Improving your “Door to-” Metrics

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Stroke Treatment Alliance of Rochester
STAR-NY

Why?

- Stroke is a time-sensitive disease.
- Every 40 seconds, someone in the US suffers a stroke.
- One of the leading causes of long-term disability.
- The sooner the treatment, the better the outcomes with a reduction in long-term disability.
- Previous studies have suggested that a patient loses 2 million neurons for every minute delay in treatment.
- Each minute saved translates into an average 1.8 days of extra healthy life for each patient receiving tPA.

Source: American Heart Association
Source: Circ Cardiovasc Qual Outcomes, 2017

AHA Target: Stroke

- Has helped hospitals nationwide achieve improved stroke outcomes through reduced door-to-needle times for eligible ischemic stroke patients.

PHASE I

- **50%** of eligible patients treated with IV alteplase within **60 minutes** or less of arrival

PHASE II

- **75%** of eligible patients treated with IV alteplase within **60 minutes** or less of arrival

Source: American Heart Association

AHA Target: Stroke

PHASE III

Primary

- **85%** of eligible patients treated with IV alteplase within **60 minutes** or less of arrival
- **50%** of eligible patients with door-to-device times of **90 minutes** or less (direct-arriving patients)
- **50%** of eligible patients with door-to-device times of **60 minutes** or less (transfer patients)

Secondary

- **75%** of eligible patients treated with IV alteplase within **45 minutes** or less of arrival
- **50%** of eligible patients treated with IV alteplase within **30 minutes** or less of arrival

Source: American Heart Association

How?

- Target: Stroke advocates the adoption of key best practice strategies for reducing door-to-needle time.

- While some strategies are more strongly associated with shorter door-to-needle times than others, reductions in treatment delays can rarely be achieved by a single strategy but rather result from multiple concurrent interventions.

Source: Circ Cardiovasc Qual Outcomes 2017, AHA

Incorporating Time-Saving Strategies

- EMS pre-hospital stroke screening tool
- Advanced hospital notification by EMS
- Rapid triage protocol and stroke team notification
- Single-call activation system
- Timer or clock to track time
- Stroke Toolkit
- Registering severe stroke patients as unknown on arrival, prior to exact identification so that imaging can be ordered
- EMS direct transport of patient to CT/MRI suite

Source: Circ Cardiovasc Qual Outcomes 2017, AHA

Incorporating Time-Saving Strategies

- Written informed consent not required before tPA administration
  - Discretion with bloodwork / rapid laboratory results
- Immediate interpretation of brain imaging by stroke team members
  - Pre-mix of tPA ahead of time
- Initiation of tPA while patients are still in the brain imaging suite
  - Prompt data feedback to the ED staff and stroke team
  - Prompt data feedback to EMS providers
  - Team-based approach

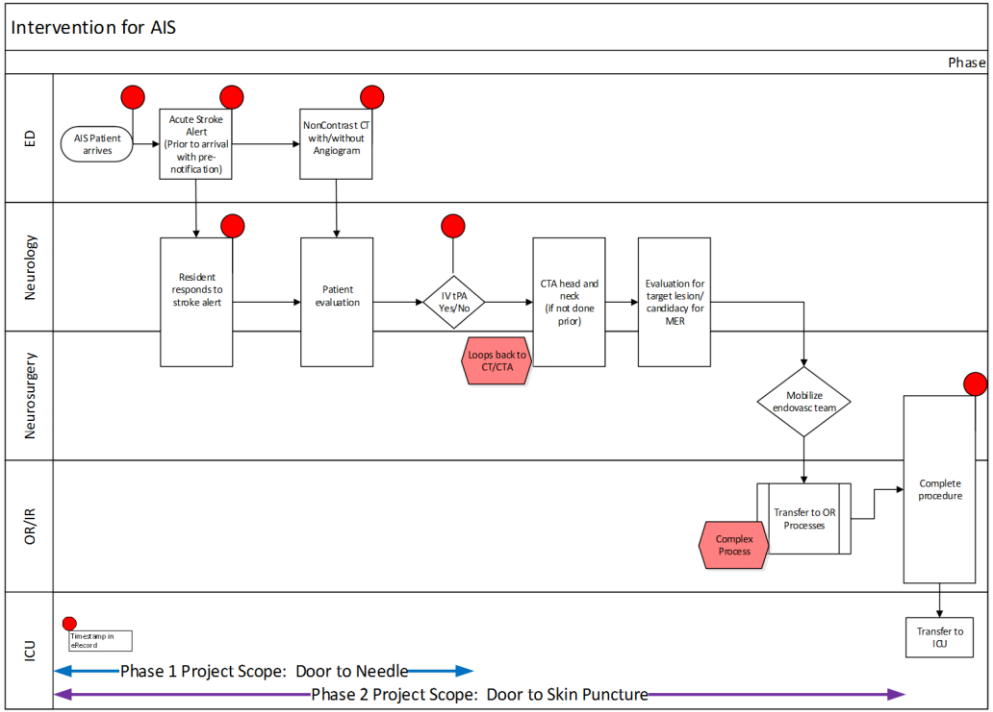
Source: Circ Cardiovasc Qual Outcomes 2017, AHA

