

# Hitting the Target: New Target Stroke III Measures

Amy Scalet

Stroke Quality Analyst



MARION BLOCH  
NEUROSCIENCE INSTITUTE



# Disclosures

- No Disclosures



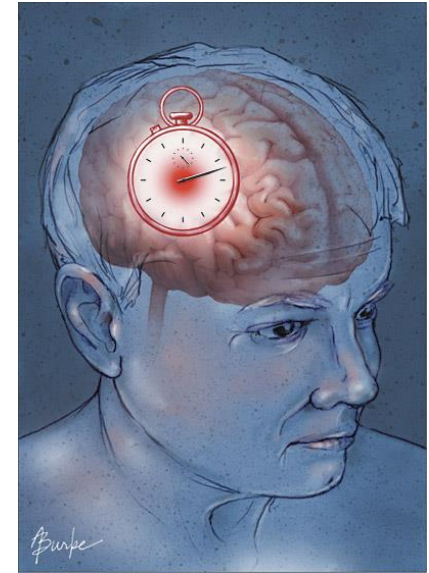
# Objectives

- Describe the history of Target: Stroke Phase I and II goals
- Review Target: Stroke Phase III initiative and recognition criteria
- Briefly review Stroke Phase III rationale
- Cover Key Strategies to improve door-to-needle and door-to-device times and how we are working on this at Saint Luke's Hospital



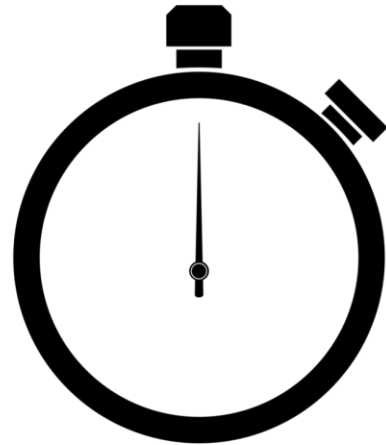
# Where We've Been- Target: Stroke

- Target: Stroke was launched by the American Heart Association in 2010
- Studies found less than 30% of US acute ischemic stroke (AIS) patients were being treated within the 60 minute window (Fonarow et al., 2010)
- Initiative to improve door-to-needle times for patients being treated with IV thrombolytics
- Introduced early key strategies to improve the process and provide rapid feedback



# Phase I Goals

- Primary Goal: Achieve door-to-needle times within 60 minutes in 50 percent or more of AIS patients treated with IV Alteplase.



