From Scene to Suite
LAMS Implementation

Central South Regional Stroke Network

Paramedic Workshop 2021

- Waterloo Region Paramedic Service
  - Superintendent Amy Rivers
    Training and Education
- Hamilton Paramedic Service
  - Superintendent Dave Thompson
    Media and Strategic Partnerships
- Niagara Emergency Medical Service
  - Superintendent Joe Tran
    EMS Training

Disclosure

- The Region of Waterloo Paramedic Service, Hamilton Paramedic Service or Niagara Emergency Medical Services have no actual or potential conflict of interest in relation to these programs or todays presentation.

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Objectives

- Niagara
  - Review the updated Prompt Card with BLSPCS 3.3
  - How does LAMS integrate with these changes
  - Geography
  - Data - EVT
- Waterloo Region
  - LAMS Collection
  - Interventionalist Consultation
  - Data - EVT
- Hamilton
  - Implementation
  - By-Pass Form
  - What were our goals
  - Quality Improvement
- Next steps

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Paramedic Prompt Card for Acute Stroke 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.

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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

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EHS Acute Stroke Bypass Protocol Update

Changes to BLS PCS v 3.3 (In force date: January 11, 2021)

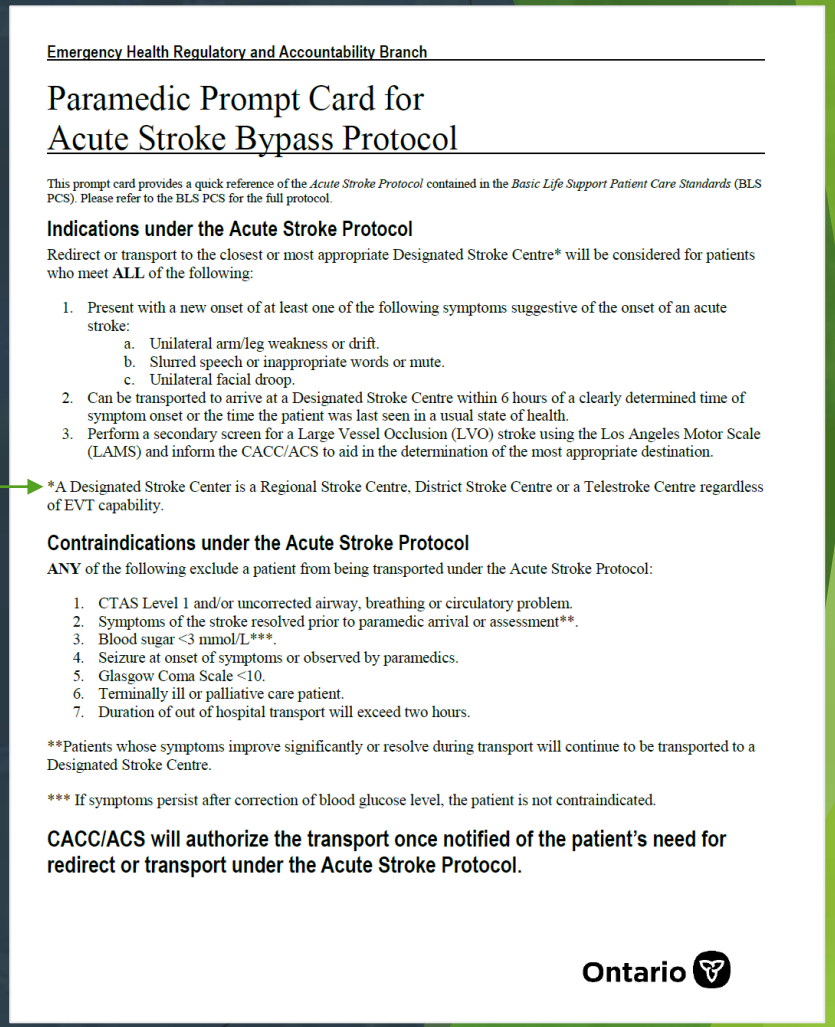
- Stroke related changes in BLS PCS v3.3 ("the BLS standards") include the addition of the LAMS tool to assist in identifying a large vessel occlusion (LVO) stroke