Outcome of Incorporating Time-Saving Strategies

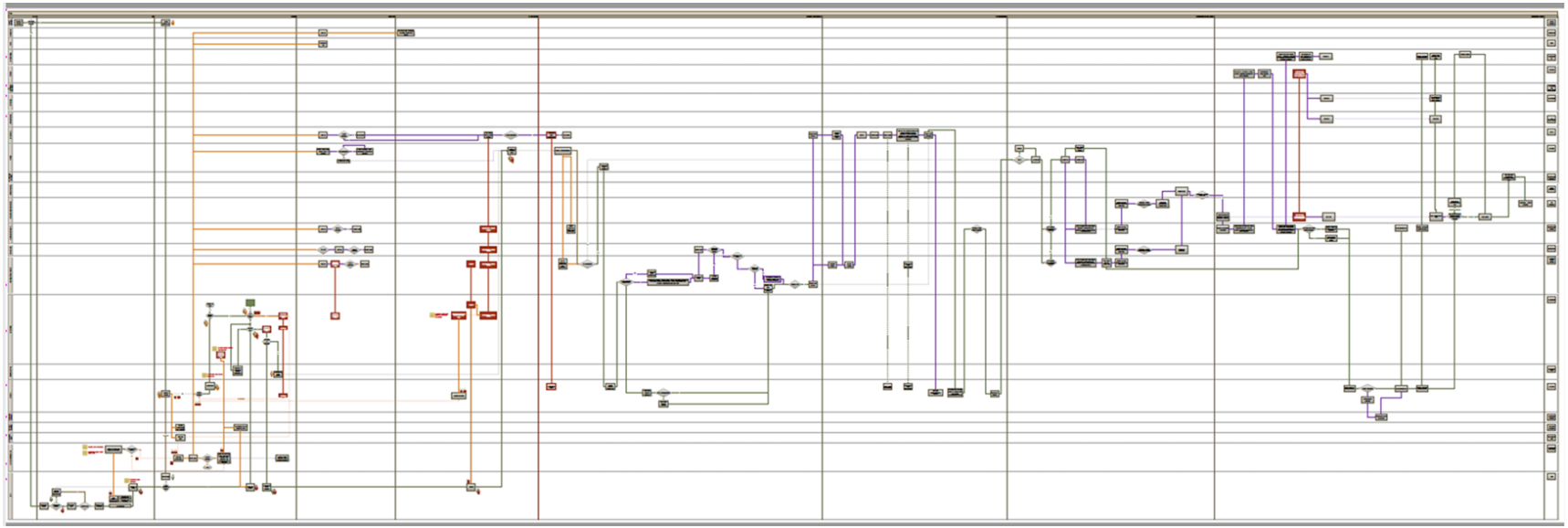
- Hospital participation in a multidimensional quality initiative was associated with improvement in the timeliness of tPA administration.
- This improvement was associated with lower in-hospital mortality, symptomatic intracranial hemorrhage, and overall tPA complications with an increase in the percentage of patients able to be discharged to home.
- Hospitals adopting the best-practice strategies can save 1.3 minutes on average for each strategy implemented.
- Requires continuous reinforcement and evaluation.

Source: Circ Cardiovasc Qual Outcomes, 2017

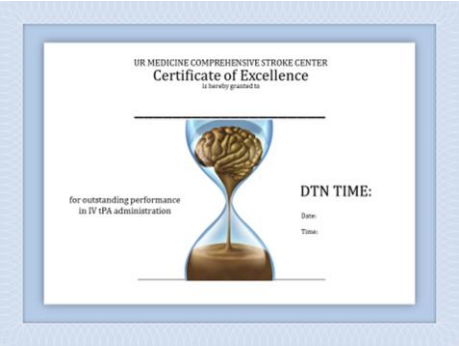
LEAN Project Planning: Initial Process Map



LEAN Project Planning: Actual Process Map



LEAN “Just Do It”



EMS STROKE ALERT!

