Kingston Health Sciences Centre
Centre des sciences de la santé de Kingston

STROKE NETWORK *of* Southeastern Ontario

Regional Paramedic Program for Eastern Ontario

Hyperacute Stroke Care Highlights & Updates

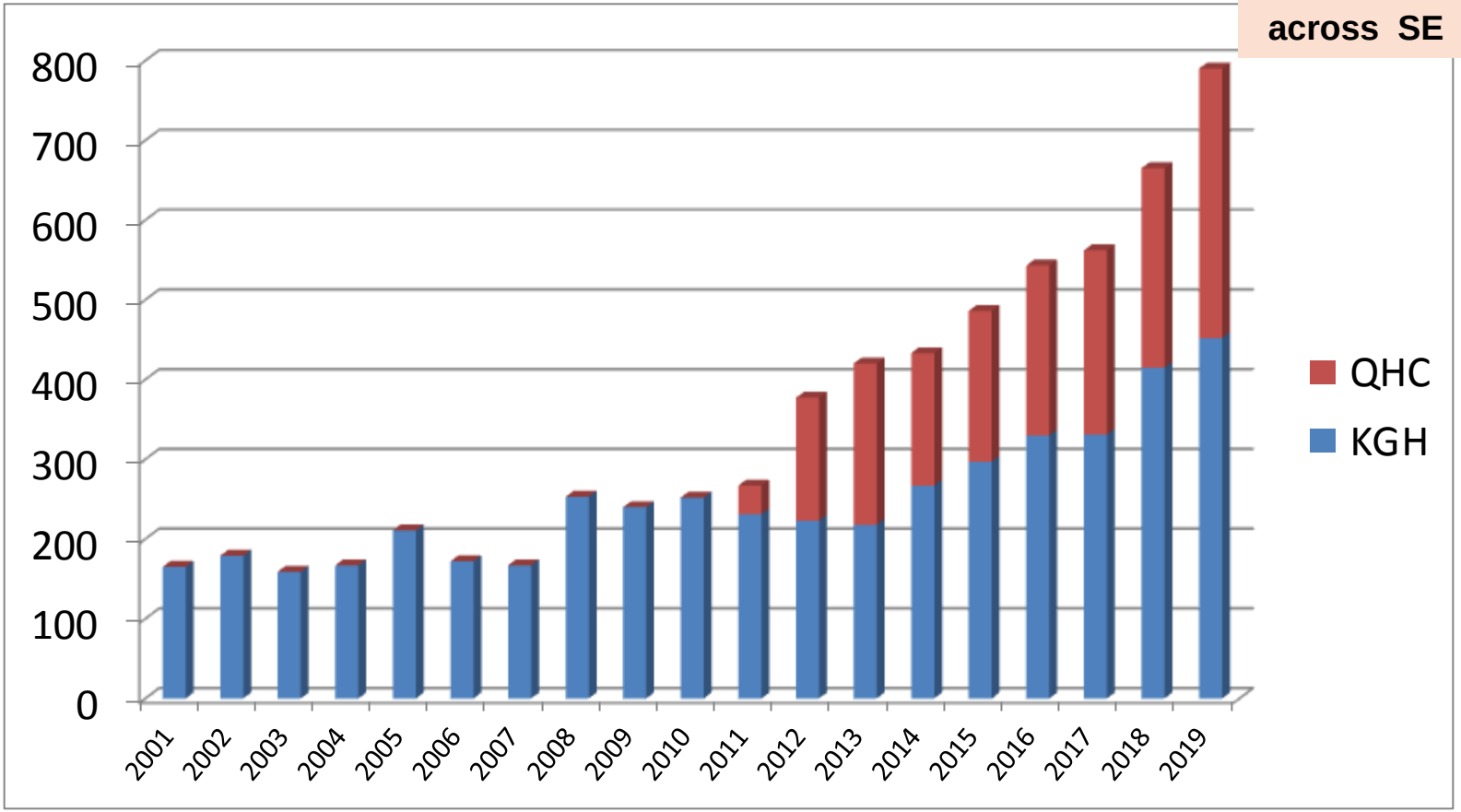
How are we doing? What's new?

