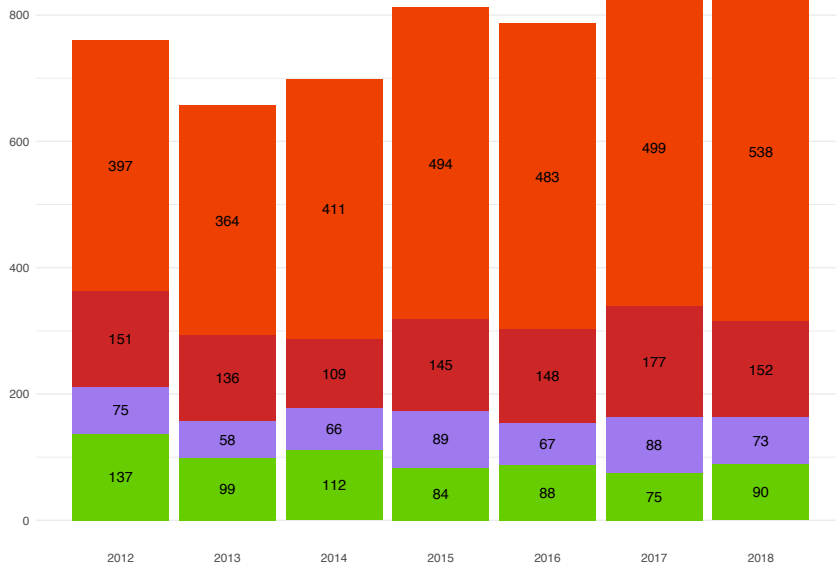


Banner University Medical Center 2018 Stroke Program Data Update

2012–2018 CSC Volumes



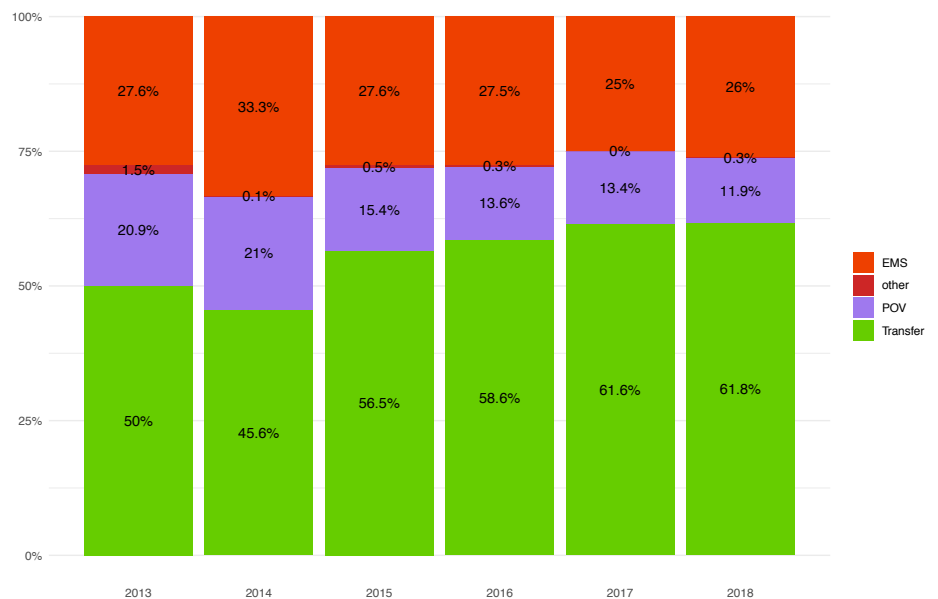
“Stroke” refers to several different diagnoses: Acute Ischemic Stroke (loss of blood supply to a region of the brain), Intraparenchymal Hemorrhage (bleeding into the substance of the brain), Subarachnoid Hemorrhage (bleeding around the brain, often from an aneurysm), and TIA (transient ischemic attack, in which the stroke symptoms resolve before causing permanent damage).

Volumes at BUMCP for each stroke type are shown since 2012.