Cerebrovascular Accident (CVA, "Stroke") Standard- p. 66

- 4. if the patient does not meet any of the contraindications listed in paragraph 3 above, perform a secondary screen for a Large Vessel Occlusion (LVO) stroke using the Los Angeles Motor Scale (LAMS);
- 5. inform the CACC/ACS of the LAMS score to assist in the determination of the closest or most appropriate*** Designated Stroke Centre;

Paramedic Prompt Card for Acute Stroke Bypass Protocol- Appendix A

- "perform a secondary screen for a Large Vessel Occlusion (LVO) stroke using the Los Angeles Motor Scale (LAMS) and inform the CCA/ACS to aid in determination of the most appropriate destination"



Emergency Health Regulatory and Accountability Branch

Paramedic Prompt Card for
Acute Stroke Bypass Protocol

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Adapted from *The Paramedic Prompt Card for Acute Stroke Bypass Protocol - Paramedic Training Module* originally developed by CorHealth Ontario https://www.youtube.com/watch?v=EanfEzCHYc8&feature=youtu.be

Los Angeles Motor Scale (LAMS)

- The LAMS tool is a simple and validated assessment of stroke severity
- It helps to identify who may be having a large vessel occlusion stroke and be eligible for EVT.
- A score of ≥ 4 is considered 'positive' for an LVO stroke