50%



# Phase I Outcomes

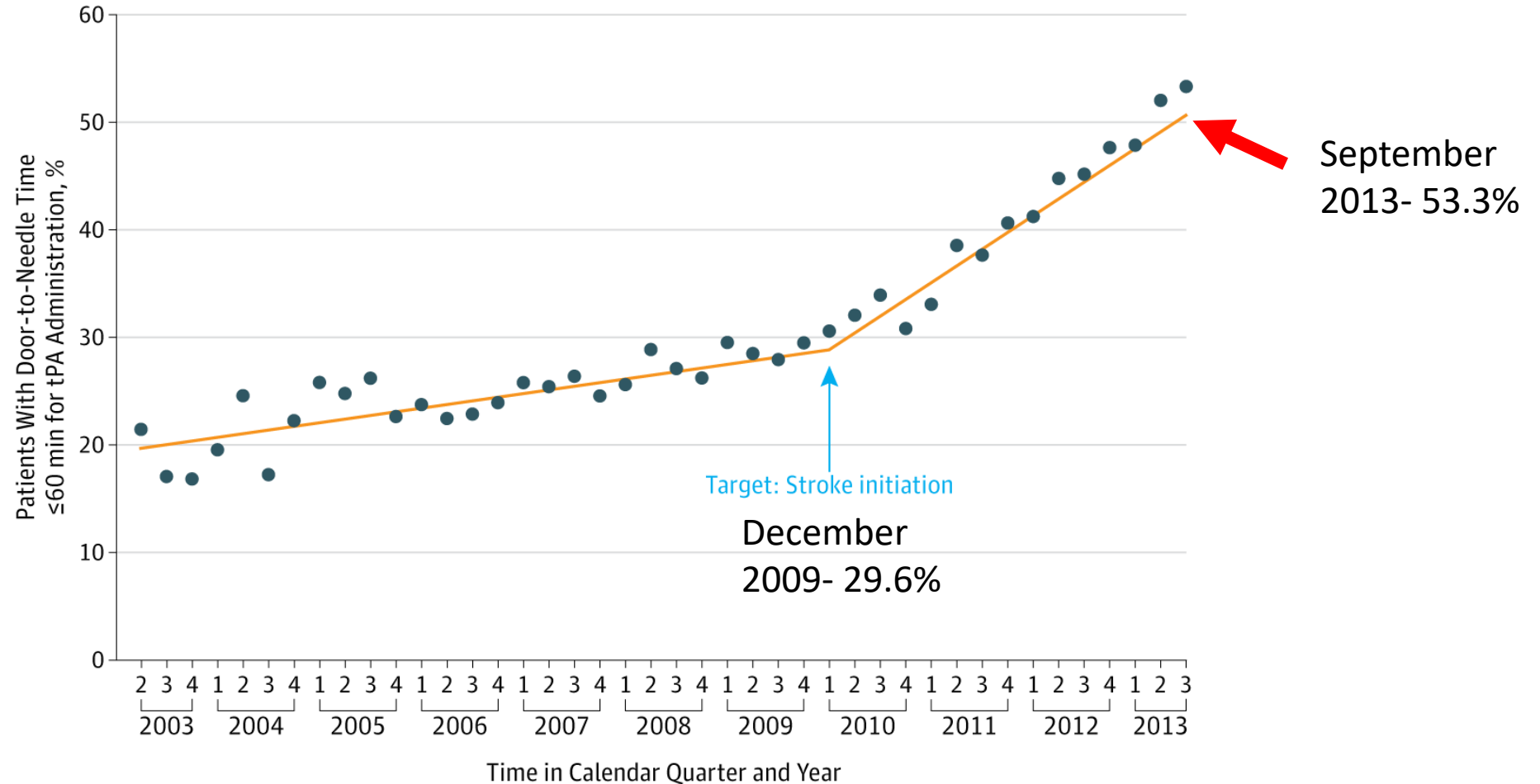


Table 1: Door-to-Needle Times for Tissue Plasminogen Activator Administration and Clinical Outcomes in Acute Ischemic Stroke Before and After a Quality Improvement Initiative ([Fonarow et al., 2014](#))



# Phase I Outcomes

Outcome	Patients With Acute Ischemic Stroke, %		P Value	Unadjusted OR (95% CI)	P Value	Adjusted OR (95% CI) <sup>a</sup>	P Value
	Preintervention (n = 27 319)	Postintervention (n = 43 850)					
<u>In-hospital all-cause mortality</u>	9.93	8.25	<.001	0.81 (0.77-0.86)	<.001	0.89 (0.83-0.94)	<.001
<u>Discharged to home</u>	37.6	42.7	<.001	1.23 (1.18-1.27)	<.001	1.14 (1.09-1.19)	<.001
Ambulatory status of independent	42.2	45.4	<.001	1.14 (1.09-1.20)	<.001	1.03 (0.97-1.10)	.31
<u>Symptomatic ICH ≤36 h</u>	5.68	4.68	<.001	0.81 (0.75-0.88)	<.001	0.83 (0.76-0.91)	<.001
tPA Complications	6.68	5.50	<.001	0.80 (0.75-0.87)	<.001	0.83 (0.77-0.90)	<.001

Table 2: Door-to-Needle Times for Tissue Plasminogen Activator Administration and Clinical Outcomes in Acute Ischemic Stroke Before and After a Quality Improvement Initiative ([Fonarow et al., 2014](#))



# Phase II Goals

- Primary Goal: Achieve door-to-needle times within 60 minutes in 75 percent or more of AIS patients treated with IV Alteplase
- Secondary Goal: Achieve door-to-needle times within 45 minutes in 50 percent or more of AIS patients treated with IV Alteplase





# Phase II Outcomes

Time Trend in DTN Times within 60 and 45 Minutes Pre-Target: Stroke, Target: Stroke Phase I, and Target: Stroke Phase II

