UTILITY OF A MOBILE STROKE UNIT FOR NON-ISCHEMIC NEUROLOGICAL EMERGENCIES IN NJ

S. SÁNCHEZ-MOLERO PÉREZ, MD*; J. BOOZAN, MICP*; C. LEWIS-DIAZ, RN, MHA*; S. ARCHBALD, MA*; G. SANFILLIPPO, MSN*; S. DONOHUE, BS, NR-P*; C. HLUBIK, BSN, RN*; I. MALIK*; R. GAISER, RVT, RDMS*; B. SZENEITAS B.S.,R.T.*; F. VISCONTI*; B.DUGGAN, B.S. R.T.*; H. C. SCHUMACHER, MD*; R. KUMAR, MD*; G. SUTTER, MD*; G. SHARP, RN, BSN*; S. VARRICCHIO MSN, RN**; N. GOFMAN, PHARM.D.*; J. COHEN, MBA, FACHE*; D. VISCONTI**; B. GRANDE, MSN, RN-BC**; B. GERASIMOWICZ, RN**; V. MCLAUGHLIN, MD***; E. YUSCAVAGE***; T. CHONG**; S. WALKER**; L. JOHANSSON**, K. MORRIS, MSN, RN*; M.F. STIEFEL, MD, PHD*

*Capital Institute for Neurosciences, Stroke and Cerebrovascular Center, Capital Health Regional Medical Center, Trenton NJ
**Capital Institute for Neurosciences, Capital Health Medical Center - Hopewell, Pennington NJ
***St Francis Medical Center, Dept. of Emergency Medicine, Trenton NJ

PURPOSE/BACKGROUND

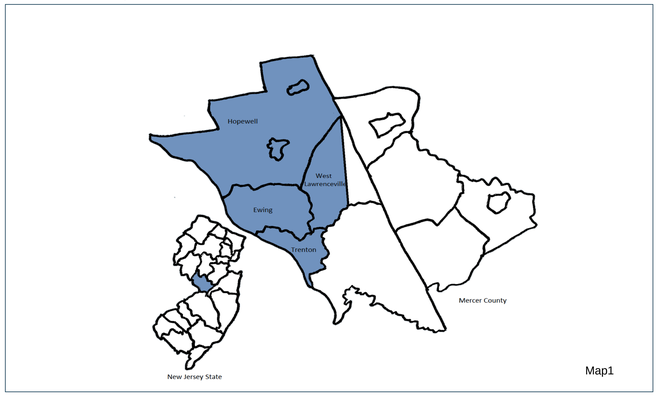
The timing of administering tissue-type plasminogen activator (tPA) in patients with an ischemic stroke is directly related to clinical outcomes[1]. The use of a mobile stroke unit (MSU) is a strategy to deliver treatment and care in a more rapid fashion compared to standard stroke management. The MSU at Capital Health was established not only as an ambulance for acute ischemic stroke, but as an extension of our advanced neurosciences ICU.

OBJECTIVES

Identify and track the utility of the Capital Health Mobile Stroke and Neuro Unit for patients with a neurological emergency or a potential acute ischemic stroke. We collected objective variables on when and how the MSU was used. This report provides the initial metrics of the Capital Health Mobile Stroke and Neuro Unit in a comprehensive stroke center in Central NJ (covering Capital Health & St. Francis Medical Center, both in Trenton, Map 1).

DESIGN/METHODS

As part of a prospective, programmatic analysis we identified and tracked all dispatches, cancellations, neuro assessments and neuro transfers undertaken by the MSU. We recorded real-time data during the deployment of the MSU. We focused on duration of delivery of care, the screening process, and patient characteristics. The data were transcribed onto a spreadsheet and descriptive statistics calculated. Dispatch time is being used to help us track processes times.



