otn.telestroke®

TELESTROKE REFERRING SITE HANDBOOK

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WHAT IS THE TELESTROKE PROGRAM?

Ontario Telestroke Program – Overview
In Ontario, the current definition of Telestroke is as follows:

Telestroke is an emergency telemedicine application that provides emergency physicians immediate access to neurologists with expertise in stroke care who can support both the assessment and treatment of patients experiencing acute ischemic stroke symptoms.

The Ontario Telestroke Program (OTP) facilitates access and delivery to time-sensitive treatment for patients experiencing acute stroke symptoms by providing consultative support to local physicians. Currently, the OTP is supported by a collaborative partnership between CorHealth Ontario, the Ontario Telemedicine Network (OTN) and CritiCall Ontario.
The Program is supported by a group of Stroke Neurologists who provide consultation[1] to clinicians for assessment and treatment of patients who may be eligible for time-sensitive treatment such as recombinant tissue plasminogen activator (rtPA) and/or Endovascular treatment (EVT).

The Ontario Telestroke Program:

- Began in North Bay in 2002;
- Receives leadership and operational support from Ontario Telemedicine Network (OTN), CorHealth Ontario, CritiCall Ontario and stroke neurologists;
- Provides a 24/7 emergency service that receives 24/7 technical support from OTN for telemedicine equipment;
- Uses CritiCall Ontario to contact a Telestroke neurologist using a single on-call system;
- Provides a videoconferencing solution and supports neurologists for 24/7 coverage
- Supports discussions between referring and consulting physicians regarding delivery of time sensitive treatment such as thrombolysis (rtPA) and endovascular treatment (EVT);
- Makes CT/mCTA imaging available to the stroke neurologist via the Emergency Neuro Image Transfer System (ENITS); and
- Provides access to Telestroke neurologists for up to 24-hour follow-up, if required.

[1] Referring Telestroke sites have a CT scanner, telemedicine network infrastructure, telemedicine equipment and protocols but require access to stroke neurologists to assist with treatment decisions. Consulting neurologists with expertise in stroke care can review the results of a patient's CT scan electronically and "see" a patient at a remote site using live video.

PARTICIPATING TELESTROKE SITES

As of 2019 Telestroke Referring Sites include:

Ajax-Pickering, Barrie, Belleville, Brampton, Brantford, Burlington, Chatham, Cornwall, Dryden, Etobicoke, Fort Frances, Guelph, Goderich, Hawkesbury, Hearst, Kenora, Kitchener, Niagara, New Liskeard, North Bay, Oshawa, Owen Sound, Pembroke, Peterborough, Richmond Hill, Sarnia, Sault Ste. Marie, Sioux Lookout, Stratford, Sudbury and Timmins

BECOMING A TELESTROKE SITE

Introduction

Referring Telestroke sites join the program to gain access to hyperacute stroke expertise provided by stroke neurologists. Telestroke neurologists support referring sites in the assessment and treatment of patients experiencing hyperacute ischemic stroke via a telemedicine consult.

Referring Site Requirements:

To participate in the Ontario Telestroke Program (OTP), a referring site must have:

- A 24/7 staffed Emergency Department
- Access to CT/CTA scan 24/7;
- Physician support for the model, including administration of thrombolysis (rtPA);
- Funding to support establishing the Telestroke Program at the site, including participation in clinical and technical training and development of hospital processes and procedures to support it; and
- Support of the Regional Stroke Network and Local Health Integration Network (LHIN).

Table 1 – Overview – Telestroke Referring Sites – Telestroke and Care Delivery Models

LHIN	Location	Hospital	Telestroke Start Date	Telestroke Model	Care Delivery Model
1	Sarnia	Bluewater Health	Jun 2014	24/7	Drip & Stay, Complex Cases
1	Chatham	Chatham Kent Health Alliance	Mar 2019	24/7	Drip & Stay
2	Goderich	Alexandra Marine & General Hospital	Feb 2011	24/7	Drip & Ship, Complex Cases
2	Stratford	Huron Perth Health Care Alliance – Stratford General Hospital	Nov 2016	PRN	Drip & Stay
2	Owen Sound	Grey Bruce Health Services	Dec 2014	PRN	Complex Cases
3	Kitchener	Grand River Hospital Corporation	Mar 2013	PRN	Complex Cases
3	Guelph	Guelph General Hospital	Dec 2013	24/7	Drip & Stay, Complex Cases
4	Brantford	Brant Community Health Care System – Brantford General Hospital	Feb 2006	24/7	Complex Cases
4	Burlington	Joseph Brant Hospital	Jun 2016	24/7	Drip & Stay
4	Niagara	Niagara Health System	Feb 2006	PRN	Drip & Stay
5	Brampton	William Osler Health System – Brampton Civic Hospital	Aug 2016	24/7	Drip & Stay
5	Etobicoke	William Osler Health System – Etobicoke General Hospital	Aug 2016	24/7	Drip & Stay
8	Richmond Hill	Mackenzie Health	Dec 2019	PRN	Drip & Stay
9	Ajax-Pickering	Lakeridge Health Ajax/ Pickering	Sep 2011	24/7	Drip & Stay, Complex Cases
9	Oshawa	Lakeridge Health Oshawa	May 2009	PRN	Drip & Stay, Complex Cases
9	Peterborough	Peterborough Regional Health Centre	Mar 2006	24/7	Drip & Stay
10	Belleville	Quinte Health Care Corporation – Belleville General Hospital	Dec 2010	PRN	Drip & Stay, Complex Cases
11	Cornwall	Cornwall Community Hospital	Dec 2010	24/7	Drip & Stay, Complex Cases
11	Hawkesbury	Hawkesbury and District General Hospital	Jan 2011	24/7	Drip & Stay, Complex Cases
11	Pembroke	Pembroke Regional Hospital	Oct 2005	24/7	Drip & Stay, Complex Cases
12	Barrie	Royal Victoria Regional Health Centre	Sep 2012	PRN	Complex Cases
13	Hearst	Notre Dame Hospital	Oct 2019	24/7	Drip & Ship
13	North Bay	North Bay Regional Health Centre	Jul 2002	24/7	Drip & Stay, Complex Cases
13	Sault Ste. Marie	Sault Area Hospital	Aug 2005	24/7	Drip & Stay, Complex Cases
13	Sudbury	Health Sciences North – Ramsey Lake Health Centre	Mar 2003	PRN	Complex Cases
13	Timmins	Timmins and District Hospital	Sep 2005	24/7	Drip & Stay, Complex Cases
13	New Liskeard	Temiskaming Hospital	Mar 2010	24/7	Drip & Stay, Complex Cases
14	Dryden	Dryden Regional Health Centre	Dec 2009	24/7	Drip & Ship