Nov 2019 Stroke Symposium

Dr. Al Jin, Mark Schjerning, Colleen Murphy, Laura McDonough

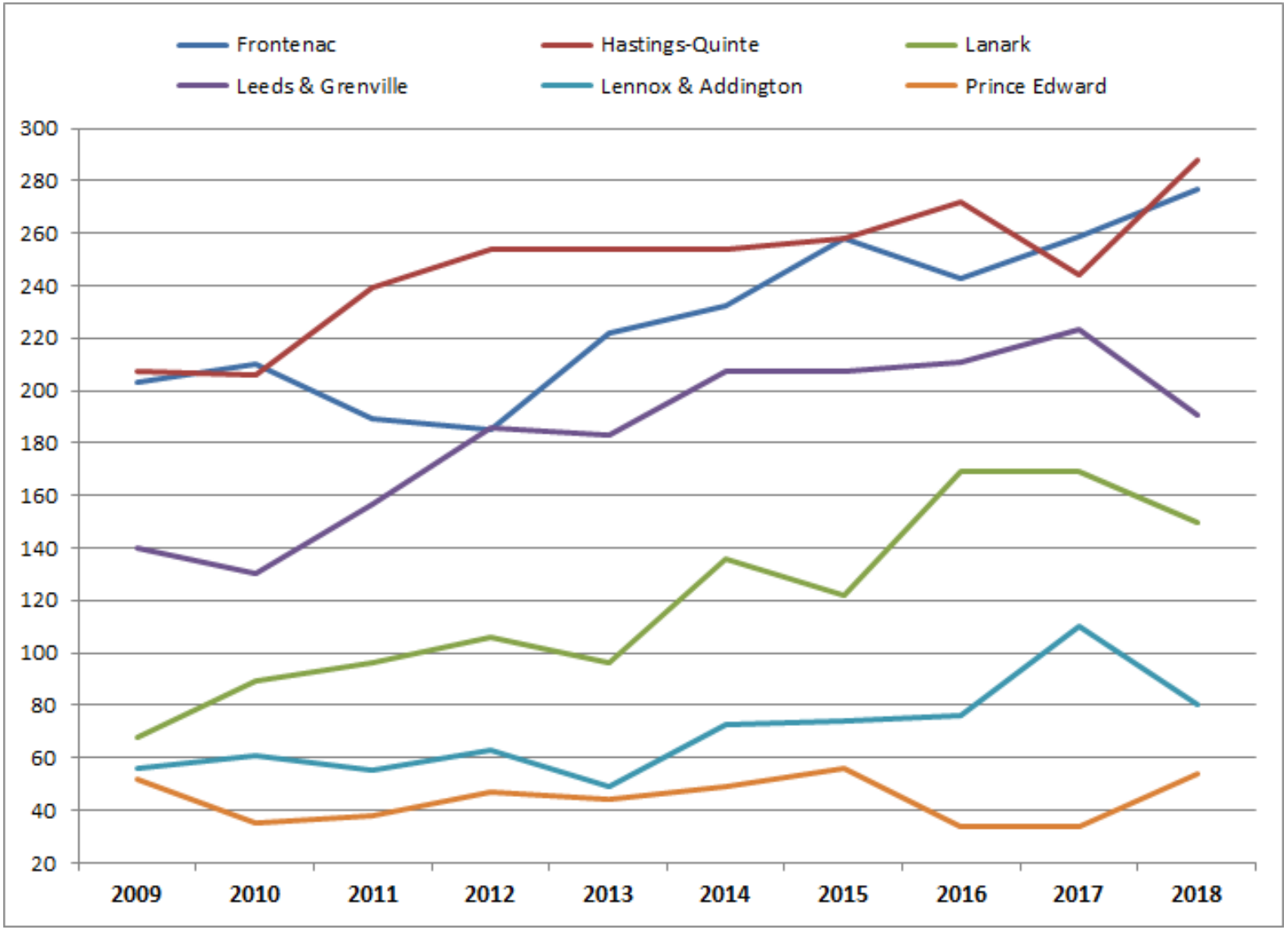
SEO ASP Activations KGH/QHC by Fiscal Year

Total of 790 activations across SE

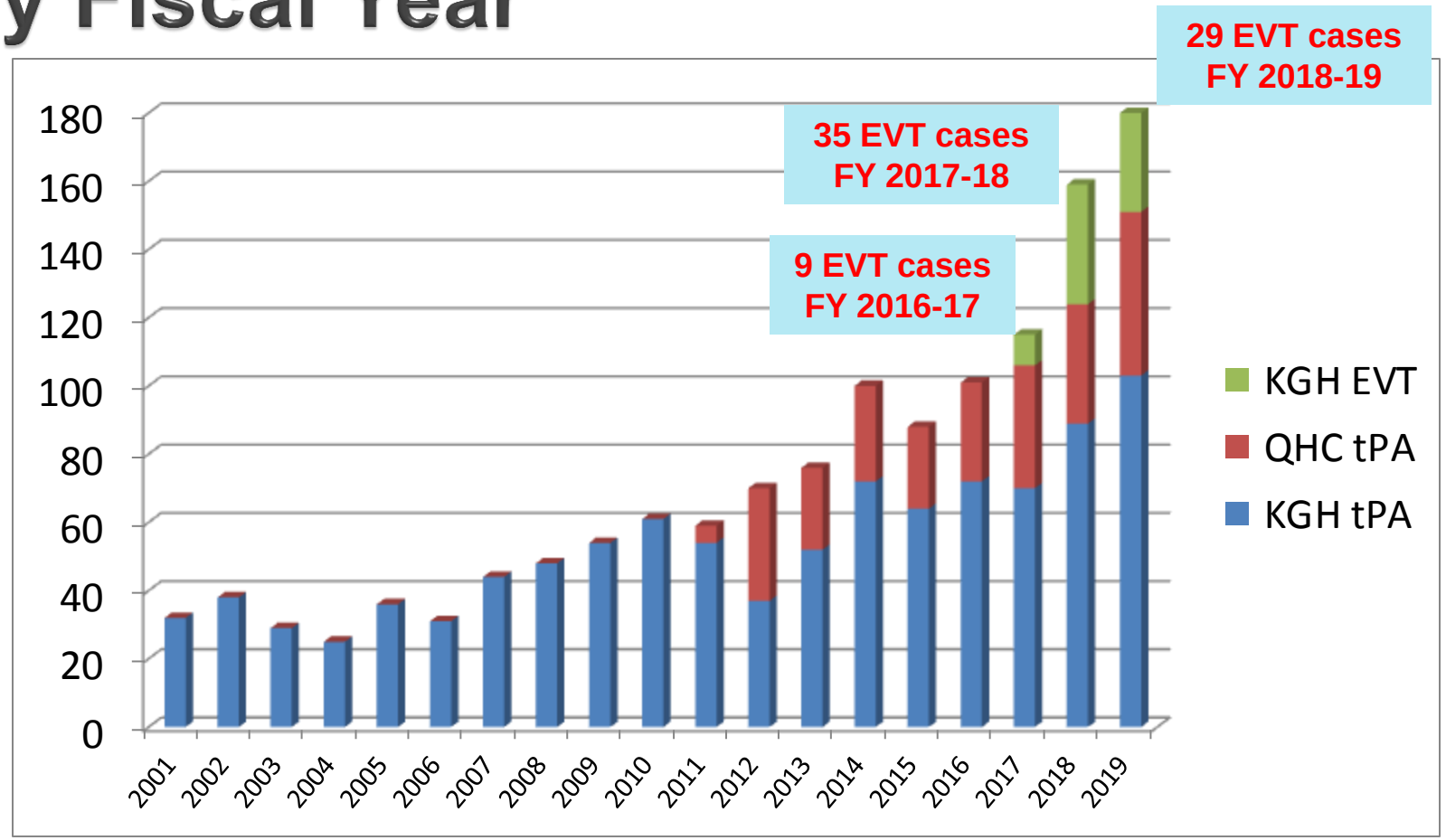


2018-19 – In- hospital stroke protocol activations
41 at KGH; 23 at QHC = 64 increased from 49 last year

