Evaluation of the Impact of Teleneurology
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Background
Based on review of data, delays and lack immediate access to Neurology services were noted. Patients, on arriving to our facility from the smaller hospitals, would frequently be outside the time window for acute stroke intervention. Additionally, patients with non-acute neurological needs were being unnecessarily transferred due to lack of neurological care. The decision was made to implement a Teleneurology Stroke service to support care of acute Neurological patients in outside hospitals.

Program Growth
Teleneurology was started in February of 2014 with one site and has expanded to include an additional eight sites. In the top graph, the blue and green bars show those patients who were transferred, all others were able to remain in their home facility with the support of teleneurology. Stroke was a particular focus and there has been an increase in patients receiving acute stroke treatments. The program continues to grow adding hospitals in the rural areas to better serve the needs of the acute stroke and neurological community.

Teleneurology Request Volume

Case Review
33 year old female, 12 days post-partum, no complications, experienced sudden left hemiparesis, EMS arrival to outside hospital at 5:50pm. Patient assessed for acute stroke at 5:51pm, and NIH Stroke Scale of 13. Vanderbilt Teleneurology was consulted as patient was en route to CT scan. Vanderbilt neurologist advised tPA was contraindicated due to uterine bleeding. CT scan was negative for cerebral bleeding. Patient arrived to Vanderbilt ED at 7:34 pm, urgently transferred to the OR, underwent successful thrombectomy for a right MCA occlusion. NIH stroke scale improved to 2 after the procedure. The patient was discharged home with no neuro deficits three days after hospital admission.

Conclusions
Teleneurology was successful in reducing transfers from 100% to 12% overall. Those patients who still required a higher level of care were seamlessly transitioned to VUMC. Additionally through the training for teleneurology, education and protocols at outside facilities were strengthened.

Lessons Learned
One important finding in a review of the data was that once patients were evaluated and treated, their transfer times were longer than expected as shown in the bottom graph. This data is being used to improve the transfer protocols for acute stroke in order to expedite the care provided. This will require engagement and cooperation of the EMS system, the outside facilities and the teleneurology service.