Apr 22nd, 1:00 PM - 2:00 PM

Quality Improvement Initiative to Improve Door to Needle Time in Acute Stroke Patients

Lauren N. Trace
Ohio Northern University

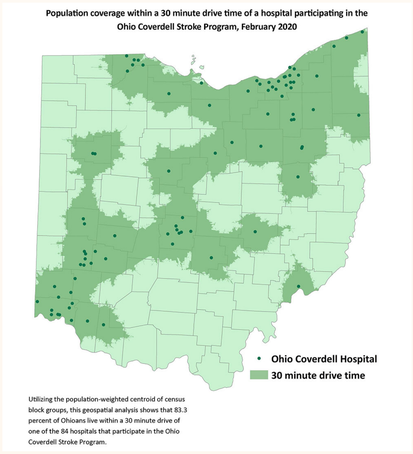
Improving Door-to-Needle Times in AIS Patients

Lauren Trace

Ohio Northern University

BACKGROUND

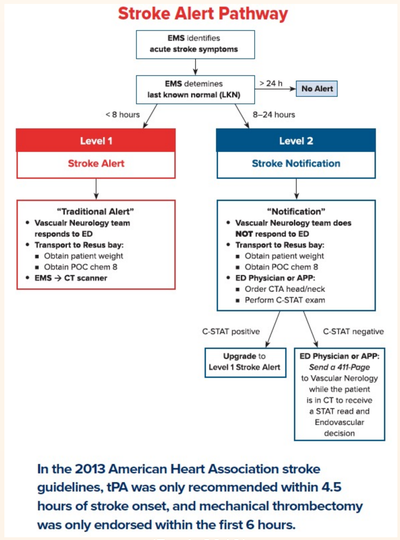
- In the US, there are an average of 795,000 strokes a year (Centers for Disease Control, 2021).
- A stroke is when blockage occurs in a blood vessel in the brain or when a blood vessel bursts creating a lack of oxygen supply to the brain.
- tPa is a clot buster that Is used to treat stroke patients if specific criteria is met.



(The Ohio Coverdell Stroke Program, 2020)

PURPOSE

- The purpose of this project is to determine if implementing a one call notification system can decrease door-to-needle (DTN) time.



(Beel, 2019)

LITERATURE REVIEW

- Research shows that a one-call notification system is directly related to a decrease in DTN times
- Presence of a stroke team also influences a decrease in DTN times
- tPA is a medication that us used to help treat stroke patients who meet the specific criteria

Criteria	Inclusion	Exclusion
Is the patient older than 18 years?	YES	NO
Can the t-PA be started within in 3 hours of known onset of symptoms?	YES	NO
Is this an ischemic stroke?	YES	NO
Is there a definite time of onset?	YES	NO
Does the CT scan show a hemorrhage?	NO	YES
Is there an area of major infarct on CT scan (e.g. mass effect, shift, or edema)?	NO	YES
Is the patient pregnant?	NO	YES
Is there a history of head trauma, stroke, or intracranial surgery in the past 3 months?	NO	YES
Is there a past medical history of intracranial hemorrhage?	NO	YES
Has the patient had major surgery in the past 14 days?	NO	YES
Is there a history of intracranial neoplasm, arteriovenous malformation, or aneurysm?	NO	YES
Is there a history of gastrointestinal or genitourinary tract hemorrhage in the past 3 weeks?	NO	YES
Is there a history of bacterial endocarditis?	NO	YES
Is there a history of myocardial infarction in the past 3 weeks?	NO	YES
Is there a known bleeding/clotting disorder?	NO	YES
Has the patient had a spinal tap or non-compressible site arterial puncture in the past 7 days?	NO	YES
Was there a reported seizure at onset?	NO	YES
Is the presentation of symptoms resolving or mild; suggestive of a TIA?	NO	YES
Does the patient currently have uncontrolled hypertension (SBP>185 and/or DBP>110) and is not responding to antihypertensive medications? NOTE: BP SHOULD NOT BE AGGRESSIVELY TREATED TO MEET CRITERIA 10-20MG IV OF LABETALOL EVERY 10-15 MINUTES (MAX DOSE 30MG IV).	NO	YES
Lab Values		
Is the PTT abnormal?	NO	YES
Is the INR greater to or equal to 1.7?	NO	YES
Are the platelets less than 100,000	NO	YES
Is the Blood sugar less than 50 or greater than 400?	NO	YES
IF THE PATIENT MEETS CRITERIA HAVE t-PA ORDERS, CONSENT, AND t-PA READY FOR INFUSION.		