Growth in Stroke Protocols by Paramedic Service – past 10 years



KGH/QHC tPA and EVT Volumes by Fiscal Year



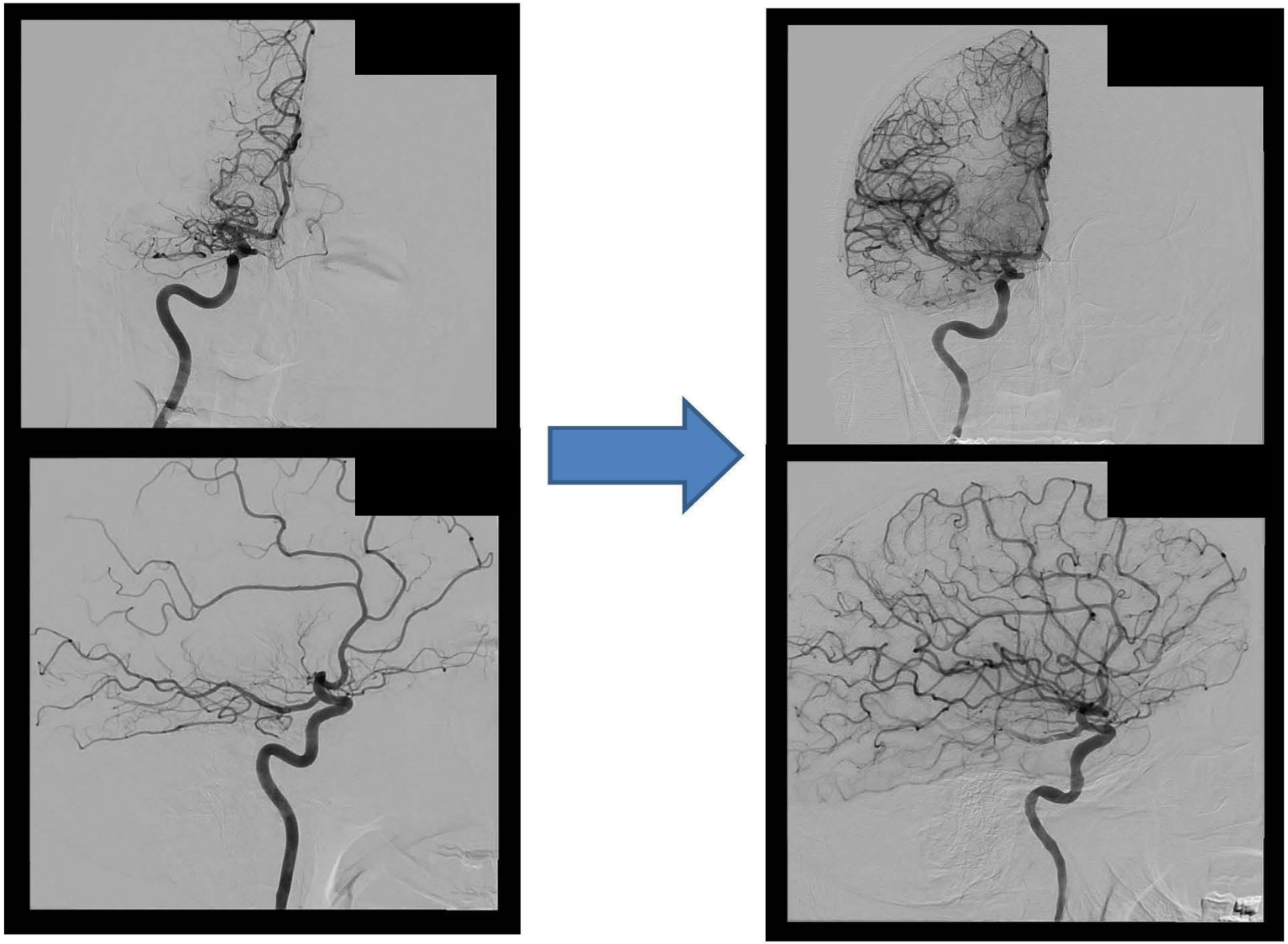
Median DTN times

2017-18 Report Card: KGH 24 mins; QHC 65 mins

2019-20 Local Data: KGH 25 mins; QHC 45 mins (most recent)

Key factors: EMS pre-notification; stay on EMS stretcher to CT; tPA in CT suite !!

KHSC EVT Outcomes



KHSC EVT Current Process Times

100th case in October

KHSC median times (April - Sept 2019)

- Door to CT: **11 mins** (ON target 15 mins)
- Door to Needle: **23 mins** (ON target 30 mins)
- Door to Groin Puncture: **42 mins** (ON target 60 mins)
- Door to First Reperfusion: **55 mins** (ON target 90 mins)

Time is Brain

What you do makes a difference!!

- Paramedic pre-notification- notify as soon as en route
- Send information ahead – DOB/name via cell phone
- IV access – Start 2 IVs
- Patient stays on paramedic stretcher to CT

- Team action!
- tPA in CT suite
- Communication!

KHSC Current Outcomes

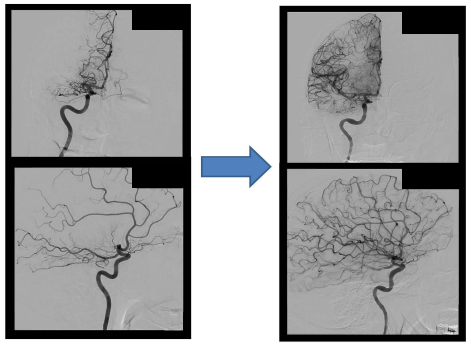
Target*: 46% with 90 day Modified Rankin Scale (MRS) score of ≤ 2 (minimal to no disability)
***based on Hermes Meta-Analysis**

<u>Most recent analysis April to Oct 2019:</u>

34 anterior cases

- 2 to 8 cases per month
- Geographic distribution:

  HPE – 10; KFLA – 15 (4 from L&A); LLG – 6;
  2 out of region; 1 out of province



<u>Modified Rankin Score at DC or 90 days (some still improving)</u>

- 16/34 (**47.1%**) with minimal to no disability
- 7/34 (20.6%) with moderate disability
- 6/34 (17.6%) with severe disability
- 5/34 (**14.7%**) mortality (all stroke-related)

Hôpital Hotel Dieu Hospital

Hôpital Général de Kingston General Hospital

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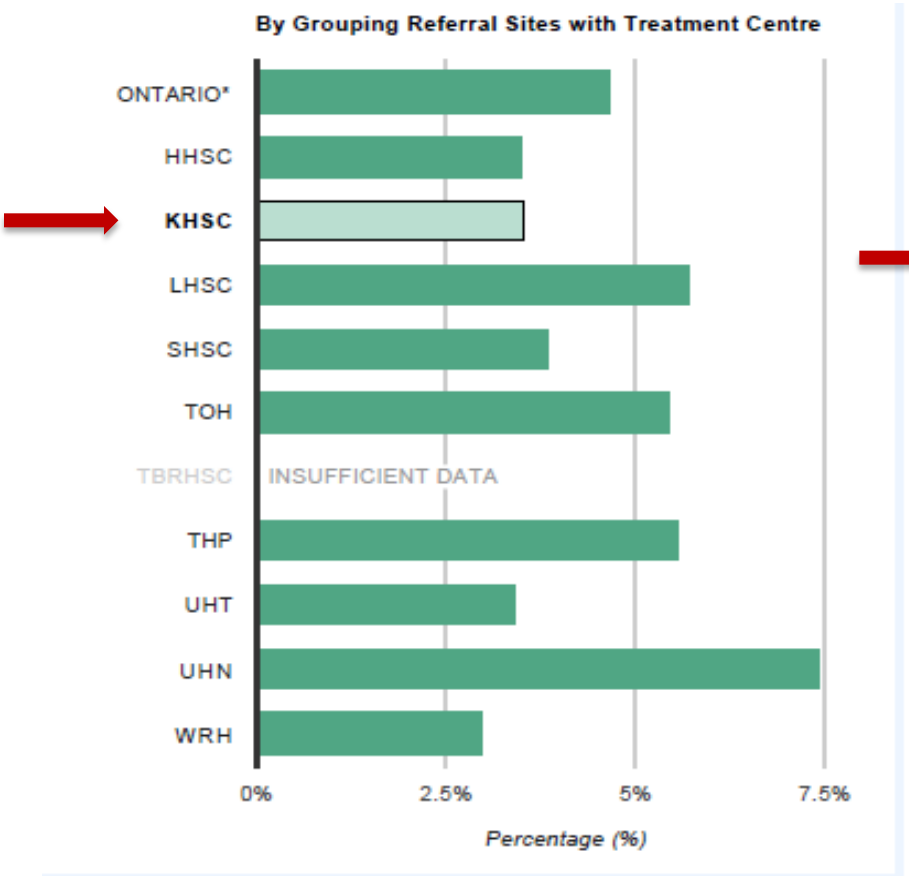
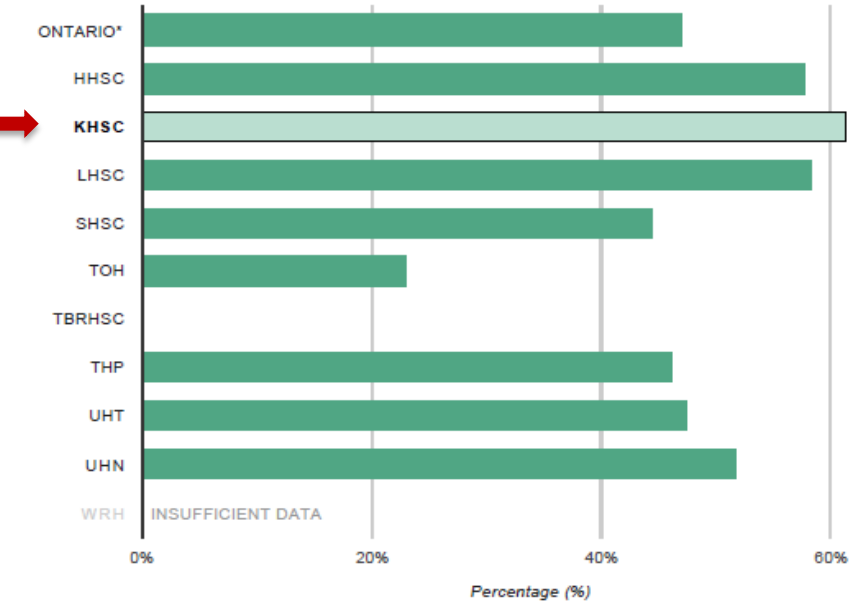
2018-19 CorHealth Ontario EVT Report Released Oct 2019