FACIAL DROOP
ABSENT: 0
PRESENT: 1

ARM DRIFT
ABSENT: 0
DRIFTS DOWN: 1
FALLS RAPIDLY: 2

GRIP STRENGTH
NORMAL: 0
WEAK GRIP: 1
NO GRIP: 2

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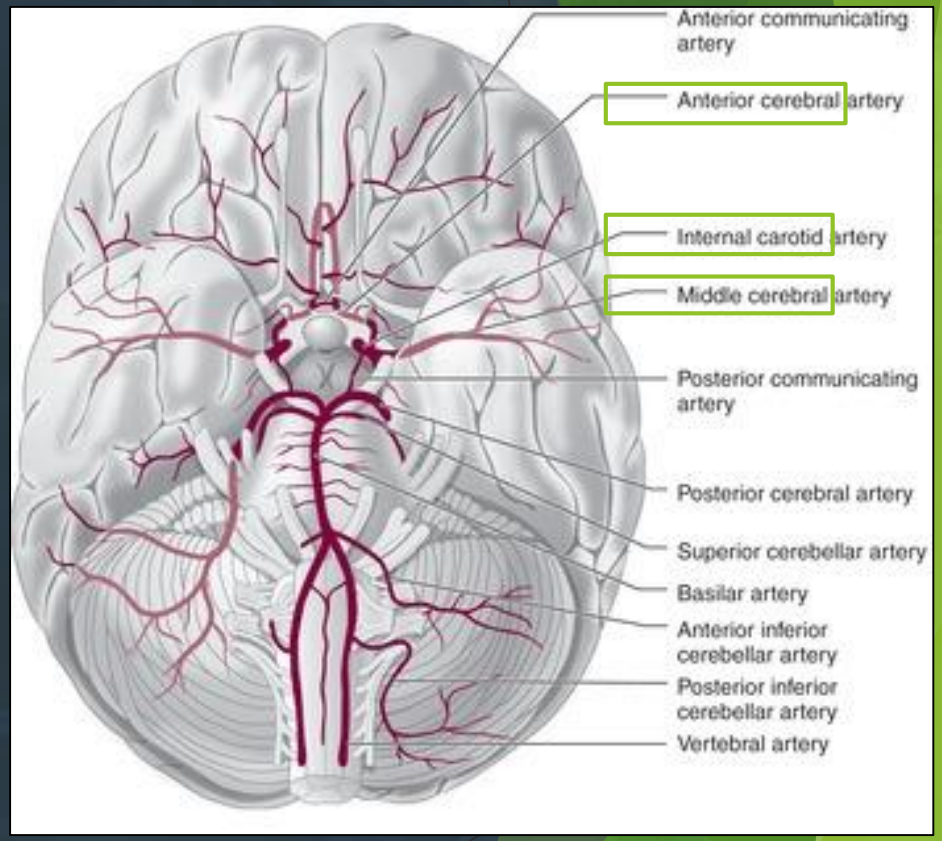
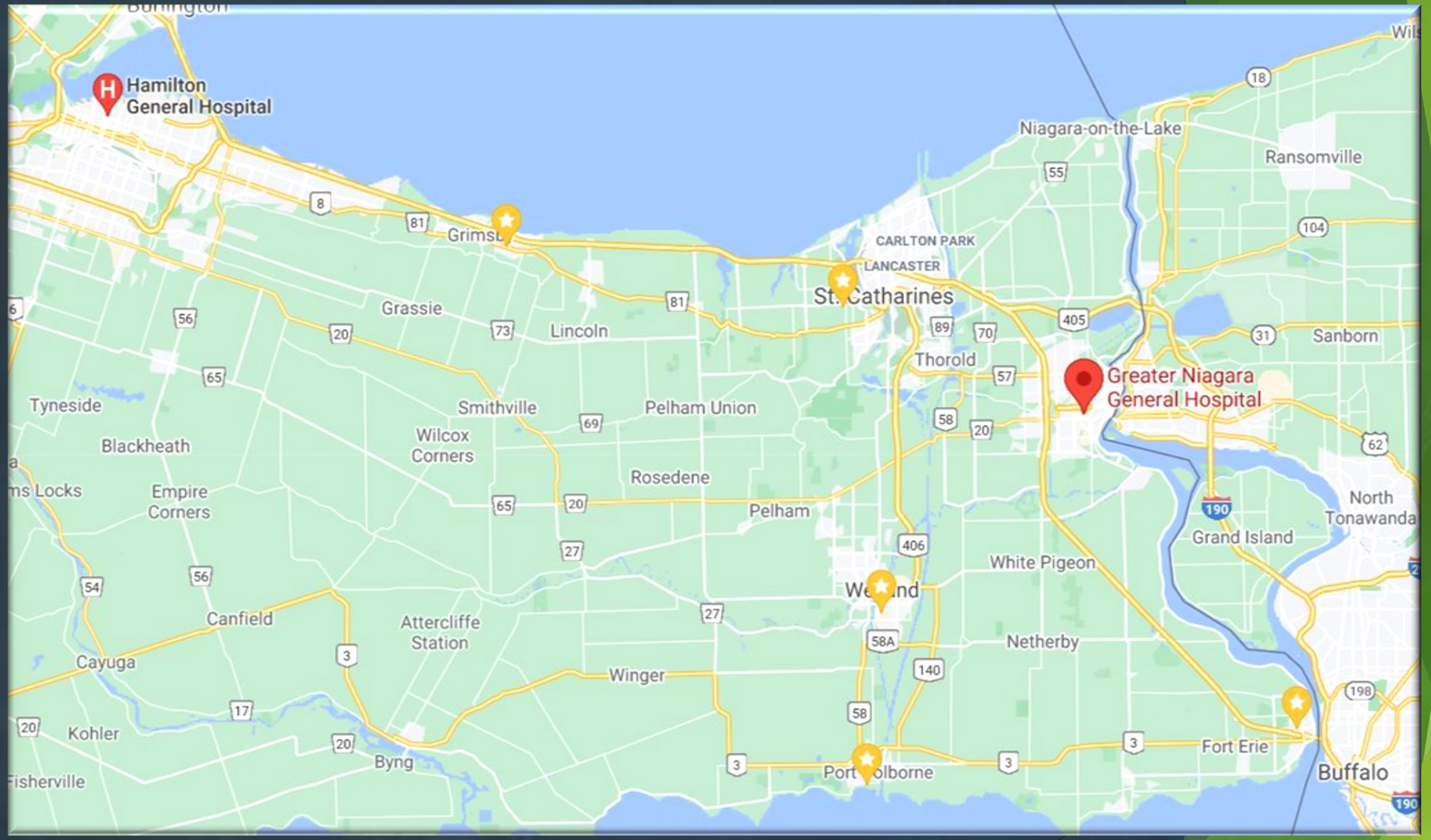
Adapted from *The Paramedic Prompt Card for Acute Stroke Bypass Protocol - Paramedic Training Module* originally developed by CorHealth Ontario https://www.youtube.com/watch?v=EanfEzCHYc8&feature=youtu.be