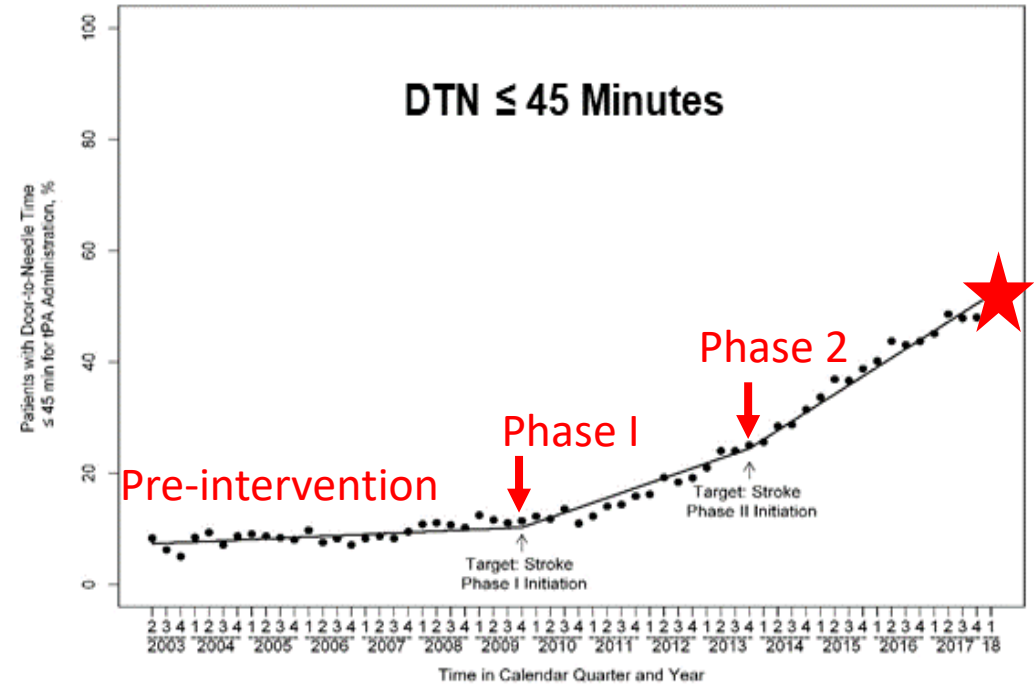
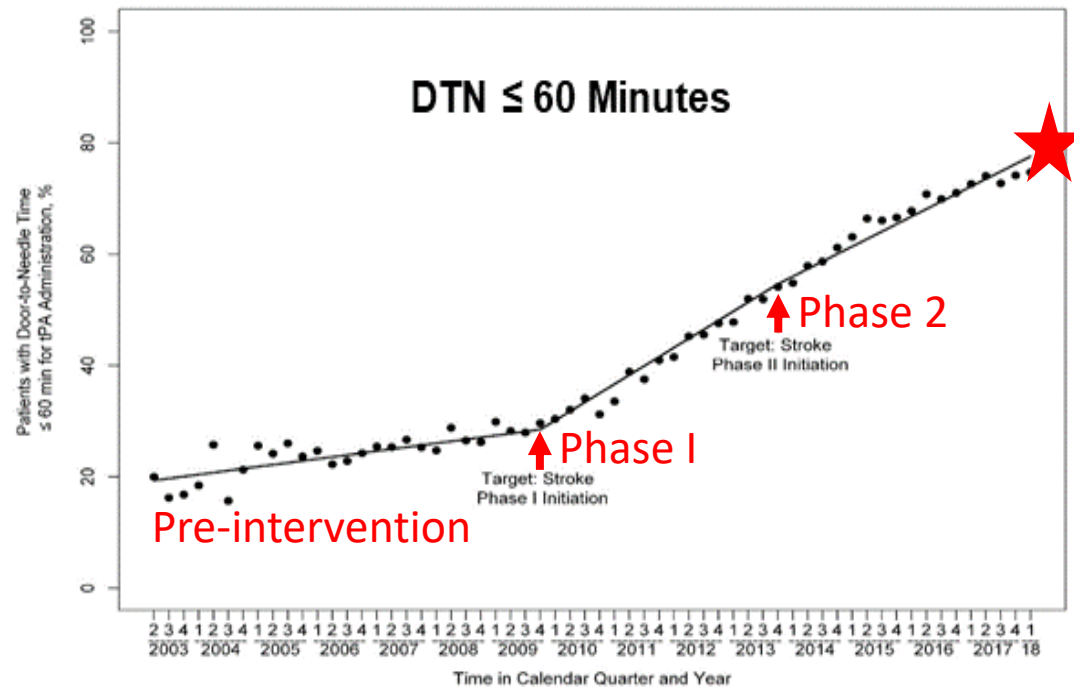