Patient: _____

Date of Birth: _____

LAST KNOWN WELL TIME

_____:_____ AM / PM

CONTACT PHONE NUMBER

Individual who saw patient at last seen normal time?
Mobile number if that person is en-route to hospital.

(_____) _____ - _____

Cincinnati Stroke Scale Findings

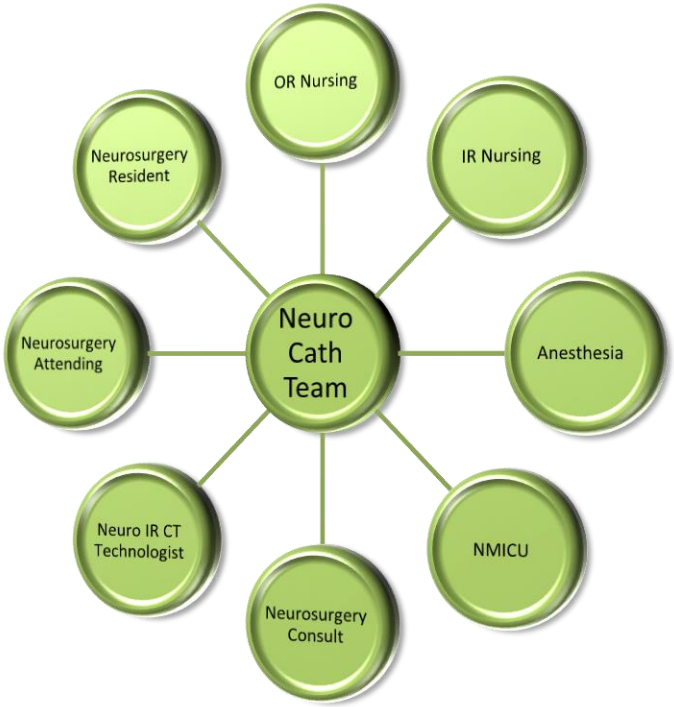
☐ Facial Droop ☐ Arm Drift ☐ Slurred Speech

Has the patient taken any of these medications in the past 48 hours?

☐ Coumadin (warfarin)
☐ Xarelto (rivaroxaban) ☐ Pradaxa (dabigatran)
☐ Eliquis (apixaban) ☐ Lovenox (enoxaparin)

DID YOU NOTIFY THE RECEIVING HOSPITAL?

LEAN “Just Do It”