Large Vessel Occlusion (LVO)

- Approximately 24% to 46% of ischemic strokes are due to large vessel occlusions[4]
  - Large vessel occlusions cause the most severe stroke, resulting in significant disability and often death
- Main vessels treated with Endovascular Thrombectomy include:
  - Large Vessels of the Anterior Circulation:
    - Middle Cerebral Artery (M1 and M2 segments)
    - Anterior Cerebral Arteries (A1 segment)
    - Internal Carotid Arteries
  - Large Vessel Occlusions in the Posterior Circulation (e.g. basilar artery) may be considered based on clinical judgement
- Endovascular therapy is more effective than intravenous tPA (Alteplase) for patients experiencing a large-vessel occlusion stroke



Is there a way to identify patients experiencing a large vessel occlusion stroke in the field?



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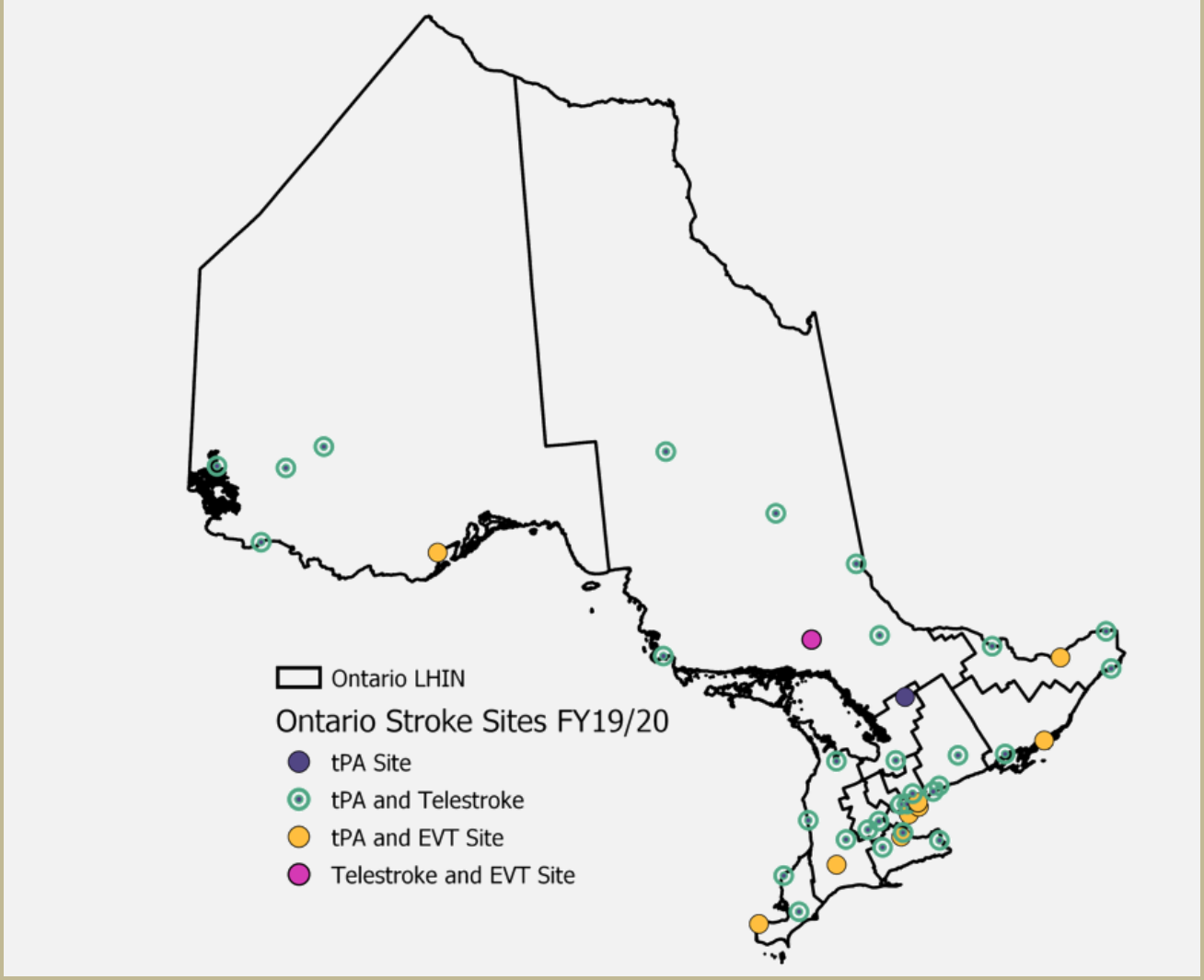
Ontario's Hyperacute Stroke System