14	Fort Frances	Riverside Health Care Facilities – LaVerendrye Hospital	Mar 2010	24/7	Drip & Ship
14	Kenora	Lake of the Woods District Hospital	Feb 2008	24/7	Drip & Ship
14	Sioux Lookout	Sioux Lookout Meno Ya Win Health Centre	Feb 2013	24/7	Drip & Ship

Telestroke Models	
24/7	Referring site physicians rely on Telestroke to delivery tPA 24 hrs./day, 7 days per week
PRN	Not all the referring site physicians require the use of Telestroke to deliver tPA; Telestroke is used when required
Set Schedule	Referring site has a set schedule where Telestroke is required to ensure coverage for tPA delivery (e.g. Mon thru Friday you do not use Telestroke, but required on weekends)
Care Delivery Models	
Drip & Ship	Patient receives tPA at referring site then 'shipped' to another site, with a Stroke Unit, for post tPA care
Drip & Stay	Patient receives tPA at Telestroke referring site then receives post tPA care at Telestroke referring site
Complex Cases	Deliver tPA without Telestroke support when local physicians are comfortable with the presenting patients. Access the Telestroke Program when more complex patients present.

APPLICATION PROCESS FOR BECOMING A TELESTROKE

Expression of Interest/ Letters of Support

To apply to become a Telestroke referring site:

- Contact your regional stroke network to express your interest and secure a letter of support from the following:
    - Regional Program Director and/or Regional Stroke Steering Committee for the development of Telestroke at your site;
    - Local Health Integration Network (LHIN)