ACCESS

Proportion of Ischemic Stroke Patients who Received an EVT Procedure



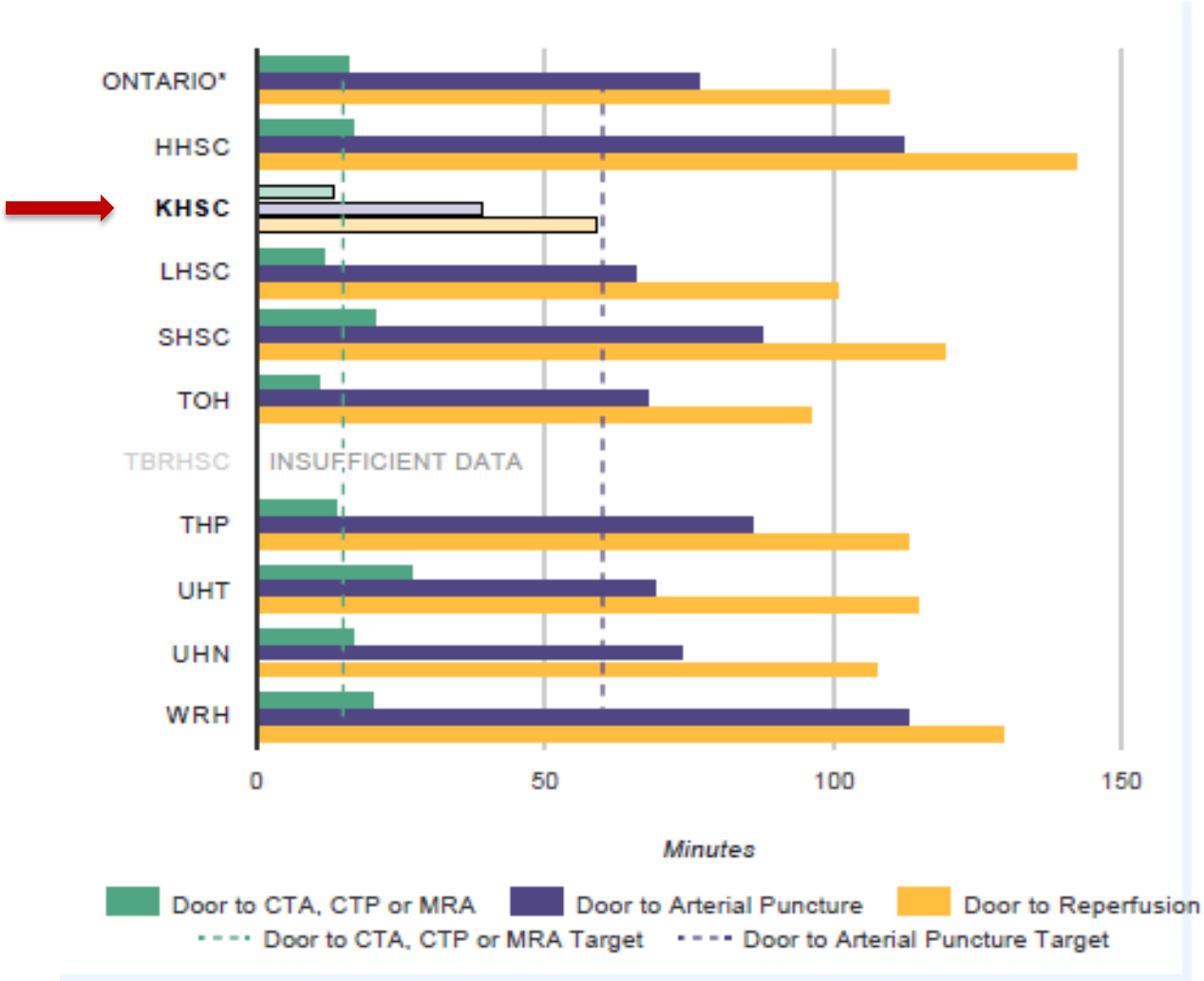
Proportion of Ischemic Stroke Patients Transferred from a District Centre for EVT who Received an EVT Procedure



2018-19 CorHealth Ontario EVT Report Released Oct 2019

PROCESS TIMES

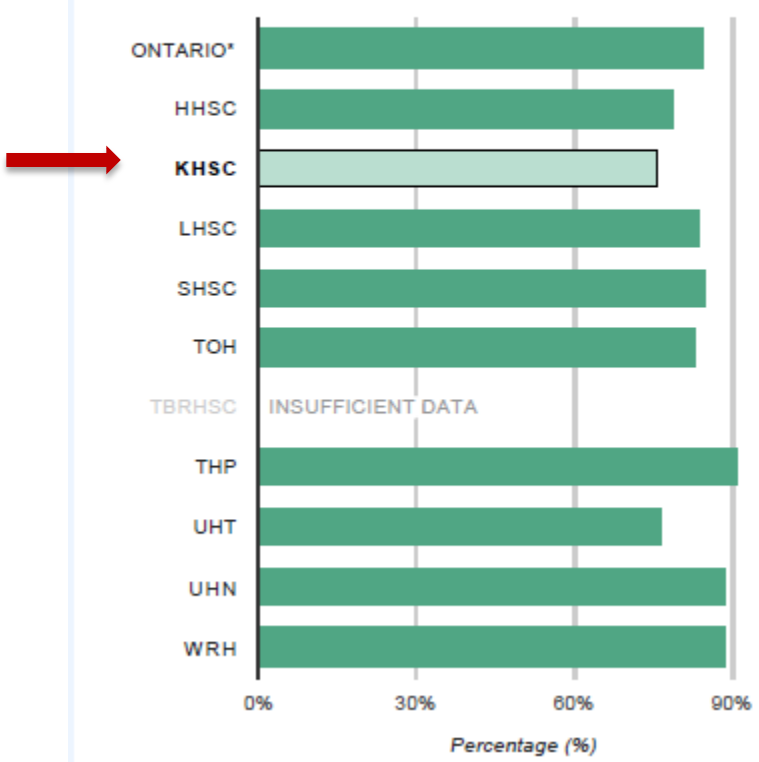
Median Time from ED Arrival to Imaging, Arterial Puncture & Reperfusion



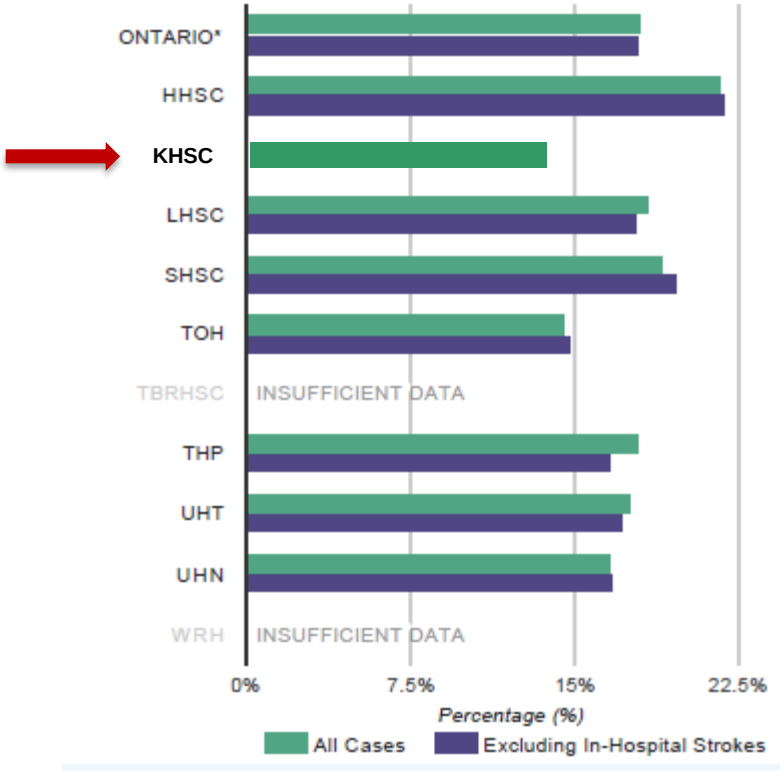
2018-19 CorHealth Ontario EVT Report Released Oct 2019

