Riverside Methodist Hospital EMS Stroke Newsletter

September 2019, Volume 3 Issue 3

Show Me The Numbers!

Riverside Methodist Hospital	January-August
tPA Administration	71 patients
Average minutes until tPA administered	33 minutes
Mechanical thrombectomy	105 patients
Average minutes until groin puncture	78 minutes
TICI Score 2b or better (see below)	88% of patients
Patients enrolled in research	36 patients
Pre-Hospital Stroke Alerts	**January-August**
Stroke Alerts from EMS	682 patients
Alert called by EMS prior to arrival	79%
Pre-hospital stroke alert was a stroke	47%

TICI Scores

What is a TICI score? TICI score is how we measure the success of the patient's clot removal. The score ranges from 0-3 with 0 being unsuccessful and 3 being complete reperfusion. Our goal is to achieve a TICI 2b or greater for every patient. Achieving this score has correlated with more patients being functionally independent after the procedure. This represents a successful treatment (like a TIMI 2 or better for STEMI patients).

Education Events

September 27th – OhioHealth EMS Update @ Riverside
November 22nd – OhioHealth EMS Update @ Dublin
May 18th-19th, 2020 – OhioHealth EMS Conference

Visit OhioHealthEMS.com for more info or OhioHealthEMS.com/calendar for online registration info

Furthering Stroke Research

We need your support to help Central Ohio patients receive the most cutting edge stroke treatments available! Here are the latest stroke research trials at Riverside….

TIMELESS: A multi-center trial randomized for patients to receive tenecteplase (TNK) 4.5 to 24 hours after LKW or a placebo; if eligible the patient would still be a candidate for mechanical thrombectomy. 90-day outcomes will be measured along with complications. Riverside, Grant and Doctors has joined 97 study locations across the U.S. – ***WE* are the only site in Columbus!**

ESCAPE NA-1: a multi-center trial randomized for patients to receive the neuroprotectant NA-1 along with mechanical thrombectomy. This trial just completed enrollment, soon we will know if mechanical thrombectomy combined with a neuroprotective agent can prevent further brain injury and improve outcomes. **Riverside is the only site in Columbus who participated!**

BASIC: A multi-center prospective study determining whether the ISCDX lab test is able to differentiate between diverse stroke etiologies. Understanding why the stroke occurred is the best way to prevent a second stroke; this would be especially useful for our cryptogenic stroke patients! Enrollment has begun! **Riverside is the only site in Columbus who participating!**

To Draw or Not To Draw….

The 2018 Ischemic Stroke Guidelines from the American Heart/American Stroke Association call out the need to provide rapid treatment for stroke patients, especially those who are eligible for alteplase (tPA).

2.3. Other Diagnostic Tests	COR	LOE	New, Revised, or Unchanged
1. Only the assessment of blood glucose must precede the initiation of IV alteplase in all patients.	I	B-R	Recommendation reworded for clarity from 2013 AIS Guidelines. Class unchanged. Class unchanged. LOE amended to conform with ACC/AHA 2015 Recommendation Classification System.
Recommendation was modified to clarify that it is only blood glucose that must be measured in all patients. Other tests, for example, international normalized ratio, activated partial thromboplastin time, and platelet count, may be necessary in some circumstances if there is suspicion of coagulopathy. Given the extremely low risk of unsuspected abnormal platelet counts or coagulation studies in a population, IV alteplase treatment should not be delayed while waiting for hematologic or coagulation testing if there is no reason to suspect an abnormal test.			

In order to administer alteplase, only a blood glucose level is needed. If the patient takes Coumadin an INR is needed and should be completed at the bedside through point-of-care testing. Waiting for lab work to result prior to administration of alteplase is delaying care to patients.
In fact, in order to administer alteplase we need to have:

- Glucose >60
- Normal non-contrast head CT
- BP <185/110
- Weight

That's all folks!

2 million brain cells die every minute our patients are having a stroke; would you want your care delayed?

Congratulations and Thank You!