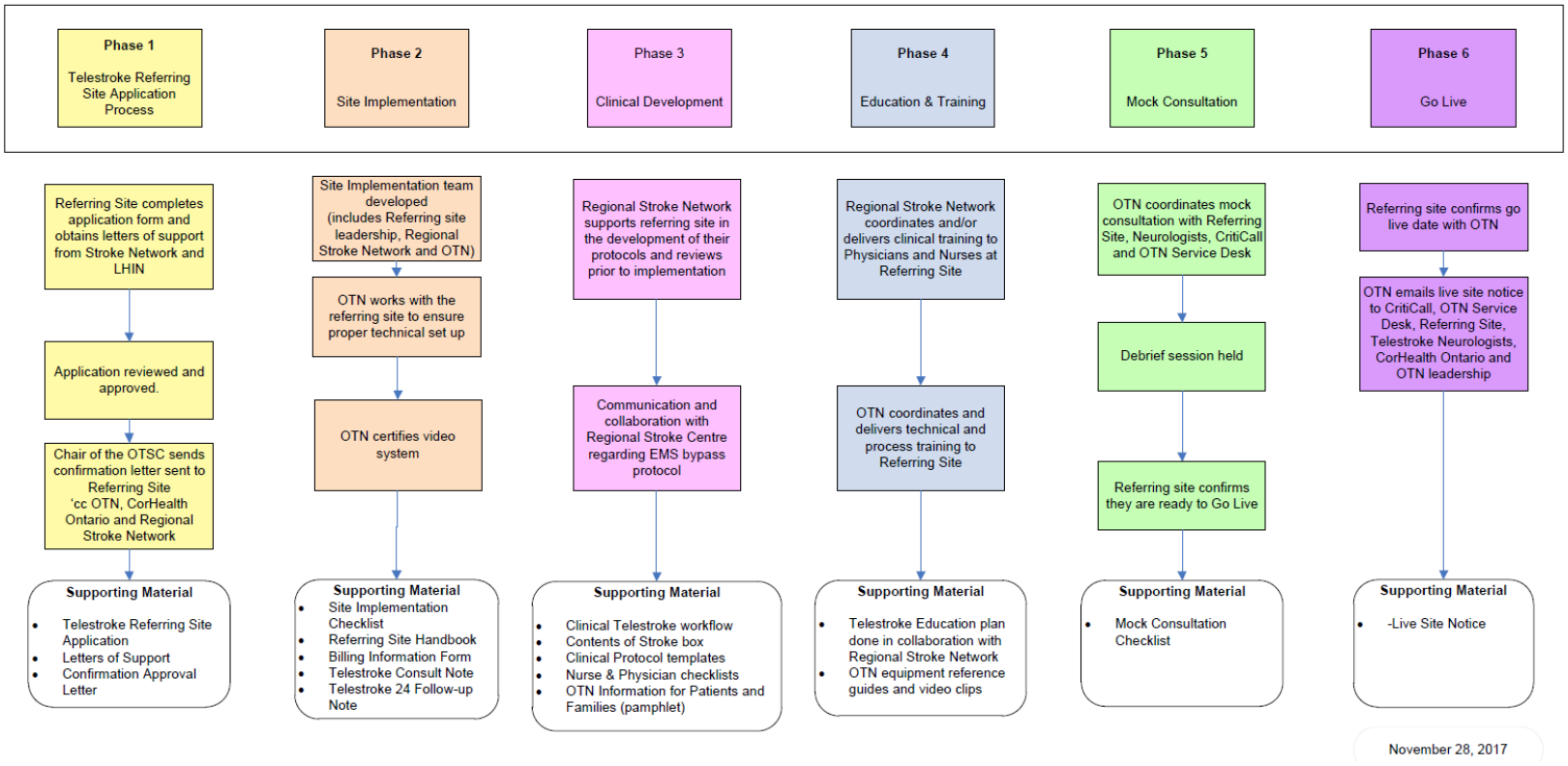
Application Form

- Complete the Telestroke Referring Site Application - https://support.otn.ca/sites/default/files/telestroke-referring-site-application.pdf and submit it, along with letters of support to telestroke@otn.ca

- The application is reviewed by the Ontario Telestroke Program (OTP) Medical Director, CorHealth Ontario Senior Strategist Stroke, Chair/Delegate of the Ontario Telestroke Steering Committee and OTN Provincial Lead- Emergency Services.

Telestroke Referring Site Implementation

- After a site is accepted to join the Telestroke program, the Regional Stroke Network and OTN will work with the site to implement the Telestroke program.
- The implementation will involve multiple phases:



• A more detailed implementation plan is developed tailored to the site. The implementation of Telestroke, depending on the model chosen and the readiness of the site, may take 3-12 months.

Before a site may go live as a Telestroke site, a mock consult will be arranged, and if successful, a go live date will be determined.

Sample implementation plan and sequence of steps:

Sequence	Component	Implementation Step	Status	Notes
1	Application Process	Identify internal resources requirements and designate roles and responsibilities.	Not started	
2	Application Process	Contact Regional Stroke Network and LHIN to express interest in becoming a referring site and obtain letters of support.	Not started	
3	Application Process	Complete & Telestroke Referring Site Application	Not started	
4	Application Process	Site prioritization group has approved application.	Not started	
5	Clinical	Finalize all clinical tPA administration/telestroke protocols.	Not started	
6	Clinical - Emergency Protocol & Policy	Ensure the policy is defined and communicated.	Not started	In conjunction with all Clinical Protocols
7	Clinical - Emergency Protocol & Policy	Determine Emergency Training & Education needs for nurses/support staff (ICU & ER nurses, x-ray and lab staff)	Not started	
8	Clinical - Emergency Protocol & Policy	Stroke training (i.e. Canadian Neurological Scale, NIHSS)	Not started	
9	Site Implementation	Identify equipment requirements in consultation with OTN and other stakeholders as required.	Not started	
10	Site Implementation	Determine who is funding equipment	Not started	
11	Site Implementation	Procure equipment	Not started	
12	Clinical - Laboratory Protocol & Policy	Finalize laboratory protocols	Not started	*In conjunction with all Clinical Protocols*
13	Clinical - Laboratory Protocol & Policy	Communicate/Educate protocols to lab staff	Not started	In conjunction with all Clinical Protocols
14	Clinical - Diagnostic Imaging Protocol & Policy	"Next on Scanner" policy for acute strokes	Not started	*In conjunction with all Clinical Protocols*
15	Clinical - Diagnostic Imaging Protocol & Policy	Telestroke protocol for pushing CT/ mCTAs	Not started	In conjunction with all Clinical Protocols
16	Clinical - Diagnostic Imaging Protocol & Policy	Revision of policy for after hour CT approval from on call radiologist to allow for all stroke CT/mCTAs to be done STAT.	Not started	*In conjunction with all Clinical Protocols*
17	Site Implementation	Determine location of additional network drops as required in the emergency department and/or ICU	Not started	
18	Site Implementation	Configure CT scanner to push images to ENITS	Not started	
19	Site Implementation	Arrange dates for shipment and installation of equipment	Not started	
20	Site Implementation	Arrange for and communicate videoconference equipment installation and vendor training dates to all relevant stakeholders	Not started	
21	Site Implementation	Arrange for network reconfiguration as required	Not started	
22	Site Implementation	Arrange for installation of drops	Not started	
23	Site Implementation	Notify OTN on installation and configuration of videoconference equipment	Not started	
24	Site Implementation	In collaboration with OTN/ ENITS develop an integrated test plan for both videoconference equipment and CT image transfer	Not started	

25	Site Implementation	Equipment certified on the network	Not started	
26	Education & Training	Identify telestroke training requirements for each Referring Site target group (CT technicians, ER physicians, clinicians and staff)	Not started	*Estimating 3 weeks for training components*
27	Education & Training	Develop clinical training modules	Not started	
28	Education & Training	Plan Referring site training dates	Not started	
29	Education & Training	Hold technical training	Not started	
30	Education & Training	Hold clinical training	Not started	
31	Mock Consult	Arrange Mock Telestroke Codes - execute and evaluate.	Not started	
32	Mock Consult	Document and communicate findings from mock consults, follow up on any action items and re-test	Not started	
33	Mock Consult	Sign-off from all stakeholders and endorsement to Go Live	Not started	
34	Go Live	Issue telestroke live site notice	Not started	
35	Go Live	External communication of new telestroke site	Not started	

TECHNOLOGY REQUIREMENTS

Telestroke uses videoconferencing technology to connect Telestroke referring sites with consulting Telestroke neurologists and enable real time, two-way videoconferencing for virtual face-to-face consultations.
Telestroke referring sites use traditional clinical cart based videoconferencing technology. The clinical cart is rolled to the patient's bedside and the camera can be manipulated by the Telestroke neurologist to ensure the best view of the patient.