Map1

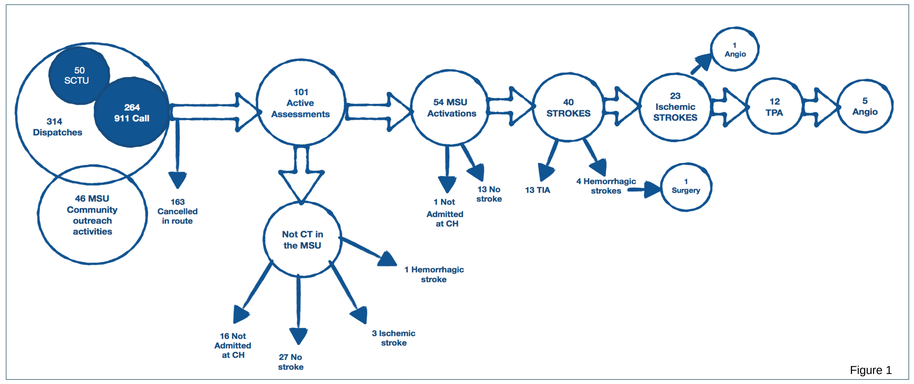


Figure 1

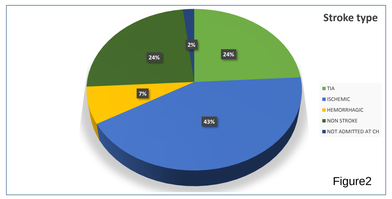


Figure2

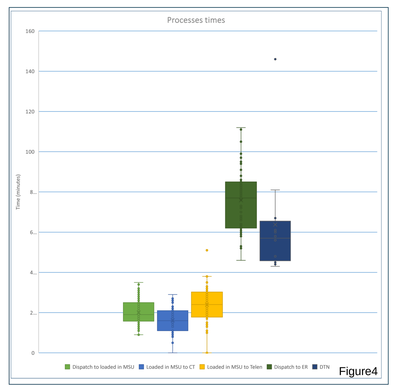


Figure4

Processes Times	Dispatch to loaded in MSU	Loaded in MSU to CT	Loaded in MSU to TLN	Dispatch to ER	DTN
Average	20	16	25	73	56
SD	7	6	8	19	11
Median	18	16	25	76	56

Table1

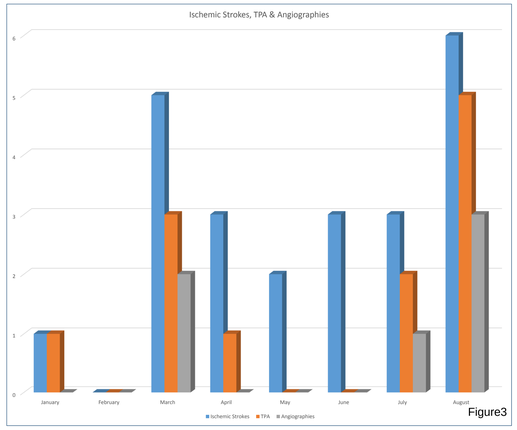


Figure3

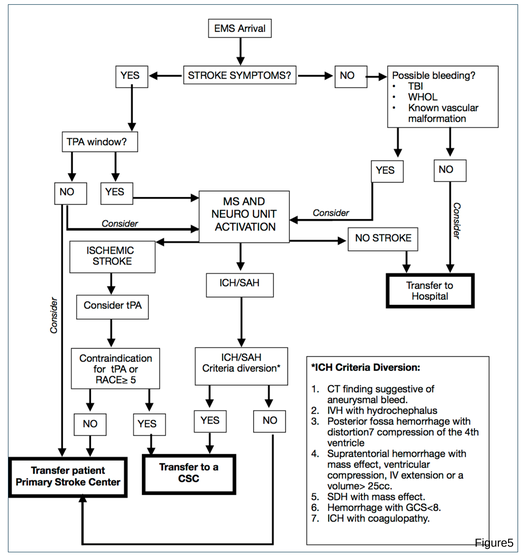


Figure5

RESULTS

In the first 7 months of 2017 there were 314 MSU dispatches. The MSU was used as a Specialty Care Transport Unit (SCTU) 50 times (Figure 1). Of the 264 alerts in response to a 911 call, the MSU was canceled in route 163 times and a neurological assessment was performed on 101 patients, of which 47 were deemed ineligible for tPA. We categorized ineligibility as: 1. Medical reasons: Contra-indication for tPA, e.g. hypoglycemia, anti-coagulant therapy (n=30), 2. Patient-centered reasons: refusing treatment (n=5), and 3. Cancelled by ALS (n=12). Of the remaining patients, 54 were deemed tPA eligible, of which 23 (42%) had an ischemic stroke, 13 (24%) a TIA, 4 (7.4%) a cerebral hemorrhage, and 13 (24%) a non-vascular neurological emergency (Figure 2). Twelve patients were treated with tPA, 11 in the MSU, of which 5 received mechanical thrombectomy (Figure 3 for monthly details regarding TPA and emergent angiographies). The mean treatment time (MSU dispatches to angio suite) was 190 mins. (s.d. 14) and MSU distance traveled was 4.2 miles (s.d. 3.97). One of the patients with an ICH underwent emergency decompressive craniectomy. We recorded the following durations (mean, s.d., Figure 4,Table 1 and list below)

1. From dispatch to loading the patient into the MSU was 20 mins. (s.d.7)
2. From MSU loading to CT completion was 16 mins. (s.d.6)
3. From loaded in MSU to Teleneurologist consult 25 mins. (s.d.8)
4. From Dispatch to ER 73 min (s.d.19)
5. Door to needle time 56 min (s.d. 11).

CONCLUSIONS

These are the first data on the use of the MSU in Central NJ. Our initial results are comparable with data reported in the literature[2]. However, we would like to note that the MSU has a role beyond tPA administration and also serves as a neurologic assessment & screening tool (Figure 5). As we gain more experience, collect outcome data, and reach locations further away from the MSU launch site we anticipate that the treatment effect will be enhanced compared to standard stroke management. The MSU can serve as an extension of an advanced neurosciences program providing important treatment to patients with neurological emergencies other than acute ischemic stroke.

REFERENCES:
1. Jauch EC, Saver JL, Adams HP, Bruno A, Connors JJ, et al. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. Stroke. 2013;3:870–947
2. Bowry R, Parker S, Rajan SS, Yamal JM, Wu TC, Richardson L, et al. Benefits of stroke treatment using a mobile stroke unit compared with standard management: the best-msu study run-in phase. Stroke. 2015;46:3370–3374.