

# Saving More Brain Cells by Reducing Time to Alteplase (tPA) on Eligible Stroke Patients

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## BACKGROUND

Early thrombolysis in acute ischemic stroke is associated with improved outcomes. For each minute that brain tissue is not perfused, 1.9 million neurons are lost. Current guidelines emphasize early delivery of intravenous (IV) Alteplase (tPA) within at least 60 minutes of hospital arrival.

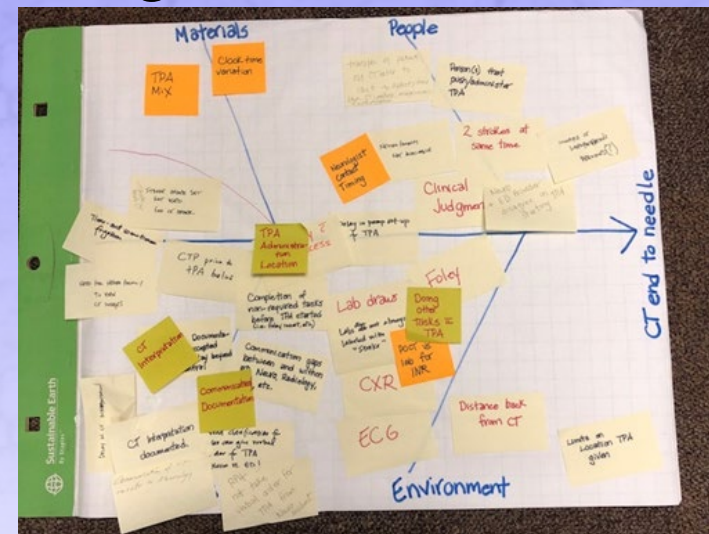
## PURPOSE

We sought to achieve average DTN time of  $\leq 30$  minutes in eligible patients.



## METHODS

- A multidisciplinary team was established.
- Goal timeframes for the subcomponents of the process were determined.
- A fishbone diagram was used to identify barriers.



- Subgroups focused on main areas identified (i.e. Scan interpretation, Location of tPA administration, Documentation and communication, and Completion of ancillary tasks prior to tPA..
- A tracking feedback tool was used for consistent

Timestamps (ND=Not Documented)

Door to:	ED MD Assessment	Stroke Team Activated	Acute Stroke CTOH Order Placed	Stroke Team Arrived	CT Begin	CT Complete	CT Interpretation Communicated	Glucose Resulted	tPA Bolus
CLOCK TIME	4/23/2018 16:49	4/23/2018 16:49	UNKNOWN	4/23/2018 16:49	4/23/2018 16:48	4/23/2018 16:49	4/23/2018 16:54	4/23/2018 16:55	4/23/2018 17:01
ACTUAL	0:03	0:03		0:00	0:02	0:03	0:08	0:09	0:15
TARGET	$\leq 5$	$\leq 7$	$\leq 7$	$\leq 5$ from activation	$\leq 12$	$\leq 15$	$\leq 22$	$\leq 22$	$\leq 30$

- Eligible patients included those meeting Get With The Guidelines (GWTG) criteria for timely tPA administration.

If IV tPA was initiated greater than 60 minutes after hospital arrival, were Eligibility or Medical reason(s) documented as the cause for delay:  Yes  No

Eligibility Reason(s):  Social/Religious  Initial refusal  Care-team unable to determine eligibility

Specify eligibility reason:  Hypertension requiring aggressive control with IV medications  Further diagnostic evaluation to confirm stroke for patients with hypoglycemia (blood glucose < 50), seizures, or major metabolic disorders  Management of concomitant emergent/acute conditions such as cardiopulmonary arrest, respiratory failure (requiring intubation)  Investigational or experimental protocol for thrombolysis