Videoconferencing Requirements

- OTN network infrastructure.
- OTN certified clinical cart videoconferencing system (with 12x zoom camera and far end camera control functionality) to be used at the patient's bedside.
- OTN network drops available in the emergency department and/or intensive care unit (if applicable).
- For more detailed information, including current system options and prices, please contact your OTN account manager and your hospital telemedicine department.

Imaging Requirements

- CT/mCTA scanner 24/7 configured to push CT/mCTA of Head to the Emergency Neuro Image Transfer System (ENITS).

Multiphase CTA (mCTA)

- All patients with suspected acute stroke (presenting within acute stroke treatment time window) should undergo brain imaging (non-contrast CT or MRI) and multiphase CTA immediately and simultaneously. (Door to CT/mCTA should be less than 15 minutes[2]).
  - For patients with acute ischemic stroke that are clinically eligible for acute stroke treatments, advanced CT imaging including multiphase CTA should be considered, however, this must not substantially delay decision and treatment with rtPA thrombolysis or mechanical thrombectomy/EVT.
  - The CorHealth Ontario mCTA imaging protocol should be utilized for patients undergoing CTA and is available at the CorHealth Ontario website: https://www.corhealthontario.ca/Stroke-CTmCTA-Imaging-Protocol-for-Endovascular-Treatment.pdf
  - For referring sites: for patients presenting with potentially disabling, acute neurological symptoms suggestive of an acute stroke within 6.0 hours of symptom onset initiate communication with CritiCall Ontario at **1-800-668-4357** (HELP) as soon as possible to request a consultation with the Telestroke neurologist.
  - Refer to Endovascular Treatment (EVT) Resource Centre: https://www.corhealthontario.ca/evt

[2] Heart and Stroke Foundation. (2016). Quality of stroke care in Canada: Stroke key quality indicators and case definitions.

Criteria for Activating Telestroke

Telestroke Treatment Patient Criteria:

- Greater than 18 years of age.
- Patient presents with acute disabling stroke causing measurable neurologic deficit.
- Time from "last seen normal" less than 4.5. hours for medical thrombolytic therapy and for most patients being considered for endovascular therapy, 6.0 hours or less from last seen normal

Thrombolysis Treatment Inclusion Criteria: as per the Canadian Best Practice Recommendations for Stroke

(https://onlinelibrary.wiley.com/doi/full/10.1111/ijs.12551)

- Diagnosis of ischemic stroke causing measurable neurologic deficit in a patient who is 18 years of age or older.
- Time from last known well (onset of stroke symptoms) less than 4.5 hours before rtPA.
- **CT/mCTA Imaging**
  - Telestroke referring sites are required to be able to perform the CT/mCTA scan. The CT and mCTA should be performed together and pushed together to ENITS (Emergency Neuro Image Transfer System), for access by a Telestroke neurologist to review and inform decision for time sensitive treatment. (door to CT/mCTA should be less than 15minutes)
  - The CorHealth mCTA Protocol
  - (https://www.corhealthontario.ca/Stroke-CTmCTA-Imaging-Protocol-for-Endovascular-Treatment.pdf) was developed to address the need for timeliness for transfer of images for review by the Telestroke/EVT treatment teams.

Endovascular Time to Treatment

Endovascular treatment should be considered for patients in whom treatment can be initiated within 6 hours of symptom onset

- Patients should have immediate neurovascular imaging (CT/CTA) to determine eligibility
- Within less than 6 hours from onset of symptoms to initiation of treatment (i.e. groin puncture) all patients who meet eligibility criteria should be treated
- Centres requesting consultation[3] by the Telestroke Neurologist and/or Stroke Endovascular Team for potential eligibility and transport of acute stroke patients for EVT should consider ability to transport (either by land or by air) to an EVT Centre within 2 hours.
- For sites that use Telestroke, a call would precede the request for Stroke EVT, requesting a Telestroke Neurologist. CritiCall Ontario will contact the Telestroke Neurologist on-call and connect the referring physician and Telestroke physician for a telephone consultation. CritiCall will disconnect and not be privy to the conversation or telemedicine activation.

[3] Through criticall ontario as "life or limb" and be managed within the critical care services ontario (ccso) life and limb policy

- When EVT is recommended, the Telestroke Neurologist will contact CritiCall Ontario post telemedicine consultation with direction to contact the Stroke Endovascular Team at the designated Endovascular Capable Centre

CLINICAL PROCESS FOR TELESTROKE

Overall Process

- When a patient presents with signs and symptoms of stroke, the procedure at the referring Telestroke site usually includes the following steps:
    - Emergency Medical Services (EMS) notifies emergency department (ED) staff of the arrival of a patient with signs and symptoms of stroke.
    - Emergency physician and CT/CTA technologist notified.
    - Screen patients using strict criteria (Acute Stroke protocol) to identify likely candidates for thrombolytics (rtPA).
    - Reference Telestroke referral worksheet (https://support.otn.ca/sites/default/files/telestroke-referral-worksheet.pdf)
    - **A toll-free call is placed to CritiCall Ontario to contact the on- call Telestroke Neurologist as soon as possible.**
      Do not wait until imaging is completed to initiate the call.
    - Converse with the consulting Telestroke physician on phone to give the patient history including:
        - stroke onset (last seen normal time);
        - patient's neurological deficits (NIHSS);
        - comorbidities;
        - medication;
        - blood pressure
        - Potential contraindications for intravenous (IV) rtPA administration.
    - Activate the acute stroke protocol; including sending patients for CT/mCTA (door to CT/mCTA should be less than 15 minutes)
- The videoconferencing equipment is prepared at the referring site and is available to videoconference with the consultant within 10 minutes of paging CritiCall Ontario.
- Have the patient, family and health care professionals available via video to discuss patient's situation; and the risks and benefits of thrombolysis with IV rtPA with the consulting Telestroke neurologist.
- After discussing the case with the referring physician and reviewing the image, a live, two-way videoconference is initiated to conduct a neurological assessment. The patient, patient's family and the health care teams have an opportunity to interact with the Telestroke neurologist via videoconference.

