

Time Matters: Saving Brain Cells as a System

Gayle E. Walker-Cillo, MSN/Ed, RN, CEN, SCR.N, FAEN; Wendy J. Beatrice, MSN, RN, SCR.N; Fiona Ahern, RN, SCR.N; Deborah Butler, MSN, RN, SCR.N; Olivia Joy Eboras, BSN, RN-BC, SCR.N; Megan Ewing, BSN, BSHR, RN; Dimple Gandhi, BS, BA, CPhT



Introduction/Purpose

- Our goal was to decrease DTN times by 5 minutes at the Joint Commission® stroke certified sites of Atlantic Health System (AHS), which includes Chilton Medical Center, Hackettstown Regional Medical Center, Morristown Medical Center, Newton Medical Center, and Overlook Medical Center.
- The objective was to work in collaboration and streamline processes to save valuable brain tissue.
- Timely reperfusion/early intervention of an acute ischemic stroke is critical to salvage the affected brain tissue and the surrounding penumbra in order to minimize brain damage.
- The administration of thrombolytics, specifically IV alteplase, is the gold standard treatment.
- The time sensitivity of this medication is measured by the time of patient's arrival to the time of administration, or the door to needle (DTN) time.
- AHS goal DTN times have decreased dramatically over the past 20 years, in accordance to the American Heart Association/American Stroke Association (AHA/ASA) criteria for achieving the highest levels of Get With The Guidelines®-Stroke (GWTG-Stroke) Target: StrokeSM (TS) Honor Roll Awards. From initial goals of DTN within 3 hours, AHS goal DTN time decreased to 60 minutes in 75% of patients and more recently 45 minutes in 50% of the patients receiving IV alteplase.

Methods

- The DTN time was calculated from the time from the patient's arrival to the administration of IV alteplase bolus.
- Quality improvement initiatives included Six Sigma and LEAN projects to streamline the process and refine inefficiencies.
- The collaborative team met regularly to identify a unified process and key components of implementing best practices outlined by the selected clinical practice guidelines from the AHA/ASA.
- Cumulative DTN results were reviewed system wide by the collaborative stroke team.
- The collaborative team identified variances in DTN times and key components of implementing best practices outlined by the selected clinical practice guidelines from the AHA/ASA.

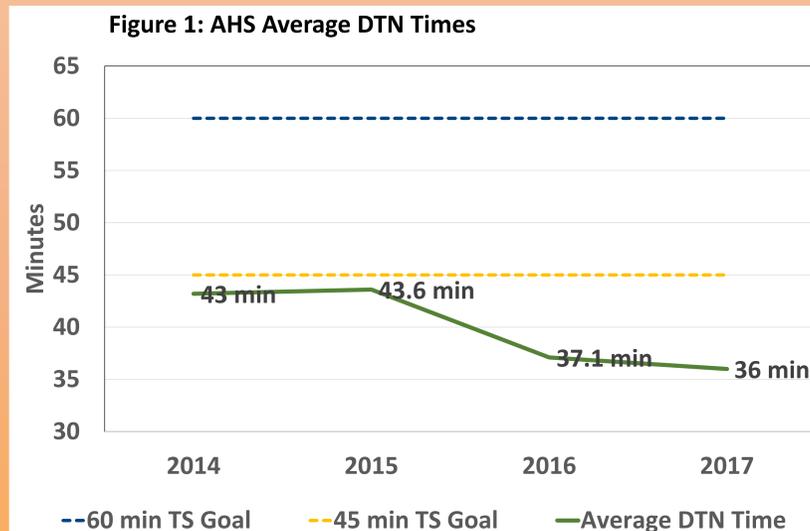
CRITERIA	
EXCLUSION	INCLUSION
Patients who had: <ul style="list-style-type: none"> • Critical management needs • Received tPA > 4.5 hours after Time Last Known Well • Transferred from another hospital • Those which stroke occurred after hospital arrival 	Patients who had: <ul style="list-style-type: none"> • acute ischemic stroke symptoms who were treated with IV alteplase • At an AHS hospital

This work represents the authors' independent analysis of local or multicenter data gathered using the AHA GWTG Patient Management Tool™ but is not an analysis of the national GWTG dataset and does not represent findings from the AHA GWTG National Program. The 2017 data for Hackettstown Medical Center was obtained from the GWTG database, but all other previous data for this hospital was manually extracted from the hospital's records and not GWTG.

