**Introduction**

- 1.9 million neurons are lost each minute during an acute ischemic stroke
- American Stroke Association (ASA) sets a goal of 60 minutes from Emergency Department triage to intravenous thrombolysis
- System improvement to speed time to treatment has potential to save brain tissue in acute ischemic stroke

**Objectives**

- Apply quality improvement principles, including process maps and plan-do-study-act (PDSA) cycles, to identify inefficiencies in existing t-PA administration
- Develop and implement interventions to address inefficiencies
- Decrease median time to t-PA to 60 minutes in order to meet ASA recommendations

**Baseline Data**

- Median time to t-PA was 71 minutes
- 19% of t-PA was administered in less than 60 minutes from presentation
- Mean times to CT initiation, interpretation, and t-PA administration were 14, 47, and 77 minutes respectively for t-PA cases which was shorter than for non t-PA cases (figure 2)
- No t-PA was given more than 3 hours 10 minutes after symptom onset
- 5% of strokes alerts resulting in t-PA administration (43 stroke alerts/month)

**Interventions**

- Based on process map, interviews and data:
  - Criteria for activating stroke alert revised to include only t-PA candidates
  - Protocols revised to increase efficiency and allow events to occur in parallel
  - Pharmacy to be present or available for all stroke alerts to speed t-PA administration
  - Real-time data collection processes integrated into processes to enable data-driven changes in future PDSA cycles
  - Criteria and protocol changes implemented using in-service educational forums

**Conclusions**

- Median time to t-PA prior to intervention was 71 minutes which corresponds to the loss of approximately 21 million neurons compared to treatment at goal of 60 minutes
- QI methodology can be applied to stroke alert procedures to identify inefficiencies and design interventions to address them
- Multidisciplinary teams are needed to develop and institute sustainable interventions
- Ongoing data collection will be used to refine the process map and generate new interventions in subsequent PDSA cycles

**Methods**

- Created a data-driven process map (figure 1)
- Analyzed baseline data from 3/2010 to 3/2011
- Interviewed key stake-holders including neurology, hospitalists, emergency department, and EMS providers to identify key barriers, unreliable steps, and bottlenecks

**Measures**

- Time to t-PA administration
- Time to stroke team arrival at bedside
- Times to non-contrast computed tomography (CT) scan initiation and interpretation
- Number of Stroke Alerts divided into non t-PA and t-PA cases