BASIC LIFE SUPPORT PATIENT CARE STANDARDS

Patients who meet the requirements of the Acute Stroke Bypass Protocol can be transported to the closest or most appropriate Designated Stroke Centre

- Designated Stroke Centres include:
  1. Regional Stroke Centres
  2. District Stroke Centres
  3. Telestroke Centres

Not all designated stroke centres are EVT capable

Adapted from *The Paramedic Prompt Card for Acute Stroke Bypass Protocol - Paramedic Training Module* originally developed by CorHealth Ontario https://www.youtube.com/watch?v=EanfEzCHYc8&feature=youtu.be

Niagara EMS LAMS Data

99 Total number of LAMS scores documented as of May 31st, 2021

LAMS ≥ 4	Direct to EVT Centre (closest)	2
	Transfer to EVT Centre	5
	No Transfer	10
	Ineligible for Stroke Bypass	4

Eligible LAMS > 4	17
% to EVT	41.2%

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Current Practice at

- Patient is assessed using Acute Stroke Protocol
- LAMS assessment performed but is not used to determine the need for bypass.
  - Reported and documented.
- Patient who meets Acute Stroke Protocol is transported to a Designated Stroke Centre.

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The Numbers So Far

- January 11th –May 31st 2021 – 240 calls with a Primary Impression Code of Stroke/TIA in Waterloo
- Approximately 30% of those calls do not meet the Acute Stroke Bypass Protocol
  - Outside the 6 hour window
  - Symptoms have resolved prior to paramedic arrival
  - Small number turn out to be unrelated to stroke upon further assessment.
- Niagara and Waterloo each see an average of one stroke per day.
- Hamilton sees 2-4 per day on average

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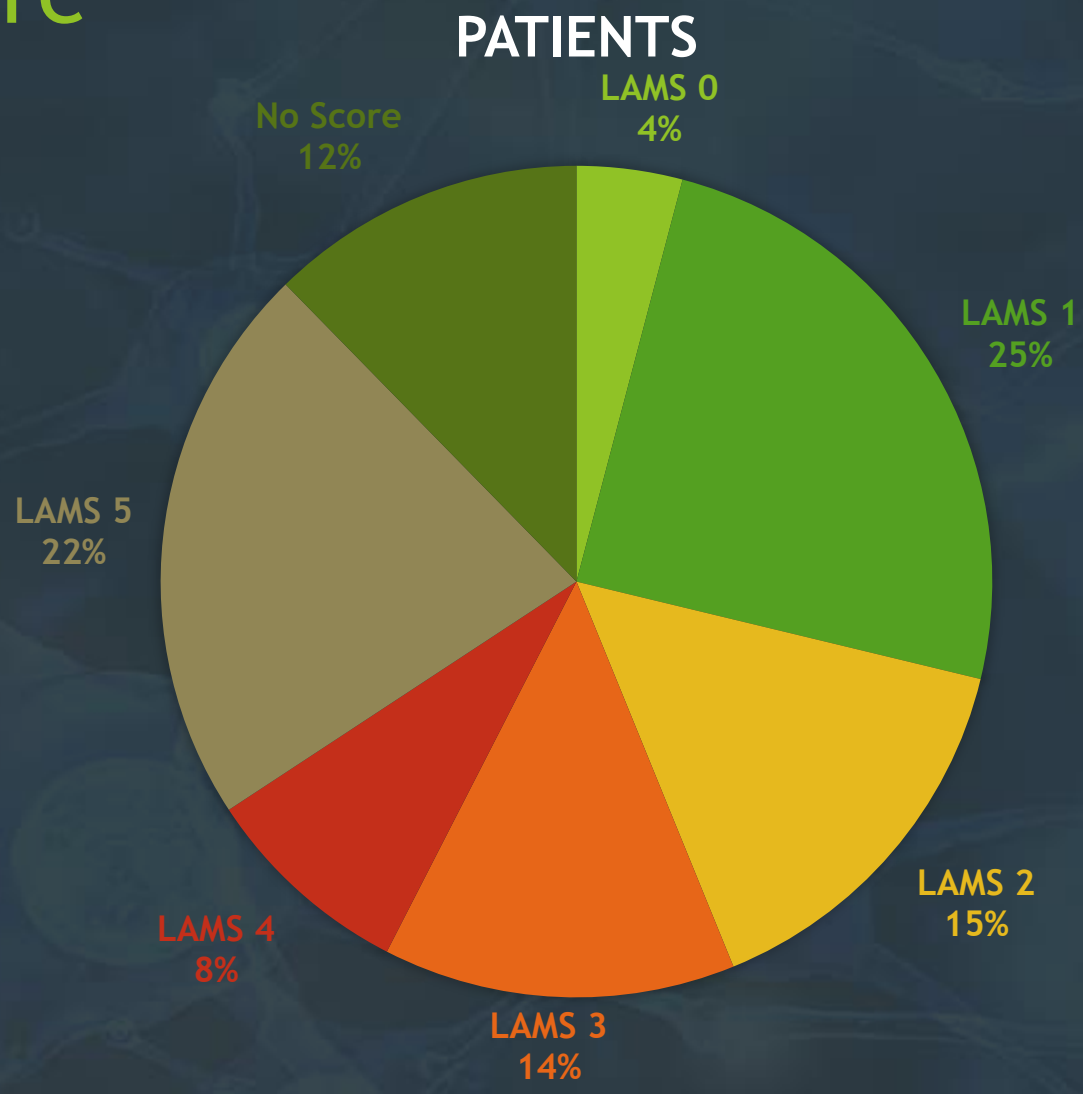
LAMS Score