A decision may then be made to treat the patient with rtPA and/or transfer to an EVT centre.

- A consultation note is forwarded to the referring Telestroke hospital.

- Complete and fax the billing information to the neurologist immediately following the consultation

CritiCall Ontario Role

- 24-hour emergency physician referral service.
- CritiCall Ontario has a physician profile for each of the on call Telestroke neurologists that includes complete contact information for each.
- CritiCall Ontario receives the call from a referring site, pages the on-call Telestroke neurologist, and then links the Telestroke neurologist with the referring site.

CT/mCTA Imaging

- Telestroke referring sites are required to be able to perform the CT/mCTA scan. The CT and mCTA should be performed together and pushed together to ENITS (Emergency Neuro Image Transfer System), for access by a Telestroke neurologist to review and inform decision for time sensitive treatment. (door to CT/mCTA should be less than 15minutes)

- Make the final decision on whether to treat with IV rtPA.

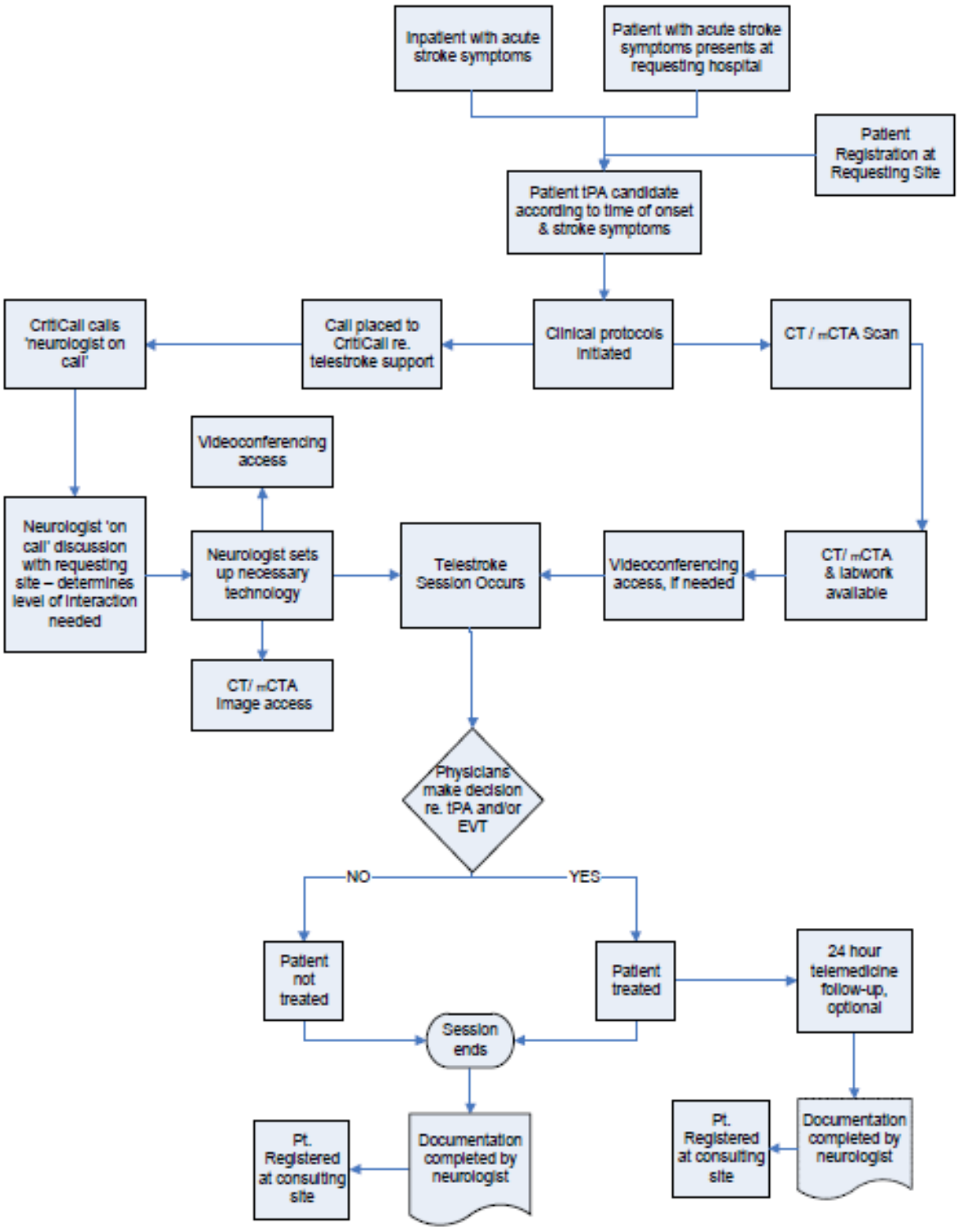
Patient Transfer to Regional/District Centre

- If the Telestroke neurologist determines that further treatment, not available at the Telestroke site, would be beneficial for the stroke patient, he/she may advise that the patient be transferred to a regional stroke centre or EVT centre.
- It is the expectation that the Telestroke site would arrange for the patient to be transferred other than if they were being treated with EVT (see bullets below).
- If it is determined that the patient is a candidate to be transferred for endovascular treatment, CritiCall Ontario will facilitate and coordinate the transfer of the patient either via land ambulance (preferred) or ORNGE
- If rtPA is infusing and/or the patient is unstable, it is the expectation of the referring site to arrange appropriate health-care provider accompaniment with the stroke patient.