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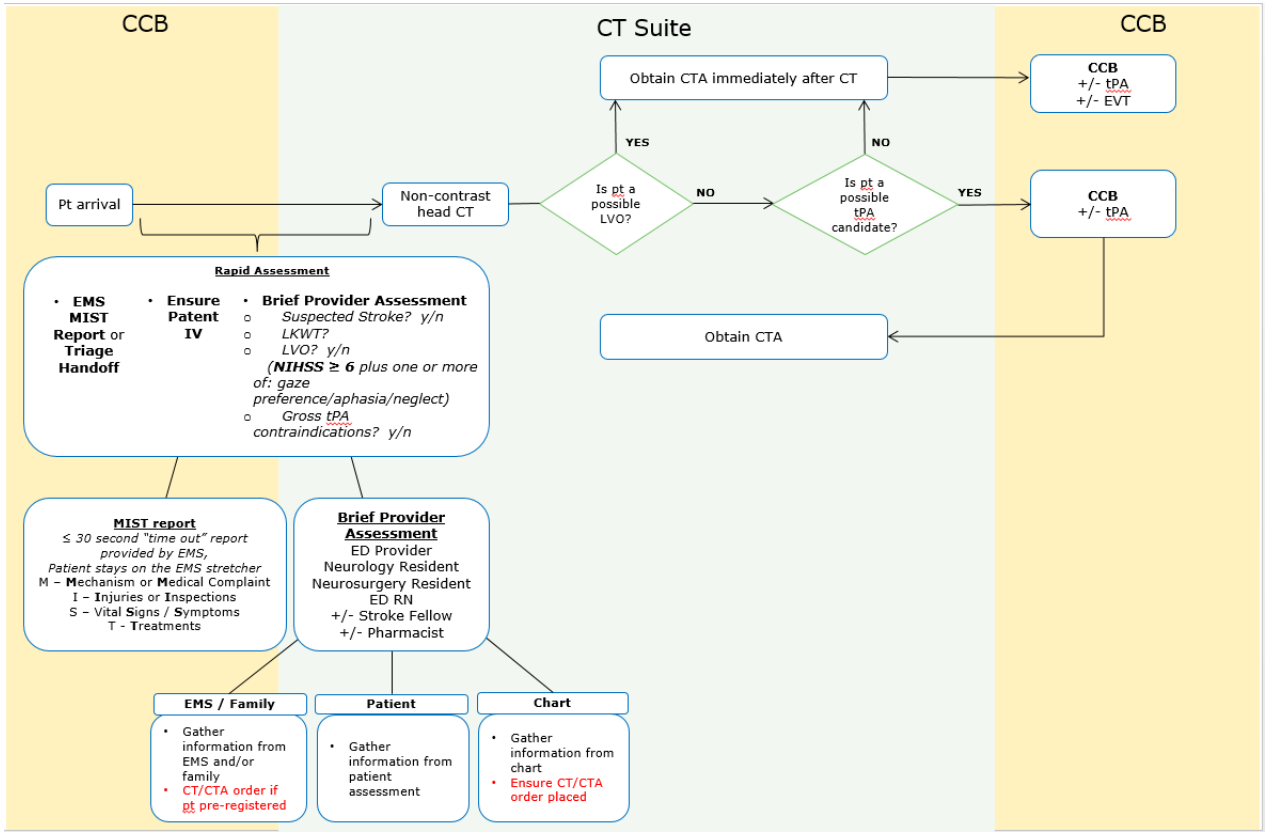
CCB
CT Suite
CCB
Obtain CTA immediately after CT
CCB
+/- tPA
+/- EVT
YES
NO
Pt arrival
Non-contrast head CT
Is pt a possible LVO?
NO
Is pt a possible tPA candidate?
YES
CCB
+/- tPA
Rapid Assessment
• EMS MIST Report or Triage Handoff
• Ensure Patent IV
• Brief Provider Assessment
○ Suspected Stroke? y/n
○ LKWT?
○ LVO? y/n
(NIHSS ≥ 6 plus one or more of: gaze preference/aphasia/neglect)
○ Gross tPA contraindications? y/n
Obtain CTA
MIST report
≤ 30 second "time out" report provided by EMS,
Patient stays on the EMS stretcher
M – Mechanism or Medical Complaint
I – Injuries or Inspections
S – Vital Signs / Symptoms
T - Treatments
Brief Provider Assessment
ED Provider
Neurology Resident
Neurosurgery Resident
ED RN
+/- Stroke Fellow
+/- Pharmacist
EMS / Family
• Gather information from EMS and/or family
• CT/CTA order if pt pre-registered
Patient
• Gather information from patient assessment
Chart
• Gather information from chart
• Ensure CT/CTA order placed

Case review

- 86 y.o. male presented with R sided weakness, R facial droop and dysarthria.
- EMS with a pre-arrival notification that included CPSS, LKW.
- Stroke alert activated.
- On initial exam at SMH, the patient had a NIHSS of 12 for gaze palsy, right facial droop, right arm/leg weakness, left gaze preference, right field cut, and both aphasia and dysarthria.
- Head CT showed no hemorrhage.
- CTA showed a left M1 occlusion and proximal LICA occlusion.
- Determined to be a candidate for IV thrombolytic therapy.
- LOS 2 days, discharged to home, NIHSS 2.

Pre-arrival EMS call	- 28 minutes
Door to Stroke Alert	- 13 minutes
Door to MD	0 minutes
Door to CT	8 minutes
Door to tPA	18 minutes

Case review

- 58 y.o. female transferred after receiving tPA at outside hospital emergency department (DTN 19 minutes).
- Transferred to SMH by helicopter.
- Neuro cath team stroke alert activated.
- Upon arrival to SMH, NIHSS 9.
- SMH imaging with minimal loss of grey-white matter differentiation.
- Pt taken directly to OR from CT scanner for embolectomy.
- Pt discharged to home 2 days later with NIHSS 0.

Pre-arrival EMS call	- 21 minutes
Door to Stroke Alert	- 21 minutes
Door to MD	0 minutes
Door to CT	11 minutes
Door to Puncture	28 minutes

Thank you