-**Liberty Township M322** for helping us achieve a 21 minute tPA on 4/4/19!
-**Westerville Fire M113** for helping us achieve a 20 minute tPA and a 53 minute door to groin puncture on 4/18/19!
-**CFD M8** for helping us achieve a 20 minute tPA on 4/21/19!
-**Washington Township M92** for helping us achieve a 50 minute door to groin puncture on 4/24/19!
-**Delaware City M301** for helping us achieve a 63 minute door to groin puncture on 5/8/19!
-**Delaware City M303** for helping us achieve a 14 minute tPA on 6/5/19!
-**CFD M18** for helping us achieve a 14 minute tPA on 7/13/19!
-**Stroke 1** for helping us achieve a 37 minute door to groin puncture on 7/13/19!
-**Norwich Township M81** for helping us achieve a 66 minute door to groin puncture on 7/16/19!
-**Worthington Fire M101** for helping us achieve a 19 minute tPA on 7/17/19!
-**Stroke 1** for helping us achieve a 38 minute door to groin puncture on 8/28/19!
-**CFD M6** for helping us achieve a 47 minute door to groin puncture on 9/4/19!
-**London City M360** for helping us achieve a 53 minute door to groin puncture on 9/6/19!

Diagnosis Highlight

Endocarditis

When bacteria, fungus or other germs spread through your bloodstream they may attach to damaged areas in your heart and cause endocarditis. Endocarditis damages the heart valves and can lead to life-threatening complications. There are many ways germs can enter your bloodstream:

- Through your mouth
- Infections
- Catheters
- Needles used for body piercing or tattoos
- IV drug use
- Dental procedure

When endocarditis occurs the patient is at an increased risk of a stroke. The endocarditis can lead to the formation of vegetation on the patient's heart valve. The vegetation can then act as an emboli and occlude a vessel in the brain.

These patients are not a candidate for alteplase (tPA) because there is no blood clot to fight. Fortunately there is a treatment option – mechanical thrombectomy – if the patient is determined to be a candidate.

The patient will also need long-term antibiotic therapy and possibly a valve replacement.

Overall prognosis depends on the patient and the severity of the infection.

Mayo Clinic. 2019. https://www.mayoclinic.org/diseases-conditions/endocarditis/symptoms-causes/syc-20352576

Los Angeles Motor Scale (LAMS)[22]		
Face	0	Both sides move normally
	1	One side is weak or flaccid
Arm	0	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move
Grip	0	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move
Total	0–5	

Assessment vs. Severity Scale

There has been some confusion around what a stroke severity scale is and when it is used. The Los Angeles Motor Scale (LAMS) is widely used in Central Ohio and has high predictability for identifying a large vessel occlusion. The LAMS is not a neuro assessment but is a useful tool for determining severity of the patient's stroke and where to transport for treatment - A patient with a LAMS $\geq$ 4 should be taken to Riverside for treatment. All OhioHealth facilities will be asking for a LAMS score if a suspected stroke is being transported.

Mobile Stroke Unit Update

The Columbus Mobile Stroke Treatment Unit (MSTU) has been active since the end of May. A collaboration between Columbus Fire, Mt. Carmel, Ohio State University and OhioHealth, the goal is to improve treatment times and outcomes for stroke patients. Staffing of the MSTU includes, a radiology tech, Advanced Practice Provider, an OhioHealth vascular neurologist through telemedicine and 2 paramedics. The MSTU features a non-contrast Head CT and the ability to administer tPA prior to hospital arrival. Patients are transported based on patient choice or to the closest comprehensive stroke center.

Here are recent numbers:

Total runs: 505
Total transports: 146 patients
tPA administration: 15 patients
Transports to OSU: 28 patients
Transports to Mt. Carmel: 37 patients
Transports to Riverside: 81 patients

DISABILITY VS. DEFICIT

These two words are often used interchangeably in stroke treatment decisions but they are anything but equal! Whether a patient has a deficit is easy to determine with a neuro assessment – this is what we do every day! Determining whether a patient has a disability is a different story.

Let's say a 50yo patient arrives with some right hand weakness, NIHSS 0. Is this a disability? What if this patient is a musician or painter or maybe works at a computer all day? Would that make a difference?