Provincial Hyper Acute Telestroke Model

November 1, 2017

Overall Clinical Process – Continuum from Mentorship to Consultation



WHAT IS EXPECTED OF A TELESTROKE NEUROLOGIST DURING A CONSULT

- Respond to pages from CritiCall Ontario in **less than 10 minutes**.
- Converse with the referring site physician on phone to obtain the patient history including:
    - stroke symptom onset (last seen normal/well time);
    - patient's neurological deficits;
    - comorbidities;
    - medications;
    - lab results
    - blood pressure
    - potential contraindications for IV rtPA administration.

- Have access to a computer to initiate the review of the patient's scan images and able to videoconference with site **within 20 minutes** from receiving the page from CritiCall Ontario.
- Review the CT/mCTA scan via ENITS.
- Review or conduct NIHSS / neurologic examination via video.
- Speak with the patient, family and health-care professionals at the referring site via video discussing your findings; and the risks and benefits of thrombolysis and/or Endovascular Treatment.
- Make final recommendation to the referring physician whether to treat or not with IV rtPA and/or transport to closest endovascular treatment centre.
- If appropriate, consult with the EVT centre neurointerventionalist to review imaging and the patient presentation
- Make final recommendation to the referring physician whether to treat or not with IV rtPA and/or transport to the closest endovascular treatment centre.
- Provide further recommendations concerning the patient's medical care or treatment.
- Complete consult notes using the Ontario Telestroke consult form, as soon after the completion of the consult as possible.
- Fax the consult notes to the appropriate ED or Health Records department.

[4] These steps are often performed simultaneously and are not meant to be in sequence

CLINICAL PROTOCOLS

Consider using a standard protocol that sites can reference
Sample protocols have been included for you reference. Please feel free to adapt them to your site.

1. Canadian Stroke Best Practice Recommendations Hyperacute Recommended Laboratory Investigations

   https://www.heartandstroke.ca/-/media/1-stroke-best-practices/acute-stroke-management/table-2b_recommended-laboratory-investigations-for-patients-with-acute-stroke-or-tia.ashx?rev=c7c28ac3dcb4480ca3904588826fcbe8&hash=C7CCBBB69F4CF6FCE94342A225DF859F

2. Accountabilities of the Telestroke Neurologist and the Referring Site's Radiologist for the Interpretation of Acute Stroke CT/CTA Imaging

   https://www.corhealthontario.ca/Accountabilities-of-the-Telestroke-Neurologist-&-the-Referring-Site-November-7-2017.pdf

In preparation for becoming a Telestroke referring site; it is important to have an Acute Stroke Protocol in place. Please contact your Regional Stroke Network for sample tools and processes

Patient / Family Brochure

The attached brochure provides information for patients and families on Telestroke and EVT.
https://support.otn.ca/sites/default/files/otn-telestroke-brochure-EN.pdf
https://support.otn.ca/sites/default/files/otn-telestroke-brochure-fr.pdf
http://ontariostrokenetwork.ca/evtstaging/wp-content/uploads/sites/10/2016/08/Patient-Family-Education-Pamphlet-on-EVT.pdf

Documentation

Referring sites are to:

1. Referring physician to document the Telestroke consult timing and discussion in the patient chart;
2. Complete the Telestroke billing form **immediately** following the consult and fax it to the consulting Telestroke neurologist https://support.otn.ca/sites/default/files/otn-telestroke-billing-information.pdf

File the Telestroke consult note completed by the consulting Telestroke neurologist onto the patient's health record. https://support.otn.ca/sites/default/files/otn-telestroke-consult-note.pdf

TRAINING/EDUCATION

Telestroke Referring Site Training

Telestroke referring site staff and physicians are expected to complete clinical and technical training before becoming an active Telestroke site.

Technical Training

OTN will provide technical training for front-line staff. This training will be done live, via video with an OTN trainer. Two sessions will be offered; the training session is 30 minutes in length and focuses on videoconferencing equipment use, privacy, etiquette and troubleshooting.
To set up technical training, please contact telestroke@otn.ca.

Clinical Training

Clinical training for front line staff and referring site physicians will be provided by the regional stroke centre staff and/or a Telestroke neurologist.
The clinical learning needs of the staff will be assessed; an education plan should be created.
(As part of the clinical training, nurses and physicians will be expected to complete training on the NIHSS).

Competencies

OTN / Technical Learning:

1. Equipment
    - Equipment definitions/ network connectivity/equipment/room set up and powering
    - Review of functions of the system and remote control
2. Troubleshooting
    - Technology troubleshooting, strategy and tips, OTN Service Desk number
    - Troubleshooting tips and contacts
3. Process
    - Telestroke Process Referring Site Flow
    - Privacy and Security
    - Telestroke Referring Site Privacy
    - Clinical Consultation Etiquette
4. Documentation
    - Telestroke Patient Brochure – given to patient
    - Billing Information for Telestroke neurologists Form