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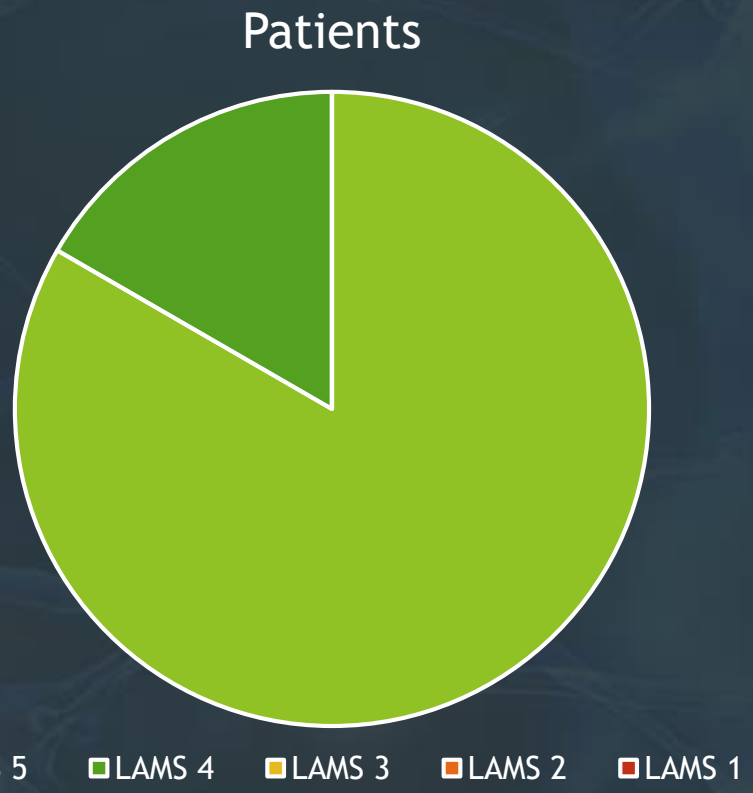
Transfer for EVT

- January 11th- May 31st 2021 – 6 patients transferred to HGH for EVT



Hamilton Paramedic Service

LAMS Implementation and Stroke Bypass Form

Implementation

- Mandatory online education package (NEMS,HPS, ROWPS) → Ensured that everyone was aware of the BLS PCS changes
- Addition of a stroke by-pass form → Allowed for more robust data collection
- Data pulls → Ongoing

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Why collect more data

- Paramedics don't want more paperwork
  - Emails
  - Awareness
  - Slow up-take
- Challenges of ePCRs data collection
  - Free form
  - Spelling
  - New technologies
- There must be an end goal….right?