(Gross & Hartmut, 2017)

National Institutes of Health Stroke Scale score

1a. Level of consciousness	0 = Alert; keenly responsive 1 = Not alert, but arousable by minor stimulation 2 = Not alert; requires repeated stimulation 3 = Unresponsive or responds only with reflex
1b. Level of consciousness questions: What is the month? What is your age?	0 = Answers two questions correctly 1 = Answers one question correctly 2 = Answers neither question correctly
1c. Level of consciousness commands: Open and close your eyes. Grip and release your hand.	0 = Performs both tasks correctly 1 = Performs one task correctly 2 = Performs neither task correctly
2. Best gaze	0 = Normal 1 = Partial gaze palsy 2 = Forced deviation
3. Visual	0 = No visual loss 1 = Partial hemianopia 2 = Complete hemianopia 3 = Bilateral hemianopia
4. Facial palsy	0 = Normal symmetric movements 1 = Minor paralysis 2 = Partial paralysis 3 = Complete paralysis of one or both sides
5. Motor arm 5a. Left arm 5b. Right arm	0 = No drift 1 = Drift 2 = Some effort against gravity 3 = No effort against gravity; limb falls 4 = No movement
6. Motor leg 6a. Left leg 6b. Right leg	0 = No drift 1 = Drift 2 = Some effort against gravity 3 = No effort against gravity 4 = No movement
7. Limb ataxia	0 = Absent 1 = Present in one limb 2 = Present in two limbs
8. Sensory	0 = Normal; no sensory loss 1 = Mild-to-moderate sensory loss 2 = Severe to total sensory loss
9. Best language	0 = No aphasia; normal 1 = Mild to moderate aphasia 2 = Severe aphasia 3 = Mute, global aphasia
10. Dysarthria	0 = Normal 1 = Mild to moderate dysarthria 2 = Severe dysarthria
11. Extinction and inattention	0 = No abnormality 1 = Visual, tactile, auditory, spatial, or personal inattention 2 = Profound hemi-inattention or extinction
Total score = 0–42.	

(Centers for Disease Control and Prevention, 2021)

METHODS

- Quasi-experimental Design
  - Chart audits to look at DTN times pre- and post-intervention
- Participants
  - AIS patients
  - 5 Hospitals within Knox, Licking and Richland Counites
- Procedure
  - Suspected stroke patients who present to the ED will activate the one call notification system
  - Interdisciplinary team meets with patient (Doctor, Nurse, radiologist, and phlebotomist)
  - Time of onset of symptoms, arrival time to ED, time to CT scanner and time of tPA administration will all be collected.
- Materials
  - NIHSS scale
  - Chart Audits
- Ethical Standard
  - Informed consent
  - Approved by ONU's IRB board

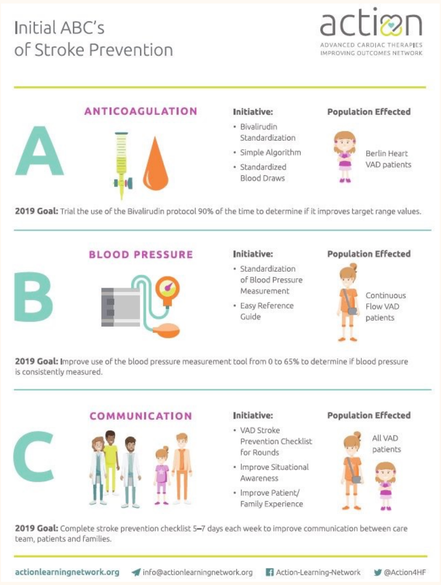
DISCUSSION

- Implications
  - Better education programs for ED nurses
  - Provider education
- Limitations
  - May not be replicable in larger hospitals
  - Experiment conducted during pandemic
  - Accurate time documentation
- Recommendations
  - Mandatory education
  - Implementation of a stroke policy
  - Better way for collection of data

(Boulder Community Health, 2021)

CONCLUSION

- Improving AIS patient outcomes
- Educational opportunities for healthcare professionals
- Improving time documentation



(Serrato, 2021)

REFERENCES

Beel, B. (2019). *Updates in Prehospital Stroke Alert Identification Clinical Scenario*. EMRA. https://www.emra.org/emresident/article/prehospital-stroke-alert/

Boulder Community Health. (2021, April 30) https://www.bch.org/latest-news/2021/april/when-it-comes-to-spotting-a-stroke-b-e-f-a-s-t-/

Centers for Disease Control and Prevention. (2021). Stroke facts. *Centers for Disease Control and Prevention*. https://www.cdc.gov/stroke/facts.htm

Gross & Hartmut. (2017). "Emergency Neurological Life Support: Acute Ischemic Stroke". *Neurocritical Care* 27 (S1): 102-115. doi:10.1007/s12028-017-0449-9.

The Ohio Coverdell Stroke Program. *Ohio Department of Health*. (2020). https://odh.ohio.gov/know-our-programs/stroke/coverdell-program

Serrato, K. (2021). *ABCs of stroke prevention*. Action Learning Network https://www.actionlearningnetwork.org/rh-articles/2020/1218