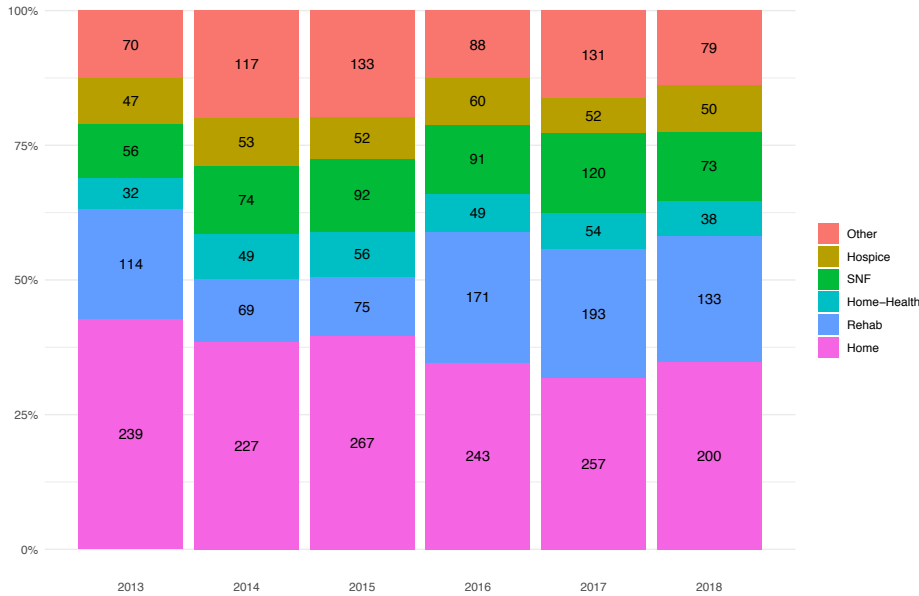
Our stroke patients arrive in various ways. As a referral center for more complex stroke patients, many of our patients are transferred from other facilities for advanced treatments. This proportion has been steadily climbing over the past several years

The patients who weren’t transferred arrive via the Emergency Department, some via EMS after calling 911, and some via Privately Owned Vehicles. We prefer overall that people call 911 however when a stroke is suspected.

2013–2018 CSC Arrival Mode Distribution



2013–2018 CSC Discharge Dispositions



A majority of our BUMCP stroke patients are discharged home (often with outpatient therapies) or to acute rehab for intensive therapy.

Some are not able to tolerate therapy, and are placed in skilled nursing facilities.

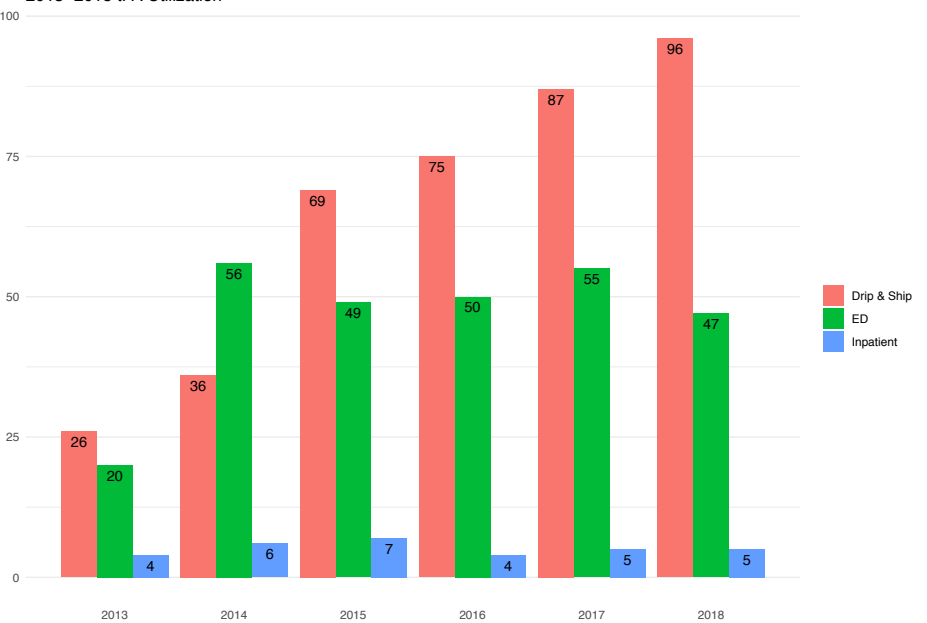
The “Other” category reflects patients who did not survive, or were placed in types of facilities besides those of the other categories.

