Acute Stroke CT/mCTA Imaging Protocol for Endovascular Treatment

Background:

A key decision during hyperacute stroke care is determining if a patient is a candidate for Endovascular Treatment (EVT). This is based on clinical and radiological criteria. The imaging selection requires both a non-contrast CT (NCCT) and Multiphase Computed Tomography Angiography (mCTA).1

ENITS2 is the recommended viewing platform for the CT/multiphase CTA protocol (CT/mCTA) in Ontario (Appendix A). ENITS is currently used for Telestroke consults.

CT images from the Telestroke referring site's scanner are automatically transferred to the ENITS' server for review; however, transferring large numbers of images takes time. The goal is to have the minimum number of standard images sent to ENITS that provides the Telestroke Stroke Neurologist and the Interventionalist the necessary images for decision making within a short time.

Images are available for review using a secure web-based, diagnostic quality enterprise DICOM viewer, eUnity™. Scans transferred to the ENITS' server remain available for review for about one week. For Telestroke, the CT/multiphase CTA protocol images are transferred to the ENITS server within approximately 10 minutes after completion of the CT scan. This will ensure that the imaging for EVT consultation is available for review on ENITS by the consulting Neurologist within 15 minutes or less after the patient has completed their CT scan. Note that the goal is to have patients with acute stroke in the CT scanner within 10 minutes of their hospital arrival.

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2 Emergency Neuro Imaging Transfer System (ENITS) is connected to 101 Ontario hospitals and approximately 350 modalities receiving great than 250,000 exams annually. ENITS exams are time sensitive to support the emergency consultative process facilitated by Criticall Ontario.
Recommended Implementation Planning Process for New Sites or Sites that want to assess their image transfer rates

1. New Telestroke sites should contact ENITS to schedule a time to set up the system and test one in-bound exam using the CT/mCTA Protocol. Our work hours are 8 am-4 pm.
2. Contact Mike Jewison ENITS Business Systems Analyst by email-mike.jewison@lhsc.on.ca and cc Help Desk (enits@lhsc.on.ca) or phone-519-685-8500 ext. 72073
3. ENITS team will catalog the total time from receipt of the first acquired study image until the complete study is transferred to the ENITS database.
4. ENITS team will verify correct # of series and images were received from the site and in conjunction with the designated site contact. Given the variability of network throughput, ENITS requests that the site sends the updated protocol at mutually agreed upon timeframes.
5. The ENITS team will catalog findings and provide them to EVT Imaging Task Group for evaluation and feedback.
6. Once the exam has been reviewed by a member of the EVT Imaging Task Group a confirmation email to Go-live will be sent to the site.
7. A follow-up process for sites that fall outside of the 15- minute threshold will be developed (if required) and communicated to the EVT Imaging Task Group.

Training Materials

Please visit the link below for ENITS Training Materials and Information

http://swodin.ca/content/ENITS
Appendix A

Acute Stroke CT/mCTA Imaging Protocol:
Minimum Image Set for Initial Telestroke or Endovascular Treatment Consultation

Reformatted scans are derived from 0.5 or 0.6 mm axial images from aortic arch to the vertex. **Do not transfer these thin axial images to ENITS.**

The following images, in this order, should be sent to the ENITS server:

1. **Non-enhanced CT head**
   a. Axial 3 mm images
   b. Coronal 3 mm images
   c. Sagittal 3 mm images

2. **CTA neck & head**
   (acquired from aortic arch to the vertex, peak bolus and ~ 10 second delays)
   a. First phase
      i. Axial 2 mm (head and neck)
      ii. Coronal 5 mm MIP (head and neck)
      iii. Sagittal 5 mm MIP (head and neck)
      iv. Axial 30 mm MIP (head only)
   b. Second phase (delay)
      i. Axial 2 mm (neck and head)
      ii. Axial 30 mm MIP (head only)
   c. Third phase (delay) [optional]
      i. Axial 30 mm MIP (head only)

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