OUTCOMES

Proportion of EVT patients successfully reperfused

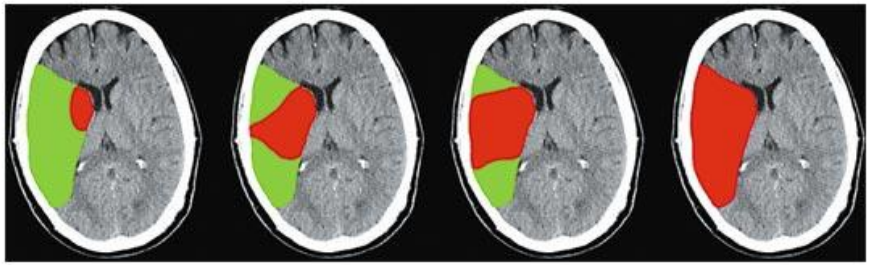


30-day all-cause mortality rates for patients who received EVT



Median 54/90 days at home – ON rate 52/90

KHSC EVT What's new?



- DAWN and DEFUSE-3 trials indicate extended time window for EVT beyond 6 hours in select cases
- Hyperacute Best Practice Guidelines summer 2018 include expanded time window for EVT
- Eligibility based on quantifiable measure of mismatch between ischemic core and penumbra
- "RAPID" advanced CT perfusion software installed at KHSC Jan 2019 allows evidence-based approach
- Cases are now selected for EVT beyond 6 hours
- NOTE: Quinte has also recently purchased and installed "RAPID" software.

Revisions to Stroke Walk-in/Transfer Protocols:

"ACT-FAST" large vessel occlusion screening tool for use in 6-24 hour timeframe

TRIAGE TOOLs for Acute Stroke < 24 hours

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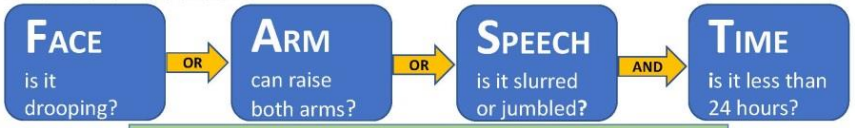
FAST Stroke Screen:



- ✓ One or more symptoms from Face, Arm, Speech **AND**
- ✓ LAST SEEN NORMAL <24 hours

IF ≤ 6 hours, refer to Pink Poster to activate Acute Stroke Protocol
IF 6 -24 hours, Complete **ACT-FAST**

ACT-FAST Stroke Screen:

"ARM" (one-sided arm weakness)

Position both arms at 45^0 from horizontal with elbows straight
POSITIVE TEST : One arm falls completely within 10 seconds

For patients that are uncooperative or cannot follow commands:
POSITIVE TEST:
Witness minimal or no movements in one arm & movements in other arm

Proceed if Positive

If **RIGHT** ARM is weak

"CHAT" (Severe language deficit)
POSITIVE TEST: Mute, speaking incomprehensible, or unable to follow simple commands

If **LEFT** ARM is weak

"TAP" (gaze & shoulder tap)
Stand on patient's weak side
POSITIVE TEST : Consistent eye gaze away from weak side
Otherwise
Tap shoulder & call name
POSITIVE TEST : Does not quickly turn head & eyes to you

Proceed if Positive

Physician will assess EVT Eligibility (Positive if All Criteria Met)

1. Deficits are NOT pre-existing (mild deficits now worse are acceptable as true deficits)
2. Living at home independently– must be independent with hygiene, personal care, walking
3. Does NOT have stroke mimics: seizure preceding symptoms, Hypoglycemia = glucose less than 2.8 mmol/L, Active malignancy with brain lesions

Proceed if Positive

Refer to Pink Poster to Activate Acute Stroke Protocol

2019-04-29

Additional Tips:

If patient is uncooperative or cannot follow commands & you clearly witness minimal or no movements in one arm and normal or spontaneous movements in the other arm, THEN proceed to next ACT-FAST Step

If both arms are similarly weak, or testing is clearly affected by shoulder problems or pain, notify ED physician

- Try to use clues to guess time last seen well – did someone talk to or call patient?
- For suspected Wake-Up symptoms, did patient get up overnight? Were they normal when first getting up?
- Negative eligibility if time of onset is > 24 hours

- If there is uncertainty as to time of symptom onset or whether a patient meets the ACT-FAST or Acute Stroke Protocol criteria, the ED physician can contact the neurologist on call for stroke for consultation

USED by ED STAFF across SEO

Adapted from "Ambulance Clinical Triage for Acute Stroke Treatment" Zhao et al. Stroke 2018; 49: 945-951

Walk-in Protocol Revision

Acute Stroke Protocol of Southeastern Ontario 11/04/2019

Emergency Transfer Guide
Patients who present with features of an acute ischemic stroke may be eligible for thrombolytic therapy and/or endovascular thrombectomy at Kingston General Hospital.