Table 3: Achieving More Rapid Door-to-Needle Times in Acute Ischemic Stroke: Results of Target: Stroke Phase II ([Fonarow, et al., 2017](#) & [Fonarow & Schwamm \(n.d.\)](#))



# Phase II Outcomes

Clinical Outcomes Pre-Target: Stroke, Target: Stroke Phase I, and Target: Stroke Phase II

Outcome	Pre-Target: Stroke (n=24,365)	Post-Target: Stroke Phase I (n=44,257)	Post-Target: Stroke Phase II (74,447)	P value	Adjusted OR 95% CI (Phase I vs Pre Target: Stroke)	Adjusted OR 95% CI (Phase II vs Pre Target: Stroke)
In-Hospital Mortality	10.0%	8.2%	6.2%	<0.0001	0.85 (0.80-0.91)	0.72 (0.67-0.77)
Discharge Home	35.8%	41.5%	49.0%	<0.0001	1.21 (1.16-1.27)	1.35 (1.27-1.45)
Ambulatory Status Independent	41.5%	44.6%	52.7%	<0.0001	1.05 (0.99-1.22)	1.35 (1.27-1.45)
Symptomatic ICH within 36 Hours	5.7%	4.5%	3.6%	<0.0001	0.79 (0.72-0.86)	0.67 (0.61-0.73)

Table 4: Achieving More Rapid Door-to-Needle Times in Acute Ischemic Stroke: Results of Target: Stroke Phase II ([Fonarow, et al., 2017](#) & [Fonarow & Schwamm \(n.d.\)](#))



# Phase III Goals-

## Effective January 1, 2019 (2020 awards)

- Primary Goals:
  - Achieve door-to-needle times within 60 minutes in 85% or more of AIS patients treated with IV thrombolytics
  - **Achieve door-to-device times (arrival to first pass of thrombectomy device) in 50% or more of eligible AIS patients within 90 minutes (for direct arriving patients) and within 60 minutes (for transfer patients) treated with endovascular therapy (EVT)**
- Secondary Goals:
  - Achieve door-to-needle times within 45 minutes in 75% or more of AIS patients treated with IV thrombolytics
  - Achieve door-to-needle times within 30 minutes in 50% or more of AIS patients treated with IV thrombolytics



# Recognition Criteria

	Target: Stroke Phase II	Target: Stroke Phase III
Honor Roll	Time to thrombolytic therapy within <b>60 minutes</b> in <b>50%</b> or more of acute ischemic stroke patients treated with IV thrombolytic	DTN times within <b>60 minutes</b> for at least <b>75%</b> of applicable patients are required.
Honor Roll Elite	Time to thrombolytic therapy within <b>60 minutes</b> in <b>75%</b> or more of acute ischemic stroke patients treated with IV thrombolytic	DTN times within <b>60 minutes</b> for at least <b>85%</b> of applicable patients are required.
Honor Roll Elite Plus	Time to thrombolytic therapy within <b>60 minutes</b> in <b>75%</b> or more of acute ischemic stroke patients treated with IV thrombolytic AND time to thrombolytic therapy within <b>45 minutes</b> in <b>50%</b> of acute ischemic stroke patients treated with IV thrombolytic	DTN times within <b>45 minutes</b> for at least <b>75%</b> of applicable patients and DTN times within <b>30 minutes</b> for at least <b>50%</b> of applicable patients.
Honor Roll Advanced Therapy		DTD times in at least <b>50%</b> of applicable patients within <b>90 minutes</b> for direct arriving and within <b>60 minutes</b> for transfers

(American Heart Association)



# Rationale

- Programs to integrate the tools provided with the Target: Stroke quality improvement initiative have substantially improved care and outcomes for patients with AIS (Fonarow et al., 2014)
- Target Stroke Phase III is designed to further improve care and outcomes for patients with AIS (Caputo et al., 2017)
- Target Stroke Phase III aims to facilitate and incentivize hospitals and stroke systems of care to provide IV thrombolytic and endovascular therapy to eligible patients with AIS in a timely fashion (American Heart Association, n.d.)
- Significant addition to goals (Saver et al., 2016)
  - Improved outcomes within first 7.3 Hours of onset
  - Endovascular Therapy- each 1-hour delay to reperfusion was associated with less favorable degree of disability



