
- Knowledge (KT)
- Awareness
- Prevention
- Hyperacute
- Acute
- Rehabilitation
- Transitions
- Cross-Continuum
- References
- Appendices

Recommendations will prevent stroke patients from falling through cracks

OTTAWA - The 2010 Canadian Best Practice Recommendations for Stroke Care emphasize the need to prevent stroke patients from falling through the cracks as they move from the ER to in-hospital care to rehabilitation therapy and back to the community.

» Read more



NEWS AND EVENTS:

March 7-May 1, 2011
Abstracts accepted for the Canadian Cardiovascular Congress

April 30, 2011
2011 Hypertension Collaborative Toronto, Ontario

May 15, 2011
Abstract Deadline for the Canadian Stroke Congress

May 24-27, 2011
European Stroke Conference Hamburg, Germany

TRANSITIONS OF CARE



CROSS-CONTINUUM OF STROKE MANAGEMENT

PATIENT GUIDES

 A Patient's Guide to Canadian Best Practice Recommendations for Stroke Care

 Getting on With the Rest of Your Life After Stroke

RESOURCES:



Direct Access to Specific Best Practice Recommendations

Up-to-date Conference and Research Events for Health Professionals in Stroke Care

Real-Time Updates on Key Stroke Topics and Best Practice Updates

Quick Access to Knowledge Translation Tools and Resources

Front Page Access to Family and Patient Guides and Resources for the General Public



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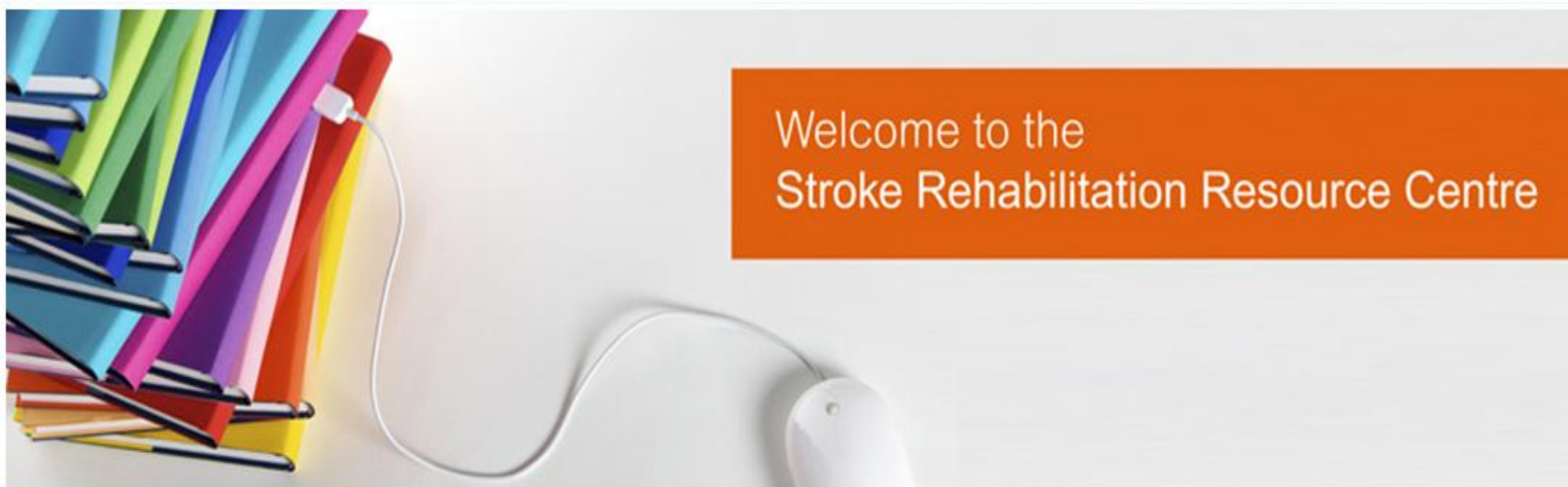
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Stroke Rehabilitation
Standards of Care

Health System Level
Tools and Guidelines

Clinical Tools and
Resources for
Implementation

Educational
Resources

Success Stories
Inventory

Performance
Indicators

<http://www.ontariostrokenetwork.ca/rehab.php>





- Please email info@ontariostrokenetwork.ca with your position title and LHIN/Stroke Region
- Please forward additional questions regarding the presentation to info@ontariostrokenetwork.ca