Clinical Training / Telestroke Education

Nursing Learning Competencies / Hyperacute Stroke Patient in ED/ICU

Learning Objective		Date	Comments
1.	Demonstrates knowledge in the care of the hyperacute stroke patient. This includes knowledge and understanding of:		
	Cerebrovascular anatomy and physiology		
	Ischemic and hemorrhagic stroke Stroke Mimics (enter a new line)		
	Target times for Acute Stroke Protocol		
	History- Key components i.e. Time Last Seen Normal		
	Organizations Acute Stroke Protocol		
	Organization's Telestroke Procedures		
2	Awareness of Stroke Team Members Roles and Responsibilities in Code Stroke Protocol		
3	Demonstrates skill in performing neurological assessment, including:		
	The validated Stroke Assessment Scale determined by the Organization- either the CNSS and/or NIHSS		
	Glasgow Coma Scale		
	Interpretation of findings in relation to patient status		
	Communication of changes to physician and co-workers		
4	Demonstrates knowledge of treatment with rtPA and/or Endovascular Treatment by:		
	Identifies patient eligibility criteria for rtPA		
	Identifies patient eligibility criteria for Endovascular Treatment		
	Preparation of eligible patients: • patient weight: document most accurate weight available • intravenous access and saline lock • bloodwork drawn • Foley catheter only if necessary		
	Correct preparation of rtPA and administration including responsibilities of physician and nurse		
	Identifies adverse effects including management of complications: bleeding (intracranial and extracranial) and angioedema		
	Patient/family education pertaining to rtPA / EVT		
	Monitoring and management of patient during rtPA infusion and following per Hospital Acute Stroke Protocol		
5	Knowledge of Telestroke, including;		
	Explanation of the purpose and benefits of Telestroke		
	Telestroke procedure-including contacting the consulting Telestroke neurologist		
	Knowledge and skill in utilizing Telemedicine equipment for emergency telemedicine delivery including powering the system, effective framing techniques and basic remote functions		
	Identify proper videoconference etiquette and processes involved with emergency telemedicine delivery		
	Obtain a knowledge of techniques to ensure proper privacy and security during videoconferences		
	Skill in troubleshooting basic technical problems including how to access the OTN Service Desk		

	Providing patient and family teaching related to videoconferencing		
6	Demonstrates understanding of dysphagia		
	Recognizes the signs and symptoms of swallowing difficulties and implements strategies for prevention of aspiration		
	Performs dysphagia screening on a validated dysphagia screening tool (tool is determined by the organization)		
7	Interprofessional Collaboration and Communication		
	Support and promote collegial interprofessional collaboration and communication between the referring and consultative sites		
	Be cognizant of videoconferencing etiquette		
	Facilitate assessment, planning and implementing patient transition throughout the continuum of care		
	Transfer of accountability: receiving, transferring and transporting patient within organization and to Regional Stroke Centre		
8	Documentation		
	Document as per organization's policy		
	Complete Telestroke-specific documentation as per local stroke policy		

Competencies for Referring Physicians at Telestroke Sites

Level	Clinical competency	Technical competency
1	Awareness of Canadian Best Practice Recommendations for Stroke Care Sufficient competence in the neurologic exam to be able to assist the neurologist in carrying out elements of the NIHSS assessment (see below)	Basic training on OTN videoconferencing system (powering on, mute, zoom, basic troubleshooting)
2	NIH Stroke Scale certification (mandatory for level 2)	
3	Awareness of the Alberta Stroke Program Early CT Score (ASPECTS)	

***Note: it is strongly recommended that all referring physicians and ED nurses seek to obtain their NIHSS training.**

Level 1 is the minimum requirement for a physician working in the ED of a Telestroke referring site.

- The referring physician must be aware of all inclusion/exclusion criteria and be familiar enough with the NIH Stroke Scale to assist the neurologist in completing the NIHSS assessment.
- Sufficient clinical competence in performing elements of the neurological exam covered in the NIHSS is mandatory, (in particular visual field and sensory examinations as they cannot be tested directly by the consulting neurologist). NIHSS certification is the recommended means of meeting this requirement
- It is strongly recommended that all referring physicians and the ED nurses seek to obtain their NIHSS **training**, recognizing that low volumes of activity in the rural areas may not necessarily allow them to maintain their competence. Nevertheless, having some knowledge of the process would save time for the neurologist during the consult**.**

- Please contact your regional stroke education coordinator to obtain more information on resources for **NIHSS training.** (http://apexinnovations.com/NIHStrokeScale.html)
  For example, a new referring site in a rural area with limited experience dealing with stroke cases would be expected to have all physicians complete Level 1. This type of site would require full support from the neurologist including performing the NIHSS. Often, these sites are staffed with temporary locums making it difficult to enforce all three levels of competency training.

Level 2 includes Level 1 plus certification on the NIHSS. The ED clinicians or internist may require mentoring support or CT interpretation. A videoconference may not be required.

Level 3 includes Levels 1 and 2 plus an awareness of the ASPECTS. This would typically represent a mature experienced Telestroke site which only requires backup with a Telestroke Neurologist via telephone. The local physician should be able to supply the Telestroke Neurologist with both a NIHSS score and an ASPECTS score. The local physician would not be expected to calculate the ASPECTS score, but should be able to liaise with local radiology support to obtain a score and have a working knowledge of the rationale behind the ASPECTS score. Interpretation of the CT by the Telestroke neurologist is mandatory in the absence of interpretation by a local radiologist.
The role of a Telestroke Neurologist in working with physicians from referring sites with level 3 competency would therefore primarily involve mentoring for challenging scenarios, although the opportunity for the Telestroke neurologist to independently review the CT imaging should nevertheless always remain possible.
Endorsed by the Ontario Telestroke Steering Committee and Provincial Telestroke Neurologist Group
Canadian Stroke Best Practice Recommendations for Telestroke

> *"Referring physician and nursing staff who may be involved in acute Telestroke consultations should ideally be trained in administration of the National Institute of Health Stroke Scale (NIHSS), to efficiently and competently assist the Telestroke consultant with the remote video neurological examination [Evidence Level B]."*

Telestroke Mock Consult:

At the completion of the technical and clinical training a mock Telestroke session is to be completed. The Telestroke mock will allow the site to run through Telestroke activation from start to finish, starting with a call to CritiCall Ontario and including a consult with a Telestroke neurologist. The mock allows a site to determine if everything is in place and they are ready to go live.
A mock checklist is completed (https://support.otn.ca/en/members/telestroke-private)
Following the mock, a debriefing session may be helpful to inform quality improvement activities. At the completion of a successful mock, a Go Live date is set.