# Door-to-Needle Best Practice Strategies

1. EMS pre-notification (Lin, C. B et al., 2012)
  - Early detection of stroke symptom
  - Faster imaging
  - Community outreach
2. Stroke toolkit
  - Rapid triage protocol
  - Clinical decision support
  - Stroke-specific order sets
  - Guidelines
  - NIH Stroke Scale- prior to intervention



# Door-to-Needle Best Practice Strategies, cont'd

3. Rapid triage protocol and stroke team notification
  - Activate team as soon as there is pre-hospital notification or the stroke is identified in the emergency department
  - Rapid neurologic evaluation
4. Single call activation system
  - Central page operator who then pages team





# Door-to-Needle Best Practice Strategies, cont'd

5. Timer or clock attached to chart, clip board or patient bed
  - Keep the clock visible
  - Other creative ideas such as Grease Pencil with patient arrival time on Glass Doors in ED
6. Transfer directly to CT scanner
  - Stroke team meet patient at CT scanner
  - Reduced DTN times (Caputo, L. M., et al 2017)
  - Neurological exam
  - Brain imaging
  - Initial bolus if criteria is met





# Door-to-Needle Best Practice Strategies, cont'd

7. Rapid acquisition and interpretation of brain imaging
  - Reserve advanced imaging for unclear cases
8. Rapid laboratory testing (including point of care testing if indicated)
  - When Indicated-
    - Glucose
    - INR- suspicion of coagulopathy or Warfarin treatment
    - Point-of-care testing for faster turnaround



# Door-to-Needle Best Practice Strategies, cont'd

## 9. Mix Alteplase ahead of time

- Prepare as soon as patient is recognized as a possible Alteplase candidate
- Can be done prior to imaging

## 10. Rapid access and administration of intravenous Alteplase

- Readily available in Emergency Department or CT Scanner



# Door-to-Needle Best Practice Strategies, cont'd

## 11. Team-based approach

- Meet frequently
- Review processes, care quality, patient safety parameters and clinical outcomes
- Make recommendations for improvements

## 12. Prompt data feedback

- Accurately measure/track door-to-needle times
- Other metrics such as time to stroke team arrival and time to CT should be monitored



# Door-to-Device Best Practice Strategies

1. Rapid administration of Alteplase
2. Rapid acquisition and interpretation of CT/MR Angiography
3. Rapid acquisition and interpretation of additional imaging
4. Pre-notification and rapid activation of the Neurointerventional team
5. Rapid availability of the Neurointerventional team
6. Timer or clock attached to chart, clip board or bed



# Door to Device Best Practice Strategies, cont'd

7. Transfer directly to Neuroangiography suite
8. Transfer directly from brain imaging suite to Neuroangiography suite
9. Endovascular therapy ready Neuroangiography suite
10. Anesthesia Access and Protocols
11. Team based approach
12. Prompt Data Feedback



