



Stroke Door in Door Out Project

KENTUCKY STROKE QUALITY IMPROVEMENT PROJECT

Door In Door Out Subcommittee

- *Door In Door Out Overall Objectives:*

- Improve DIDO times (< 90 minutes or not > 120 minutes) for SEQUIP hospitals for time sensitive diagnosis.
- Track Barriers Delaying DIDO goals
 - Transferring hospital delay
 - EMS/Transport Delay
 - Receiving hospital delay
- Collaborate with EMS/Transport/Receiving Facility

Committee Members

- Jane Van Tatenhove- Baptist Health Lexington- Chair
- Kari Moore- U of L Neurology SEQIP
- Abby Loechler@heart.org AHA representative
- Lindsay Albertson – Baptist Floyd
- Rachel Antonites- Baptist Paducah Hospital
- Jeanette Benton – University of Louisville
- Johnnida Caldwell – Baptist Richmond
- Margie Campbell – University of Kentucky
- Kathy Carr- Owensboro Health
- Ashley Gibson- Baptist Floyd County Hospital
- Scott Helle- Kentucky Office of Rural Health
- Brandon Heming- U of Louisville EMS
- Polly Hunt – Kings Daughter’s Hospitals

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- Joy Highfield – Baptist Corbin
- Susan Kendrick – ARH
- Betty McGee – St Elizabeths
- April Mullins- ARH
- Kristen Oneil – Baptist Lagrange
- Amy Porter- Baptist Health Louisville
- Sabrina Reed – Frankfort HCA
- Pamela Stewart – Norton Healthcare
- Rosa Vittitoe- Baptist Health Hardin
- Shelly Zielke- Stroke Care Network

Member’s verbalized facilitating/solving transportation issues to CSC.

Evidence

CURRENT STUDIES ON DOOR IN DOOR OUT

Review of Door In Door Out Evidence

- Retrospective GWTG study of 103,913 patients requiring transfer from 1925 hospitals from 2019 - 2021
- Median door in door out was 174 minutes
- Longer times: > 80 years old, female, Black race, Hispanic ethnicity,
- Shorter times: Pre notification by EMS, severe stroke, endovascular eligible

Door IN Door Out –JAMA 2023

- KY Overall: 151 – 164 minutes
- KY eligible for Endovascular: 119-125 minutes
- KY other AIS: 168 – 195 minutes
- KY Hemorrhagic Stroke: 157 – 172 minutes

Protocol for LVO, JAMA Neurology, 2017

- Emergency department physicians assess patients with potential stroke immediately on arrival to the PSC and call the TCS/CSC if the patient's (LAMS, RACE or CSSS) score is positive. This is before any imaging has been performed.
- Following this telephone call from the emergency department physicians, the PSC can make arrangements to have a transport team ready prior to confirmation of LVO by computed tomographic angiography (CTA). The mantra here is "waste gas not brain."

Implementing parallel workflows (patient work up and arranging transportation).

- The PSC performs CTA at the time of initial non contrast computed tomography (NCCT) of the brain, and ideally within 30 minutes of PSC arrival.
- The images are sent via a secure, via compliant cloud-based platform for remote viewing by the CSC/TSC stroke team.
- All patients with confirmed ELVO are directly transported to the CSC/TSC angiography suite.

Establish baseline data for your facility:

- Joint Commission STK OP 1 measures
- AHA 27 measure with reasons for delay
- DNV measures

Barriers:

- STK measures are broken down by stroke diagnosis and include nonemergency transfers.
- AHA 27 measure abstraction includes a reason for delay, but not being utilized and requires the provider to document in EHR.

