Comprehensive Stroke Center
Robert Wood Johnson University Hospital
RWJBarnabas HEALTH

Lean Initiative: Direct to CT-Scan for Reduction in Door to Needle Time

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Background

The Joint Commission recommends targeting a door-to-needle time (DTNt) of less than 45 minutes (min) in 50% of IV tPA candidates. Robert Wood Johnson University Hospital (RWJUH) engaged in a LEAN initiative to identify process opportunities to reduce DTNt. Reduction in door-to-CT-Scan time (DtCT) was a key area of focus. The team hypothesized that a direct to CT approach, bypassing traditional ED triage, would ultimately reduce DTNt. Barriers included the distance to the CT-Scan (CT), and patient safety concerns with bypassing ED triage. It was determined that after a rapid assessment of ABCs during quick registration, qualified patients would safely go directly to CT.

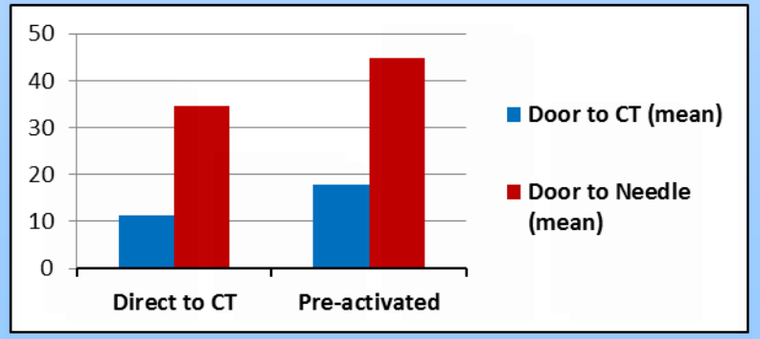
Objectives

1. Determine if having ALS pre-activated patients go directly to CT significantly reduces DtCT.
2. Determine if having ALS pre-activated patients go directly to CT significantly reduces DTNt.
3. Ensure patient safety by tracking adverse events related to airway, breathing, and circulation.

Results

Mean DtCT for the direct cohort was 11.3 min (median= 11, IQR: 8-15), significantly reduced compared to 17.9 min (median=14, IQR 11-18) in the pre-activated cohort (p=0.000691). In the direct cohort, 33% (n=13) received IV tPA compared to 25% (n=43) in the pre-activated cohort. The mean DTNt in the direct cohort was 34.5 min (median= 29, IQR 29-36) compared to 44.7 min (median=41, IQR 33-53) (p=0.036). No complications related to airway, breathing, or circulations were reported for direct patients from door to return to ED.

Mode of arrival	Door to CT (mean)	Door to Needle (mean)
Direct to CT	11.3 min (n=39)	34.5 min (n=13)
Pre-activated Only	17.9 min (n=173)	44.7 min (n=43)



Methodology

A Lean Initiative was developed over a 3 month period to ultimately reduce DTNt. After initial analysis, it was determined that there was opportunity to level load the process map, and focus was placed on reducing triage wait times. Prospectively, patients were eligible to go directly to CT if they had a Cincinnati Positive Stroke Scale, arrived during a pre-determined time period, and were pre-alerted at the discretion of the ALS crew. On arrival, these patients received a rapid ED physician assessment, and then met the Stroke Team in CT. The mean time from DtCT for this cohort (n= 39) was then compared to all pre-activated Code Stroke patients arriving via ALS during this same period (n=173, January 2016-July 2016). For IV tPA eligible patients, the mean DTNt was compared between the direct to CT group (n=13) and the control (n=43). All cases were reviewed for complications related to airway, breathing, or circulation from time of arrival until return to the ED.

Conclusion

A direct to CT process reduced DtCT times at RWJUH, and ultimately DTNt for tPA eligible patients potentially reducing stroke related deficits. We extrapolate that this process can be applied similarly at other institutions.