# Opportunities for Key Strategy Employment

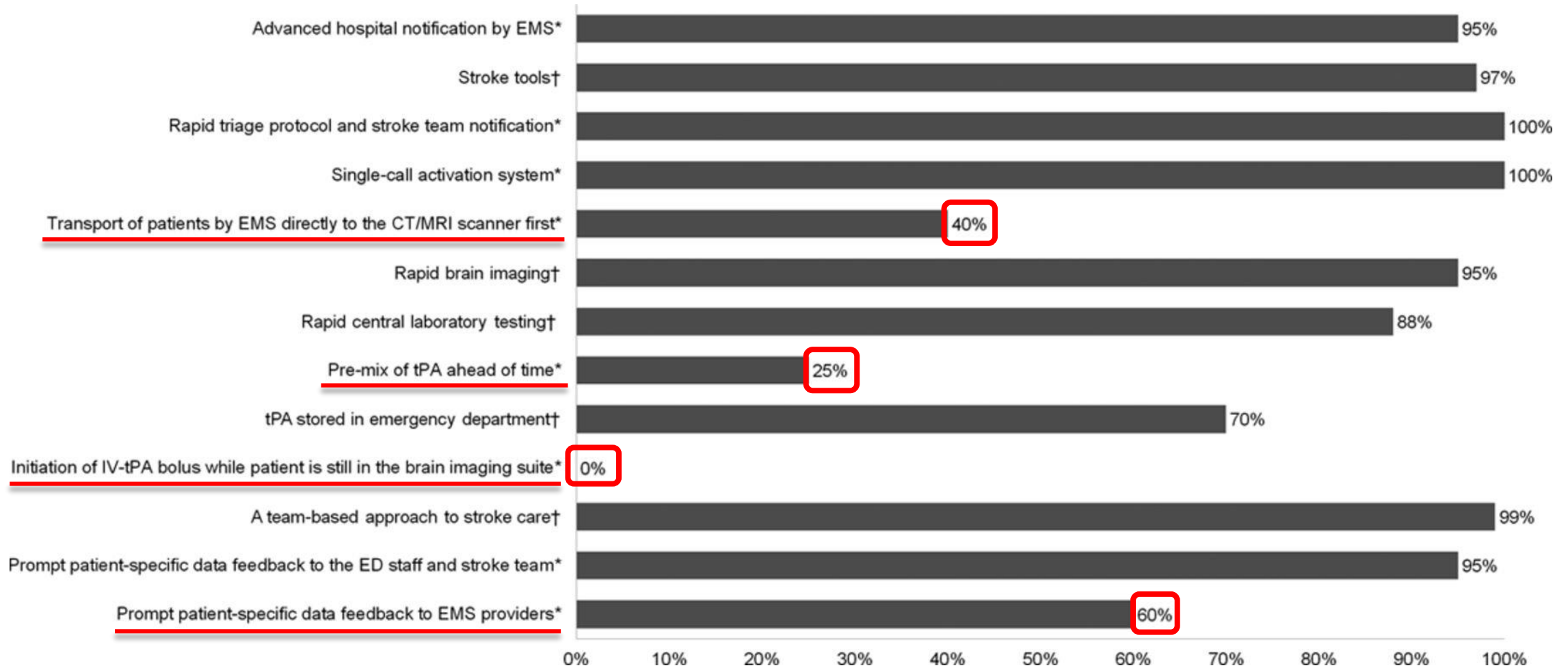


Figure 3: Use of Strategies to Improve Door-to-Needle Times With Tissue-Type Plasminogen Activator in Acute Ischemic Stroke in Clinical Practice ([Xian et al. 2017](#))



# Quality Approach at Saint Luke's Hospital

- Continuous Data Abstraction
  - Analysis
  - Identify Gaps
  - Review with the Team
  - Create Action Plan
  - Educate & Make Changes
  - Monitor Results
  - Hardwire



# Our Focus

- Good Documentation!
- Back to the Basics-
  - Real time feedback to bedside staff for their times and fallouts
  - Manager being involved in code stroke process- front line staff relationship
  - Get patients to CT as quick as possible!
  - Reliance on iSTAT labs over serum labs to improve times
  - Team meetings
  - Feedback report





# Sources

- American Heart Association (AHA). (n.d.). Target: Stroke- When seconds count. Retrieved from <https://www.heart.org/en/professional/quality-improvement/target-stroke/learn-more-about-target-stroke>.
- Fonarow, G. C. , Smith E. E., Saver J. L., Reeves, M. J., Hernandez, A. F., Peterson, E. D., ... Schwamm, L. H. (2011). Improving door-to-needle times in acute ischemic stroke: The design and rationale for the American Heart Association/American Stroke Association's Target: Stroke initiative. *Stroke*, 42. <https://doi.org/10.1161/STROKEAHA.111.621342>.
- American Heart Association/American Stroke Association. (2010). Target: Stroke campaign manual. Retrieved from [http://www.strokeassociation.org/idc/groups/heart-public/@wcm/@hcm/@gwtg/documents/downloadable/ucm\\_308277.pdf](http://www.strokeassociation.org/idc/groups/heart-public/@wcm/@hcm/@gwtg/documents/downloadable/ucm_308277.pdf).
- Fonarow, G. C., Zhao X., Smith E. E., Saver, J. L., Reeves, M. J., Bhatt, D. L., ... Schwamm, L. H. (2014). Door-to-needle times for tissue plasminogen activator administration and clinical outcomes in acute ischemic stroke before and after a quality improvement initiative. *JAMA*, 311(16), 1632–1640. doi:10.1001/jama.2014.3203.
- American Heart Association/American Stroke Association. (2014). Target: Stroke campaign manual. Retrieved from [https://www.strokeassociation.org/idc/groups/heart-public/@wcm/@gwtg/documents/downloadable/ucm\\_470730.pdf](https://www.strokeassociation.org/idc/groups/heart-public/@wcm/@gwtg/documents/downloadable/ucm_470730.pdf).
- Fonarow, G. C., Cox, M., Smith, E., Saver, J., Reeves, M., Bhatt, D., ... Schwamm, L. (2017). Abstract 86: Progress in achieving more rapid door-to-needle times in acute ischemic stroke: Interim findings from Target: Stroke phase II. *Stroke*, 48(supplemental 1). Retrieved from [https://www.ahajournals.org/doi/10.1161/str.48.suppl\\_1.86](https://www.ahajournals.org/doi/10.1161/str.48.suppl_1.86).
- Fonarow, G. C., & Schwamm, L. H. (n.d.). Advancing stroke systems of care to improve outcomes Target: Stroke phase III. Retrieved from <https://www.heart.org/-/media/files/professional/quality-improvement/get-with-the-guidelines/get-with-the-guidelines-stroke/workshops-and-webinars/finaltarget-stroke-phase-iii-launch-ppt.pdf?la=en&hash=A50A5A9C548BEE1A580FB9DC0A8D56DD55A4F906>.
- American Heart Association. (2018). Phase III Target: Stroke: Higher goals for greater good. 2018. Retrieved from <https://www.stroke.org/-/media/files/professional/quality-improvement/target-stroke/target-stroke-phase-iii/aha-qi-target-stroke-phase-3-brochure.pdf>.
- American Heart Association. (n.d.) Target Stroke phase III and health equity.