Inclusion Criteria

- ☐ Patient is suspected of having ischemic stroke.
- ☐ Clear and credible time of symptom onset can be established and patient can reach KGH:
  - Within 6.0 hours of onset
    OR
  - Within 6-24 hours of onset if ACT-FAST screen is positive

  *Time of onset is the time patient was last seen well.
  *Time is Brain. The sooner patient arrives at KGH, the greater potential for better outcomes.
  *KGH Stroke team requires 1 hour from KGH ED door to treatment.
- ☐ Pregnancy is **NOT** a contraindication.
- ☐ Age < 18 years is **NOT** a contraindication.

Exclusion Criteria

- ☐ Unknown onset of symptoms or patient last seen well > 24hours.
- ☐ Complete resolution of neurological signs (TIA).
- ☐ Serious co-morbidity with limited lifespan (e.g., advanced cancer, advanced dementia).
- ☐ If uncertain about whether patient meets Acute Stroke Protocol criteria, contact Neurologist on Call for Stroke at KGH

The following steps are recommended if the patient meets eligibility criteria and is stable for transfer:

Step 1 Arrange for ambulance transfer by calling dispatch.
Inform the dispatcher that patient fits **"Acute Stroke Protocol"**

Step 2 Call KGH Emergency Department. Ask to speak to the Charge Nurse and inform them you have a patient that meets the **"Acute Stroke Protocol"**

Phone (613) 549-6666 extension 7003

Step 3 Complete the following if time permits **(never delay transfer to complete):**

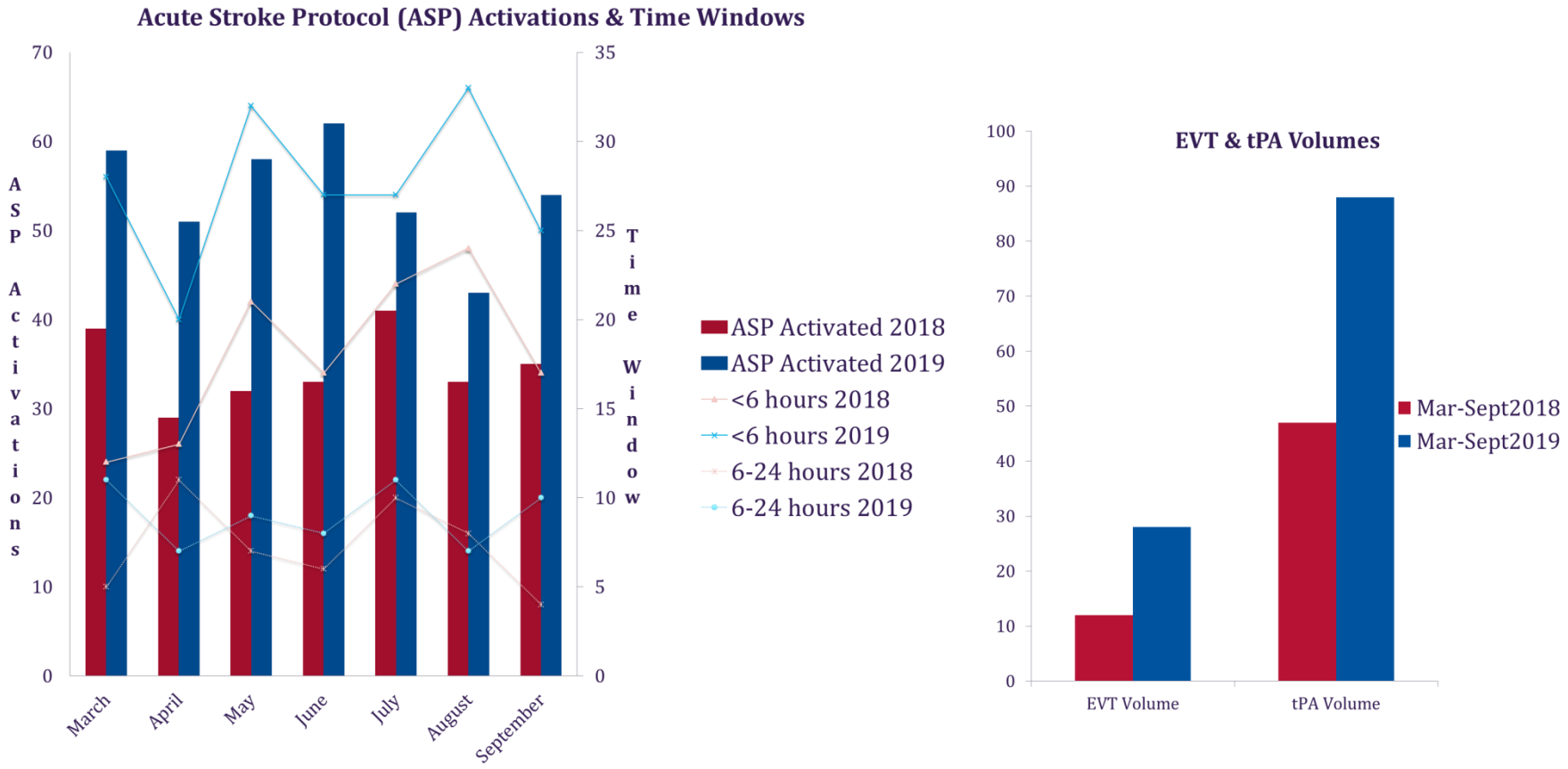
A. Preferred:
- 1 IV (no glucose solutions unless required)
- 1 saline lock started with an 18 gauge needle in the right antecubital fossa unless contraindicated

B. Optional (If time still permits):
- CBC, electrolytes, urea, creatinine, troponin, INR, PTT, glucose, pregnancy test (βHCG) if indicated
- ECG

Step 4 Fax blood work and all relevant patient information to KGH Emergency Department:

Fax (613) 548-2420

Use of the ACT-FAST in SE EDs



Qualitative Feedback on Use of ACT-FAST and New Process

ED Nurses Comments

- Positive experience using ACT-FAST as part of ASP
- ACT-FAST is simple to use
- ACT-FAST posters were helpful
- Pleased with ability to activate ASP
- Less delay for walk-in activations

Physicians Comments

- Going Well
- Most ASPs being called appropriately
- Called more often for uncertainty re left-sided weakness

Stroke in the Posterior versus Anterior Circulation

What to look for instead of "FAST":

- Crossed motor/sensory signs
- Gaze palsy or one eye deviated to one side
- Unilateral limb ataxia
- Walking tilted/off to one side

(Also)

- Dysarthria
- Vertigo

Paramedic Prompt Card

BLS 3.2 Stroke Paramedic Prompt Card as of Sept 2019: *"most appropriate centre"*

Emergency Health Regulatory and Accountability Branch

Paramedic Prompt Card for Acute Stroke Bypass Protocol

This prompt card provides a quick reference of the *Acute Stroke Protocol* contained in the *Basic Life Support Patient Care Standards* (BLS PCS). Please refer to the BLS PCS for the full protocol.