Processes

- Team approach includes multi-disciplinary site specific and system wide collaboration on time saving initiatives to drill down on quality measures and resolve inefficiencies.
- Face to Face meetings and review of individual cases/data
- Shared best practices among the team lead to success:
 - Algorithms
 - Telestroke process solidified
 - Telestroke in the ambulance
 - Visual reminders such as clocks for staff for education
 - Mock Code Strokes
 - Direct transport from ambulance to CT
 - Pharmacy mixing and responding to Code Strokes
 - Code stroke checklist
 - EMS outreach
 - AHS Stroke Coordinator face-to-face working meeting quarterly to align:
 - Policies
 - Education
 - Order set
 - Best Practices
- Root-Cause Analysis® based approach to every DTN over 60 minutes
- Solidified transfer process to Comprehensive Stroke Center

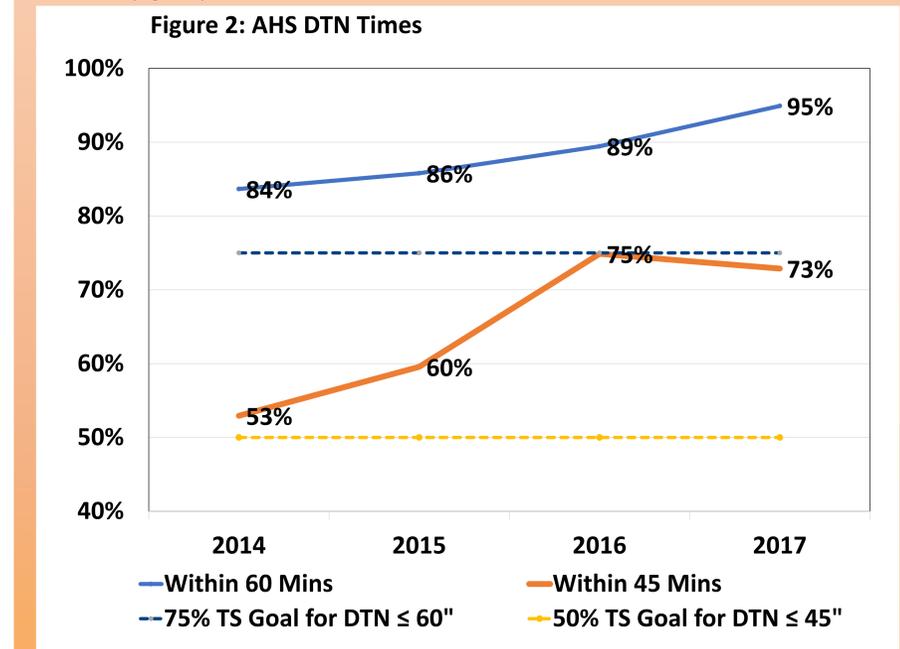
The system wide decrease in average DTN from 43 to 36 minutes (Figure 1).



Results

- Through quality initiatives and collaboration, Atlantic Health System saved **14.5 billion brain cells over a four year period.**
- Implementation of these processes from 2014 to 2017:
 - **Reduced the average DTN time by 7 minutes**
 - **11% increase in patients treated within 60 minutes**
 - **20% increase in patients treated within 45 minutes**
- In 2017:
 - 95% of patients who received IV alteplase were treated within 60 minutes
 - 73% were treated within 45 minutes, exceeding the GWTG-Stroke TS Honor Roll Elite Plus goals

The system wide increase in the percentage of DTN times within 60 and 45 minutes (Figure 2).



References

Target Stroke Phase II website. http://www.strokeassociation.org/STROKEORG/Professionals/TargetStroke/Target-Stroke-Honor-Roll-Recognition-For-Your-Success_UCM_432416_Article.jsp#.Wqa-1arrumQ Accessed January 31, 2018.

Acknowledgement

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