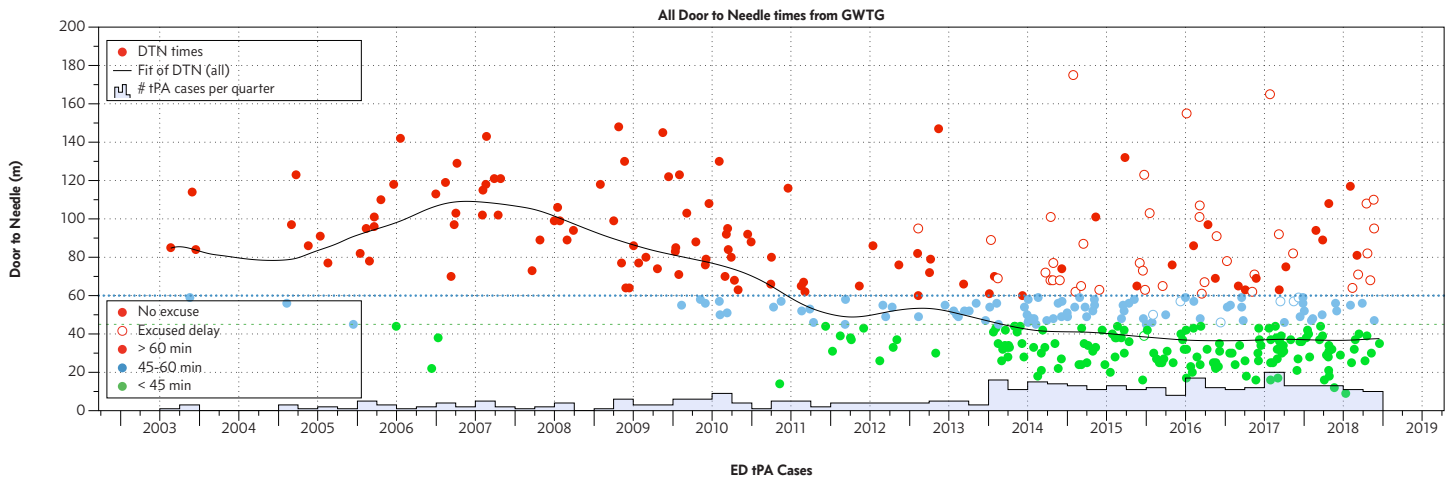
An important treatment for patients experiencing an acute ischemic stroke (starvation of part of the brain due to a blood clot) is the “clot-busting” drip tPA.

Utilization of tPA reflects both on the organization of the stroke center, and on how well the community has been educated — tPA must be given quickly after a stroke begins, and patients must get to the hospital on time for that therapy to be considered.

BUMCP receives many patients from other facilities for further care after tPA is given.

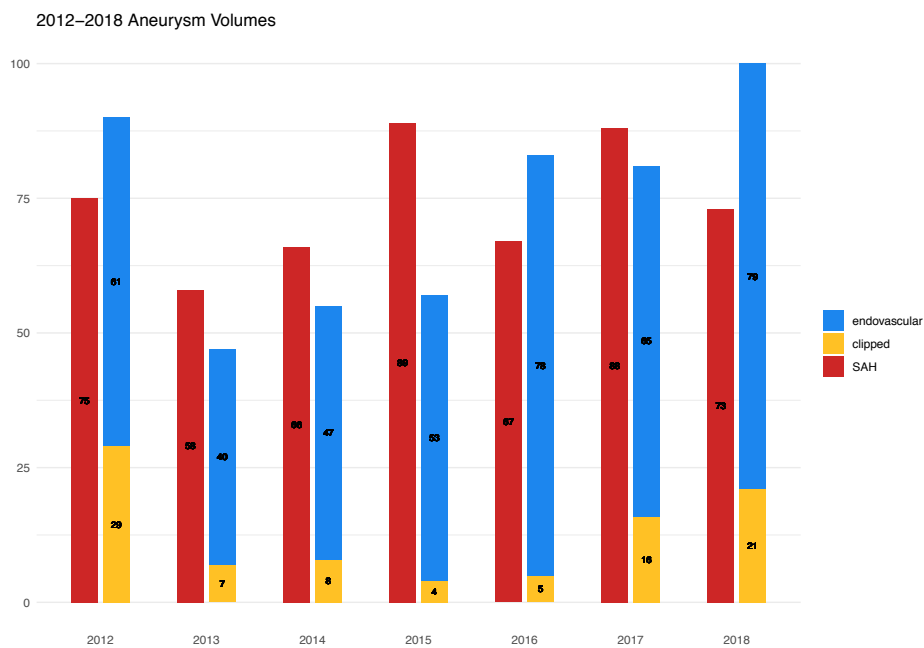
2013–2018 tPA Utilization





Delivering tPA to a person experiencing an ischemic stroke in the Emergency Department is a complex process; one that stroke centers spend a lot of time to perfect the logistics involved.

We are proud at BUMCP to demonstrate that over the past 15 years we have steadily improved that process. What used to take well over an hour to accomplish, in our fastest case of 2018 took only 9 minutes.



Aneurysms are weak spots in brain arteries that are at risk of bursting. Ruptured aneurysms are a cause of subarachnoid hemorrhage (SAH).