How to measure Door In Door Out

Best Practices Shared: EMS Prenotification in Meditech

▼ Arrival	
Arrival Date/Time	03/04/24 10:02
Mode of Arrival	EMS
EMS Service	Jan Care
Condition	Stable

▼ Triage Acuity	
▼ Stroke	
New, Acute-Onset Stroke Symptoms	Speech
Date Symptom(s) Discovered	03/04/24
Time Symptom(s) Discovered	00:00
Date Patient Last Known Well or Baseline	03/02/24
Time Patient Last Known Well of Baseline	00:00
Time Since Last Known Well	2 days, 10 hours, 10 minutes
*Time LKW < or = 24hrs and Positive for 1 Stroke Symptom	No
EMS notification of stroke prior to arrival	No

Best Practices Shared: Stroke Care Network EMS-Education on the GO <https://scnetwork.ukhc.org/education-on-the-go/>

Large Vessel Occlusions & Mechanical Thrombectomy

Acute Stroke Ready Hospital (ARSH)

Patient stabilization
 ED Stroke Care
 Administers IV thrombolytic
 Usually transfers

Primary Stroke Center (PSC)

ED and Inpatient Stroke Care
 Stroke unit or designated stroke beds
 Administers IV thrombolytic
 May admit or transfer

Thrombectomy Capable Stroke Center (TSC) or Stroke Plus (PSC +)

ED and Inpatient Stroke Care
 Administers IV thrombolytic and preforms **mechanical thrombectomy** (24/7)
 Dedicated neurocritical care beds for complex stroke patients
 Usually admits

Comprehensive Stroke Center (CSC)

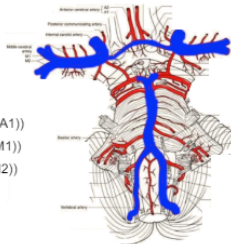
ED and Inpatient Stroke Care
 Hemorrhagic Stroke Care (preforms endovascular coiling and surgical clippings)
 Administers IV thrombolytic and preforms **mechanical thrombectomy** (24/7)
 Dedicated neurocritical care beds for complex stroke patients
 Stroke admission
 Participant in patient centered research

What is a Mechanical Thrombectomy?

An endovascular procedure that removes a blood clot(s)/thrombus in a large vessel in the brain after an ischemic stroke and can be treated up to 24 hours from last known well.

What Constitutes Large Vessel?

Internal Carotid Artery (ICA)
 Anterior Cerebral Artery (ACA (A1))
 Middle Cerebral Artery (MCA (M1))
 Middle Cerebral Artery (MCA (M2))
 Basilar Artery
 Vertebral Artery



Case Scenario

68-year-old female with history of peripheral vascular disease, hypertension and atrial fibrillation.

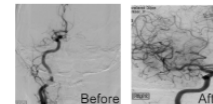
While watching TV with husband, patient began having a left facial droop and left-sided weakness. Her husband noticed the symptoms and called 911. EMS stated a positive CPSS and a CSTAT score of 4. (If C-STAT Score ≥ 2 , patient may have an ischemic stroke with large vessel occlusion.)

EMS transferred patient to an ASRH with left-sided weakness, left facial droop, and no movement of left upper extremity. Neurologic exam also revealed right gaze deviation; the patient could not move her eyes past midline. Admission NIHSS 13.

A non-contrast CT of the brain was obtained on arrival to the ER and it showed a dense right middle cerebral artery sign without significant loss of gray-matter differentiation. This finding indicates that the patient was an interventional candidate. She was **not** a candidate for IV thrombolytic because she was on Coumadin with INR > 1.7.

Knowing the CSTAT score was indicative of a LVO, EMS stayed with the patient in anticipation that the patient might get transferred. The decision to transfer the patient to a CSC was made and they were able to safely and quickly transfer to the CSC, where mechanical thrombectomy was successfully performed.

Outcome:
Immediately after the mechanical thrombectomy, the patient was identified to have increased movement of the left lower and upper extremities. Patient did not qualify for acute rehab and is home doing well with outpatient therapy.



Check out this 2 minute video on Mechanical Thrombectomy.



Scan this QR code to go directly to the Kentucky map of stroke certified centers



Scan this QR code to go directly to the Indiana map of stroke certified centers



Scan this QR code to go directly to the West Virginia map of stroke certified centers



Scan here to access your quiz and certificate

Want to join our monthly Door In Door Out meetings?

Email: Jane.VanTatenhove@bhsi.com



Time is Brain! Every minute counts.