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Lets look at the form!

mDOCS

Acute Stroke Bypass

T- T+

Save As Draft and Close | Submit and Close

Call Information

Call Date:	EHS #:	Call Number:	Service:	Last Seen Normal Time:
2021-06-03			Hamilton Paramedic Service	

Step 1: 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:
   - ☐ Unilateral arm/leg weakness or drift
   - ☐ Slurred speech or inappropriate words or mute
   - ☐ 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:

No | Yes

3. Perform a secondary screen for a Large Vessel Occlusion (LVO) stroke using the Los Angeles Motor Scale (LAMS) and inform the CACC/ACS to aid in the determination of the most appropriate destination :

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Lets look at the form

Los Angeles Motor Scale (LAMS) Scoring

LAMS	Clinical Assessment	Score the affected side	Description	Score
Facial Droop (0-1)	Instruct patient to smile; show teeth;	0 = Absent	No facial asymmetry. Normal	--
		1 = Present	Partial or complete lower facial droop.	
Arm Drift (0-2)	Elevate both arms with palms down, 45 degrees if lying, 90 degrees if sitting for 10 second count	0 = Absent	No drift. Normal.	--
		1 = Drifts down	Drifts down but does not hit the bed within 10 seconds.	
		2 = Falls rapidly	Arms cannot be held up against gravity and fall to the bed within 10 seconds.	
Grip Strength (0-2)	Have patient try to grasp examiners fingers	0 = Normal	Normal.	--
		1 = Weak Grip	Weak but some movement.	
		2 = No Grip	No movement. Muscle contraction seen but without movement.	
			Total Score (0-5) =	

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Lets look at the form

Contraindications Under the Acute Stroke Protocol

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

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- [ ] Symptoms of the stroke resolved prior to paramedic arrival or assessment**
- [ ] Blood sugar < 3 mmol/L***
- [ ] Seizure at onset of symptoms or observed by paramedics
- [ ] Glasgow Coma Scale < 10
- [ ] Terminally ill or palliative care patient
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****Note:** Patients whose symptoms improve significantly or resolve during transport will continue to be transported to a Designated Stroke Centre.

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

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Save As Draft and Close | Submit and Close

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Aren't you collecting the same thing as other codes?

- Code is 20.02 for the Acute Stroke Assessment (ASA)
- Code is 20.01 is the code for LAMS
- Both of these are "assessments" aren't they?
  - Variable data entry - free form.
  - Complicated queries, spelling can mean things are missed.
- Retrospective chart review - how do we make this easier?
  - How do we query that data reliably
- Form = Easy, validated information in one source

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Procedure example - ePCR

Date	Intervention	Code	Result	Crew
	Acute Stroke Protocol Assessment	20.02		
	LAMS Assessment Score	20.01		
	Acute Stroke Bypass 2020	2072.01		
	Stroke Notification	401.3		

General Administration

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Great! So now we have the form…….?

- Collect Data on “regular” stroke assessment “FAST”
  - Symptomology
- LAMS
  - No pulling ePCRS and manually pulling data
- Potential to validate links in symptomology, LAMS score and large vessel occlusion

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Moving forward

- LAMS
  - Comparative with hospital numbers
  - Can Paramedics identify an LVO reliably (we know LAMS does)
    - Direct to imaging?
    - Interventionalist calls like ROWPS
  - Decision making tools surrounding destinations
- Better patient outcomes!