Indications under the Acute Stroke Protocol

Redirect or transport to the closest or most appropriate Designated Stroke Centre* will be considered for patients who meet **ALL** of the following:

1. Present with a new onset of at least one of the following symptoms suggestive of the onset of an acute stroke:
    a. Unilateral arm/leg weakness or drift.
    b. Slurred speech or inappropriate words or mute.
    c. Unilateral facial droop.
2. Can be transported to arrive at a Designated Stroke Centre within 6 hours of a clearly determined time of symptom onset or the time the patient was last seen in a usual state of health.

*A Designated Stroke Center is a Regional Stroke Centre, District Stroke Centre or a Telestroke Centre regardless of EVT capability.

Contraindications under the Acute Stroke Protocol

ANY of the following exclude a patient from being transported under the Acute Stroke Protocol:

1. CTAS Level 1 and/or uncorrected airway, breathing or circulatory problem.
2. Symptoms of the stroke resolved prior to paramedic arrival or assessment**.
3. Blood sugar <3 mmol/L***.
4. Seizure at onset of symptoms or observed by paramedics.
5. Glasgow Coma Scale <10.
6. Terminally ill or palliative care patient.
7. Duration of out of hospital transport will exceed two hours.

**Patients whose symptoms improve significantly or resolve during transport will continue to be transported to a Designated Stroke Centre.

*** If symptoms persist after correction of blood glucose level, the patient is not contraindicated.

CACC/ACS will authorize the transport once notified of the patient's need for redirect or transport under the Acute Stroke Protocol.

Ontario

What's new for paramedics?

- Under 6 hr time window - no change to bypass protocol in SE region – still go to closest stroke centre
- After 6 hr time window, paramedic can use the ACT-FAST or other LVO screen to give heads up to local ED - *"ACT-FAST positive"*
- Paramedics may be asked to transfer on stroke protocol to Kingston
- Reminder: Local ED needs to call Dispatch
- Continue to pre-notify and call in by cell to provide name / DOB

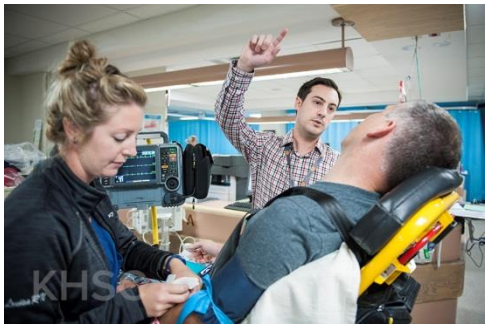
DISCUSSION

How is it going? – any process issues?

Pick one point that's not clear, what is it?

Have you encountered any barriers?

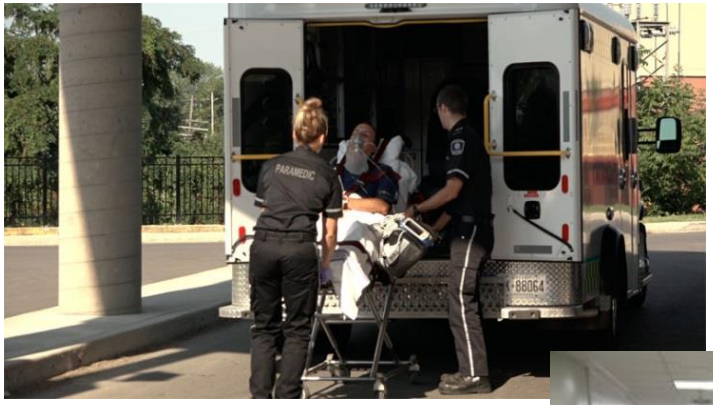
Any experiences to share?

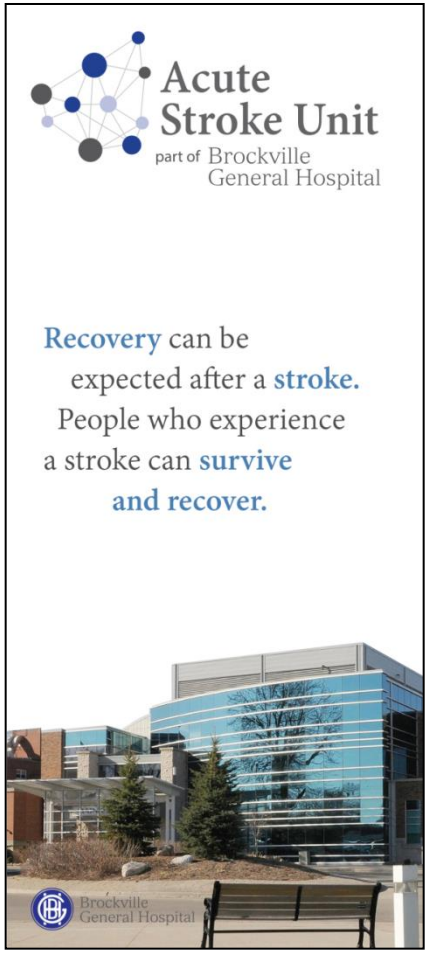


Reminders:

- Time is Brain
- Treatment possible to 24 hours
- Actively seek to identify stroke
- ED to contact dispatch for transfers
- Timely communication!!
  - pre-notification; ED to ED; within ED

THANK YOU!





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