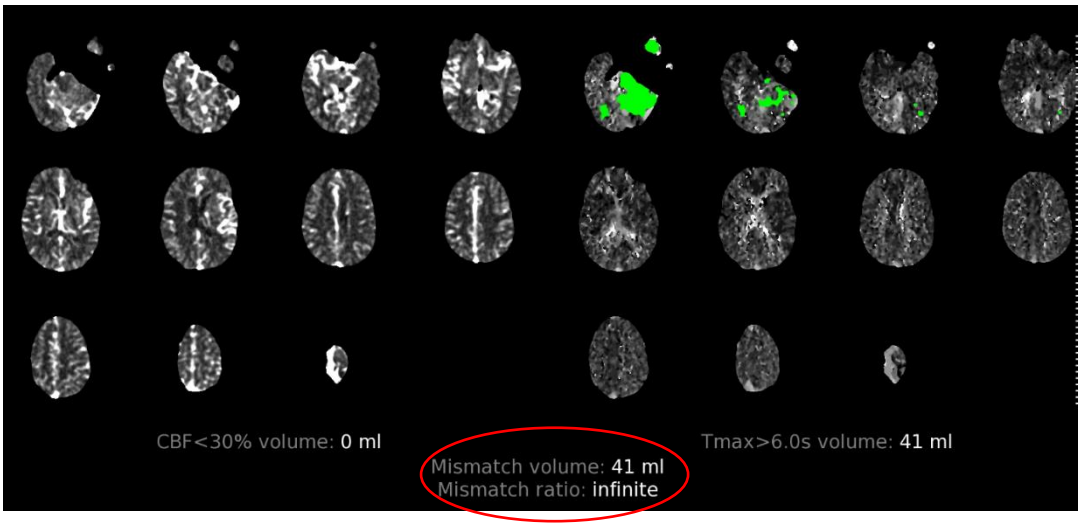
That's why it is important to determine whether the patient thinks their symptoms are disabling, we cannot make that call! You will hear our stroke team asking the patient whether they feel their symptoms are disabling to help guide treatment decisions, not relying solely on a stroke scale!

Case Highlight

66yo patient was driving on the interstate when he became weak. The patient was driven to a CFD station 3 and transported to RMH as a pre-hospital stroke alert. On arrival patient was aphasic with left sided weakness, NIHSS 21. While in CT patient was vomiting and became less responsive requiring emergent intubation before continuing scans. Advanced neuroimaging showed basilar artery occlusion and bilateral cerebellar hemisphere infarcts.

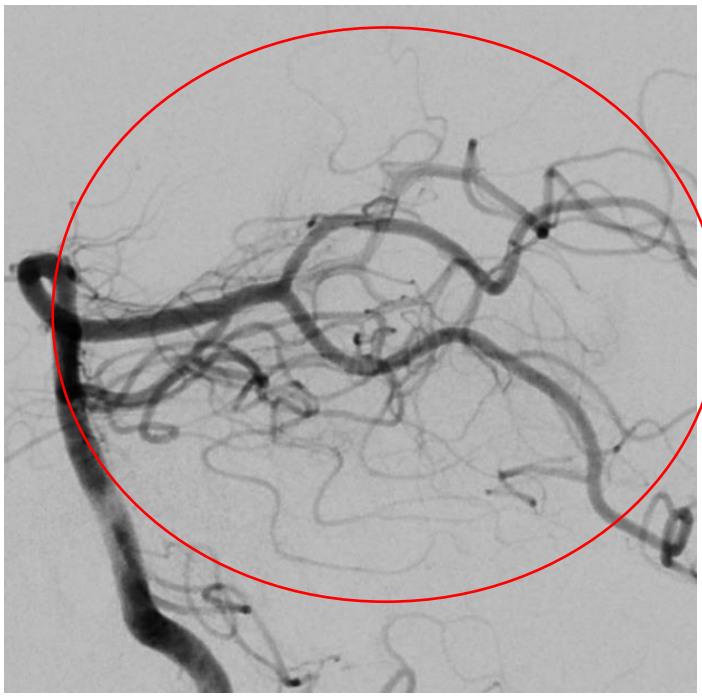
Patient received alteplase (tPA); door to tPA = 31 minutes (administered in CT, delayed for intubation)
Patient was a candidate for mechanical thrombectomy; door to groin puncture = 87 minutes (delay stabilizing patient who was in v-tach)

Perfusion imaging – green is penumbra, we look at the mismatch ratio which is infinite in this case



No flow from the right posterior cerebral artery. Prior basilar artery occlusion resolved with tPA.

TICI 3 recanalization of the right posterior cerebral artery.



Patient was discharged home 2 days later with an NIHSS of 0.