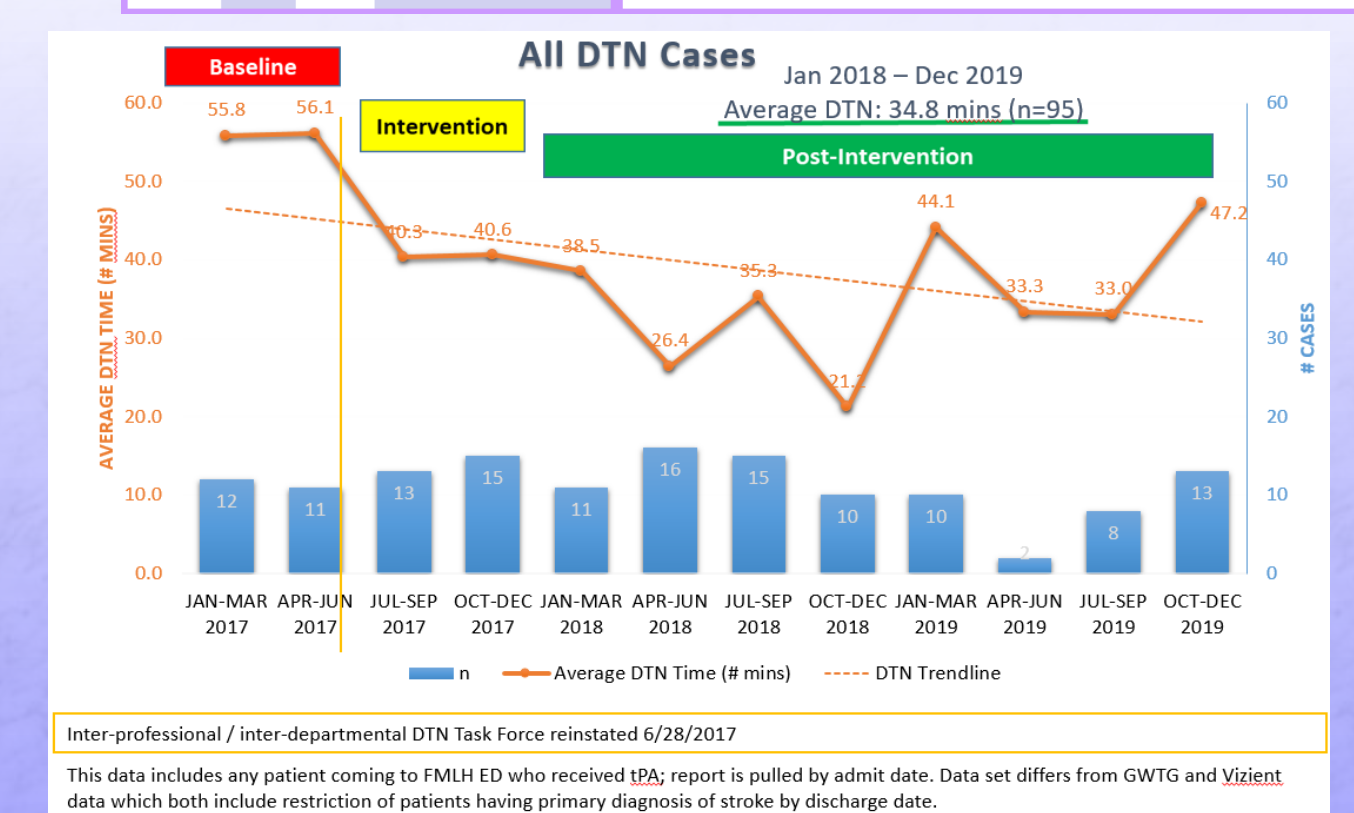
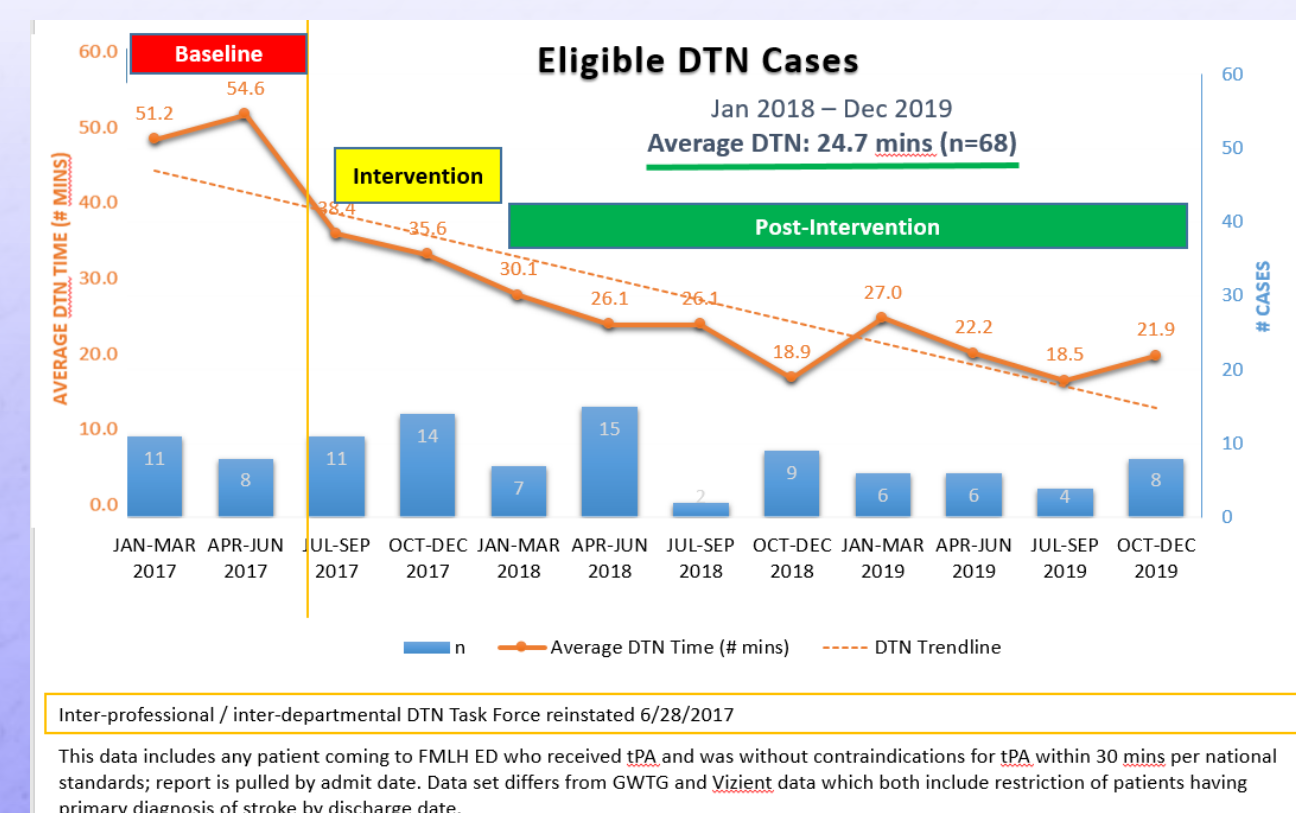
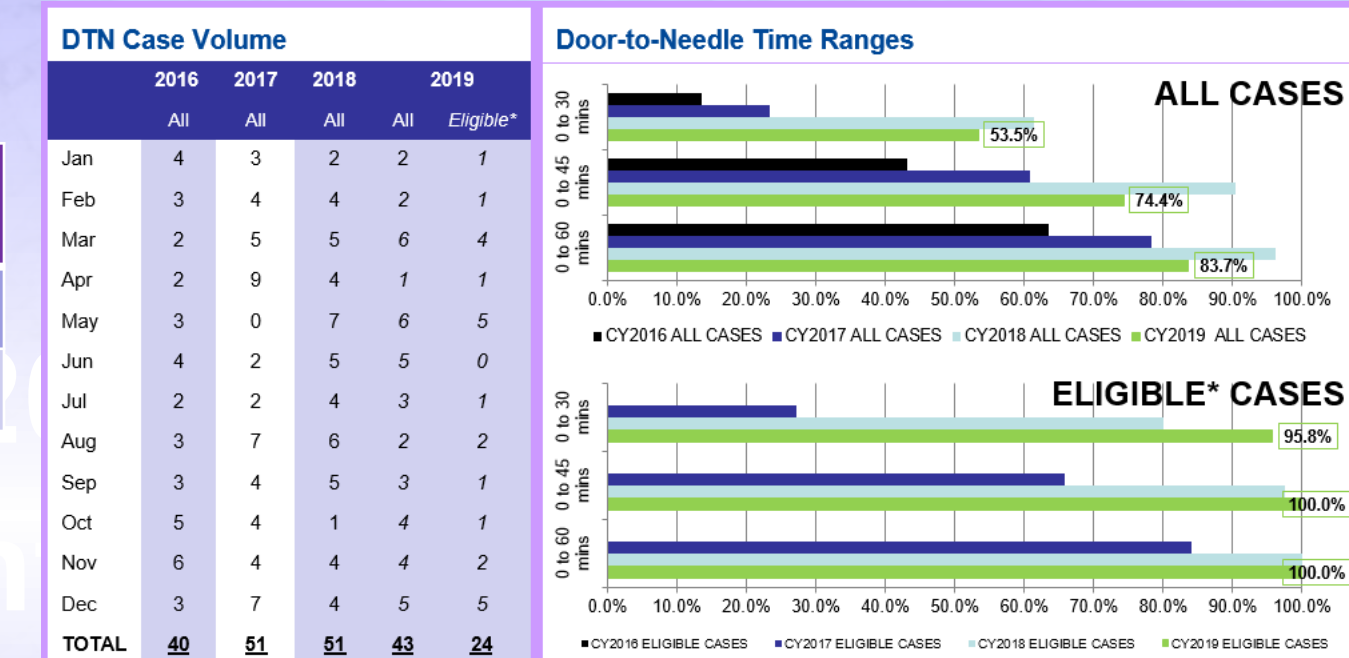
Medical Reason(s):  Delay in stroke diagnosis  In-hospital time delay  Equipment-related delay  Other

Hospital Related or Other Reason(s):  Other

## RESULTS

- Average DTN times were reduced from an average of 56.1 (Baseline) to 34.8 (Post-intervention) for all patients and 54.6 (Baseline) to 24.7 (Post-intervention) minutes for eligible patients.
- Average DTN time  $\leq 30$  minutes has been sustained nearly 24 months on eligible patients.
- The hemorrhagic complication rate has remained well below the national average.
- Calculations showed nearly four billion additional neurons might be saved with quicker intervention.

(2018, 2019)	Patients	Average Reduction from Baseline	Potential Neurons saved per minute brain perfused	Total Neuron potentially saved overall
Eligible (41, 24)	65	29.9 minutes	1,900,000	3,692,650,000
All (51, 43)	94	21.3 minutes	1,900,000	3,804,180,000



## CONCLUSIONS

- Sustainable average DTN times  $\leq 30$  minutes for acute stroke are possible. A multidisciplinary approach with emphasis on a culture of teamwork and collaboration is essential. More brain cells can be saved.