# Sources

- Caputo, L. M., Jensen, J., Whaley, M., Kozlowski, M. J., Fanale, C. V., Wagner, J. C., ... Bar-Or, D. (2017). How a CT-direct protocol at an American Comprehensive Stroke Center led to door-to-needle times less than 30 minutes. *The Neurohospitalist*, 7(2), 70–73. doi:10.1177/1941874416672783.
- Saver, J. L., Goyal M., van der Lugt A., Menon, B. K., Majoie, C. B. L. M., Dippel, D. W. ... Hill, M. D. (2016). Time to treatment with endovascular thrombectomy and outcomes from ischemic stroke: A meta-analysis. *JAMA*, 316(12), 1279–1289. doi:10.1001/jama.2016.13647.
- American Heart Association/American Stroke Association. (2017). Target: Stroke phase II: 12 key best practice strategies. Retrived from [https://www.heart.org/-/media/files/professional/quality-improvement/target-stroke/target-stroke-phase-ii/targetstrokebestpractices\\_ucm\\_470145.pdf?la=en&hash=ACC1CCA2179879AE7C49C83C42506EAD7BC34298](https://www.heart.org/-/media/files/professional/quality-improvement/target-stroke/target-stroke-phase-ii/targetstrokebestpractices_ucm_470145.pdf?la=en&hash=ACC1CCA2179879AE7C49C83C42506EAD7BC34298).
- Lin, C. B., Peterson, E. D., Smith, E. E., Saver, J. L., Liang, L., Xian, Y., ... Fonarow, G. C. (2012). Emergency medical service hospital prenotification is associated with improved evaluation and treatment of acute ischemic stroke. *Circulation: Cardiovascular Quality and Outcomes*, 5(4), 514-522. Doi:10.1161/CIRCOUTCOMES.112.965210.
- Caputo, L. M., Jensen, J., Whaley, M., Kozlowski, M. J., Fanale, C. V., Wagner, J. C., ... Bar-Or, D. (2017). How a CT-direct protocol at an American Comprehensive Stroke Center led to door-to-needle times less than 30 minutes. *The Neurohospitalist*, 7(2), 70–73. doi:10.1177/1941874416672783.
- American Heart Association. (n.d.). Target: Stroke phase III door-to-device time key best practice strategies. Retrieved from <https://www.heart.org/-/media/files/professional/quality-improvement/target-stroke/target-stroke-phase-iii/9-17-update/final-door-to-device-best-practice-one-pager.pdf?la=en&hash=C07468C602B3803CA534A3D38C9F40654BFB286E>.
- Xian, Y., Xu, H., Lytle, B., Blevins, J., Peterson, E. D., Hernandez, A. F., ... Fonarow, G. C. (2017). Use of strategies to improve door-to-needle times with tissue-type plasminogen activator in acute ischemic stroke in clinical practice: Findings from Target: Stroke. *Circulation: Cardiovascular Quality and Outcomes*, 10(1). Doi:10.1161/CIRCOUTCOMES.116.003227.



# Questions

- Thank You!
- [Ascalet@saint-lukes.org](mailto:Ascalet@saint-lukes.org)
- 816-932-2738