Sample Referring Site Mock Checklist:

Telestroke Mock Checklist -- Referring Site				
#	**Activity**	**Expected Response**	**Lead**	**Completed**
1	ER staff notified of test stroke patient	ER staff knows when patient will arrive	ER staff	
2	Clinicians locate Acute Stroke Assessment form to identify likely candidates for t-PA.	Telestroke inclusion/exclusion checklist available	ER staff	
3	Clinicians screen patients using Assessment form and determine patient may be a candidate for t-PA	Patient screened	ER staff	
4	ER staff pulls the Telestroke package and Emergency Department Acute Stroke Care Orders are ordered	Telestroke package available	ER staff	
5	Patient sent for a CT/mCTA scan ('Telestroke' noted on requisition)	CT scan performed	CT technician	
6	CT tech completes study and pushes 'test patient' image to ENITS	Image pushed to ENITS	CT technician	
7	ER staff locate CritiCall telephone number	CritiCall telephone number available	ER staff	
8	ER staff call CritiCall and notify them of a Mock Telestroke consult	CritiCall receives telephone call	ER staff & CritiCall	
9	CritiCall refers to the Telestroke on-call schedule and pages Telestroke Neurologist on-call (Dr. Neurologist on call for mock)	CritiCall has correct name and contact information of on-call physician, on-call neurologist receives call/page	CritiCall	
10	Neurologist responds to page by calling CritiCall and is connected via telephone to a physician at the referring site	Referring site speaks on the telephone to on-call neurologist	Neurologist on call & CritiCall	
NOTE: *If CT/mCTA images reside in a PACs, sending the image to ENITS may not be possible as in live situations, images may be sent directly from the CT scanner to ENITS. The following 3 steps related to CT image may not be feasible*				
11	Neurologist accesses the room with ENITS workstation	Neurologist physically located at PC to view images	Neurologist on call	
12	Neurologist powers up ENITS workstation and logs in		Neurologist on call	
13	Neurologist accesses and reviews CT image of referring site patient on his/her workstation	Image accessed, data fields correct	Neurologist on call	
14	ER staff locate the Telemedicine Clinical Cart/ remote control	Videoconferencing unit moved from secure, locked location	ER staff	
15	ER staff prepare the Telemedicine Clinical Cart for possible videoconferencing (location, lighting, located at foot of stretcher, etc.)	Videoconferencing unit in place for videoconference	ER staff	
16	ER staff plug the Telemedicine Clinical Cart into both the power source and the network port	Videoconference systems powers on and welcome screen appears	ER staff	
17	Neurologist establishes videoconference connection with referring site Telemedicine Clinical Cart	Video conference connection established	Neurologist on call & ER staff	
18	ER staff utilizes remote to 'unmute' their system so that Neurologist is able to hear audio from the referring site.	Videoconference system unmuted - Neurologist can hear audio from referring site		
18	Neurologist confirms the video image is clearly displayed	Neurologist can see referring site - image clearly displayed with no packet loss	Neurologist on call	
19	Neurologist asks whether his/her voice is audible to the referring site	Referring site can see and hear neurologist	Neurologist on call	
20	Neurologist successfully controls the camera at the referring site (far end) and can zoom in and out, tilt up and down and pan from side to side	Neurologist can control the camera at the referring site	Neurologist on call	
21	Referring site physician confirms the video image is clearly displayed	Referring site can see neurologist - image clearly displayed with no packet loss	Neurologist on call	
22	Referring site physician asks whether his/her voice is audible to the neurologist	Neurologist can hear referring site	Referring site physician	
Test Problem Resolution				
23	ER staff identify a test problem and are able to locate the contact information for the OTN Service Desk	OTN Service Desk telephone number available	ER staff	
After the Consultation				
24	Referring Physician completes and faxes Billing Information Form to Neurologist immediately following consult	Billing Info form available and faxed to neurologist	Referring site physician	
Note: depending on model used by site - emergency department AND/OR Intensive care Unit may be completing mock testing				

CONTACT INFORMATION

How do I access the Ontario Telestroke Program website for resources?

- https://support.otn.ca/en/members/telestroke-private
    - User Name:
    - Password:

Technical issues/troubleshooting - OTN service desk:

- **1-855-654-0888 –** choose ***** for emergency services.
- Important – please inform the technician that you are a trauma tenant user calling for emergency services.

CritiCall Ontario

- **1-800-668-HELP (4357)**

ENITS:

For urgent requests, such access and password related issues, call the toll-free support line at **1-877-465-7167,** or locally at **519-685-8335.**
For non-urgent requests – email enits@lhsc.on.ca

Telestroke on-call scheduling

- Linda Konkiewicz, telestrokescheduling@otn.ca, (866) 454-6861 x 6207
- Angela McKinnon, telestrokescheduling@otn.ca, (866) 454-6861 x 6274

Telestroke Medical Director

- Dr. Frank Silver, frank.silver@uhn.on.ca , (416) 603-5416

Provincial Lead – Emergency Services

Amanda Willard, telestroke@otn.ca, (866) 454-6861 x 4115

ADDITIONAL RESOURCES

Endovascular Treatment (EVT) Resource Centre – CorHealth Ontario

- https://www.corhealthontario.ca/evt

Canadian Best Practice Recommendations – Telestroke Toolkit

- https://www.heartandstroke.ca/-/media/1-stroke-best-practices/resources/professional-resouces/csbpr2017_telestroketoolkit-updated.ashx?rev=72b13c7c8c8a45a2be07a6758146756b

Quinte Health Care video "Code Stroke Using Telestroke"

- www.bit.ly/QHC-Code-Stroke
- https://www.corhealthontario.ca/evt