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Hamilton Paramedic Service - Data

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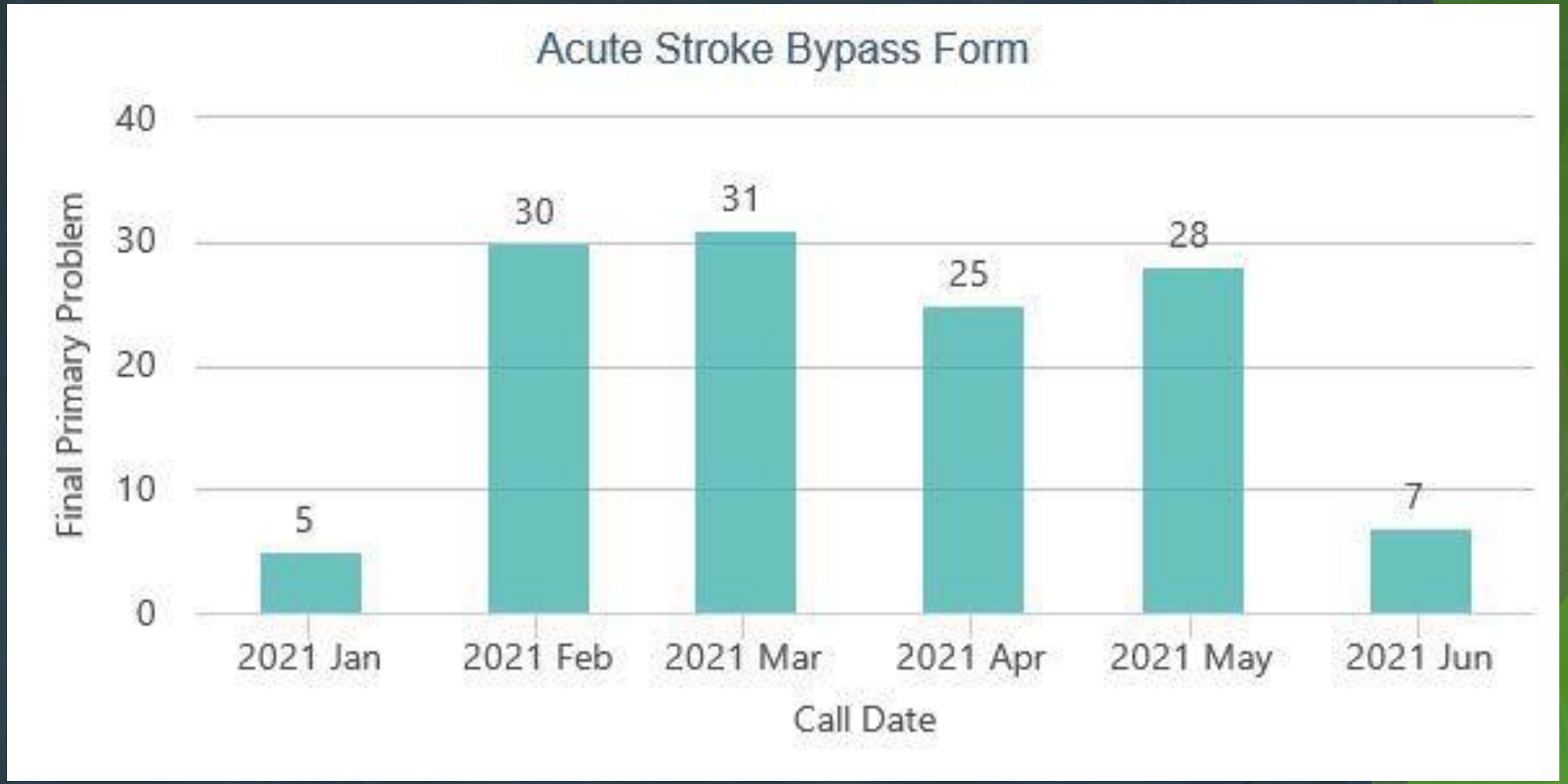
Hamilton Paramedic Service - Data



Hamilton Paramedic Service - Data

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Where can we improve?

- Paramedics
  - Diligent in completing documentation
- Management
  - Continue to develop standardized collection
    - Tools
    - Consistent metrics across all participating organizations
    - Validated data
    - Improve the collection process
- ePCR's
  - Efficiency
  - Eliminate redundant information collection
  - Eliminate where possible - free form options
  - Link free form to a data collection form

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Summary

- We are all collecting Data
- Continue to document accurate, relevant and complete information
- Collaboration is key. Different services, different methods, continue to work together
- Its all about the patient

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Thank You!

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ANY
QUESTIONS?