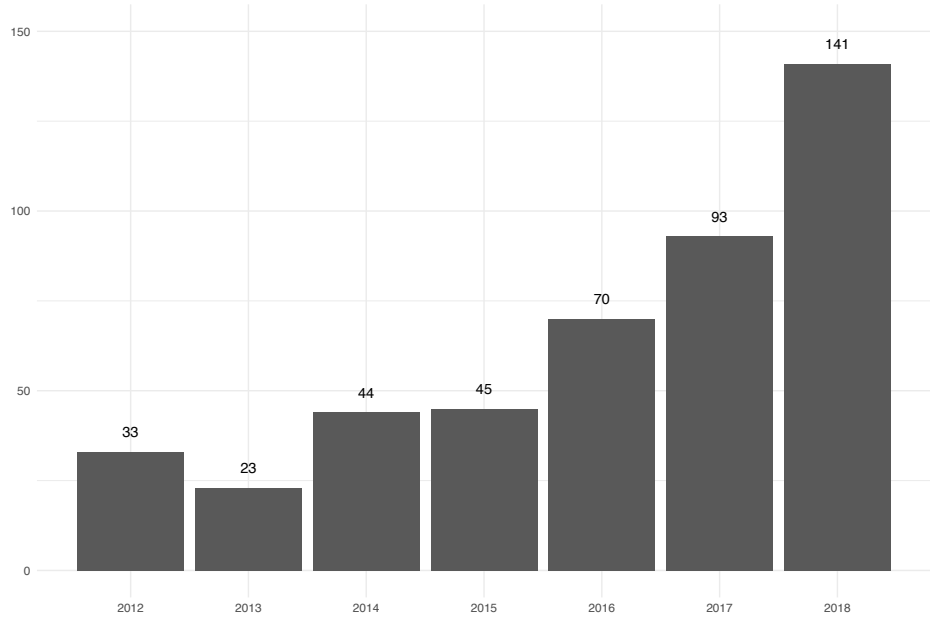
Aneurysms can be repaired with either by open surgical clipping, or in many cases, newer “endovascular” techniques using catheters and coils to block the aneurysm.

This figure depicts the number of SAH cases (ruptured aneurysms) and total treatments per year. Where the number of treatments was greater, unruptured aneurysms were treated.

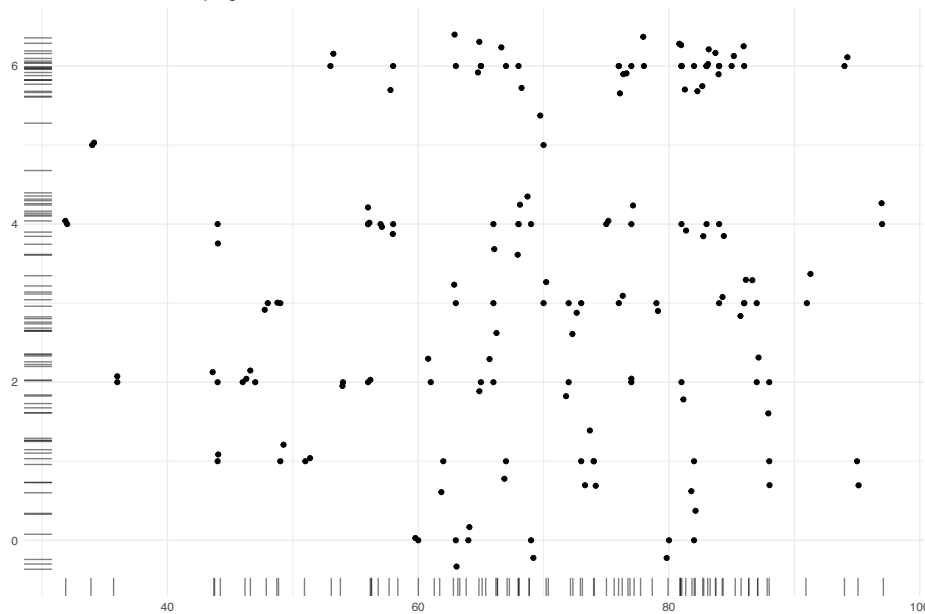
Strokes due to the blockage of large arteries deep in the brain can be treated using a catheter to clear the obstruction.

Such “endovascular” therapy was finally proven to be safe and highly effective in 2015, and while we have been developing our skills with such procedures for over 10 years at BUMCP, clearly after 2015 these therapies have been used much more often.

2012–2018 Endovascular Stroke Volumes



2018 mRS Outcomes By Age of Endovascular Stroke Patients



Many of our endovascular stroke patients are older than 80. In our 2018 data, there is no statistically significant correlation between age and outcome as measured by the “modified Rankin Scale.”

The mRS scale ranges from 0 (perfect without deficits) to 6 (death).