

# San Mateo County 2<sup>nd</sup> Annual Stroke Symposium

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Presented by:

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**KAISER  
PERMANENTE**



*The Promise of the Peninsula*

# Case Study

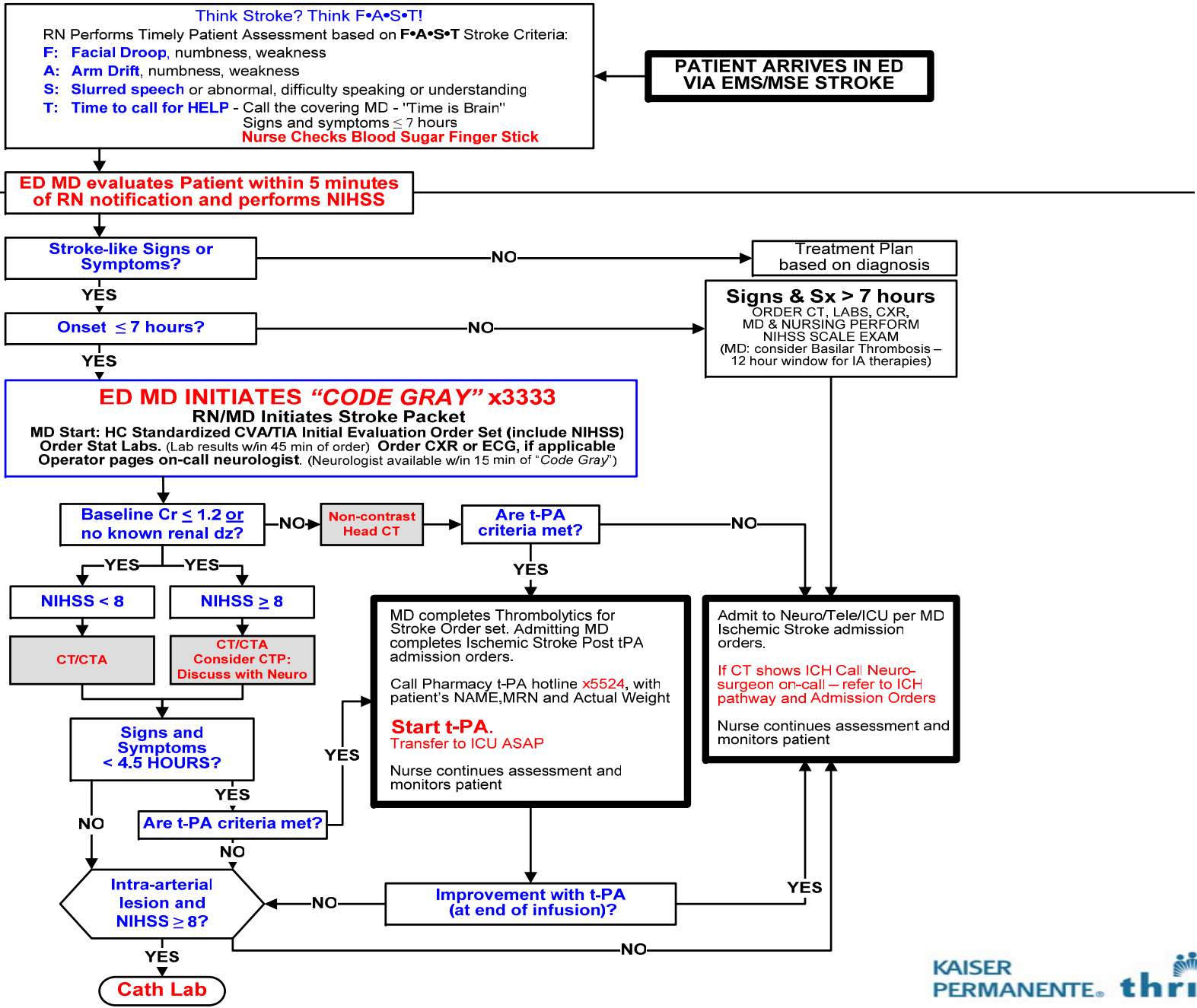
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- 48 yo female, last seen normal at 1410 when family members noted her to be suddenly confused. 911 was called and patient was brought to KRWC.
- PMHx: hyperlipidemia and previous MI
- Presented to ED at 1500: quadriplegic and aphasic
- MD unable to fully assess and complete NIHSS. Patient is able to blink eyes to answer yes or no.

# What is Locked-In Syndrome?

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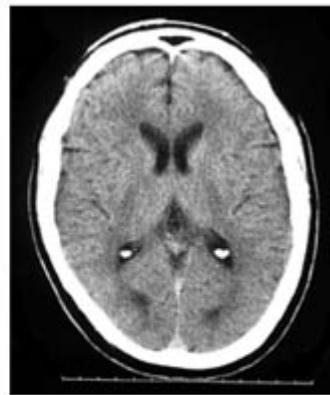
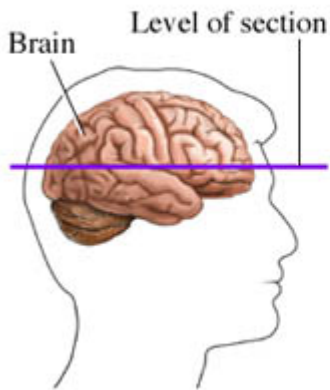
- Locked-in syndrome is a rare neurological disorder characterized by **complete paralysis of voluntary muscles in all parts of the body except for those that control eye movement**
- Individuals with locked-in syndrome are conscious and can think and reason, but are unable to speak or move
- The disorder leaves individuals completely mute and paralyzed.
- Communication may be possible with blinking eye movements





# Imaging: Head CT and CTA

Head CT non-contrast



CT scan

Head CT Angiography



# Why CT Angiogram?

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To determine mechanism of stroke and, and in appropriate cases, to determine potential endovascular or surgical interventions

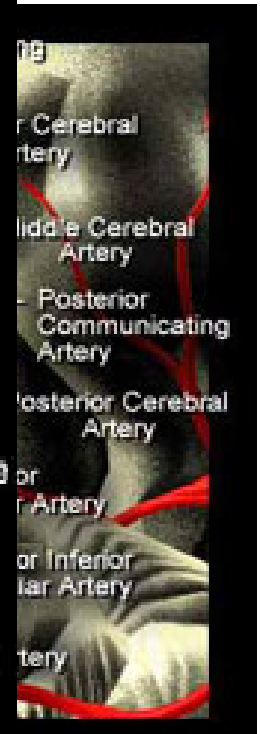
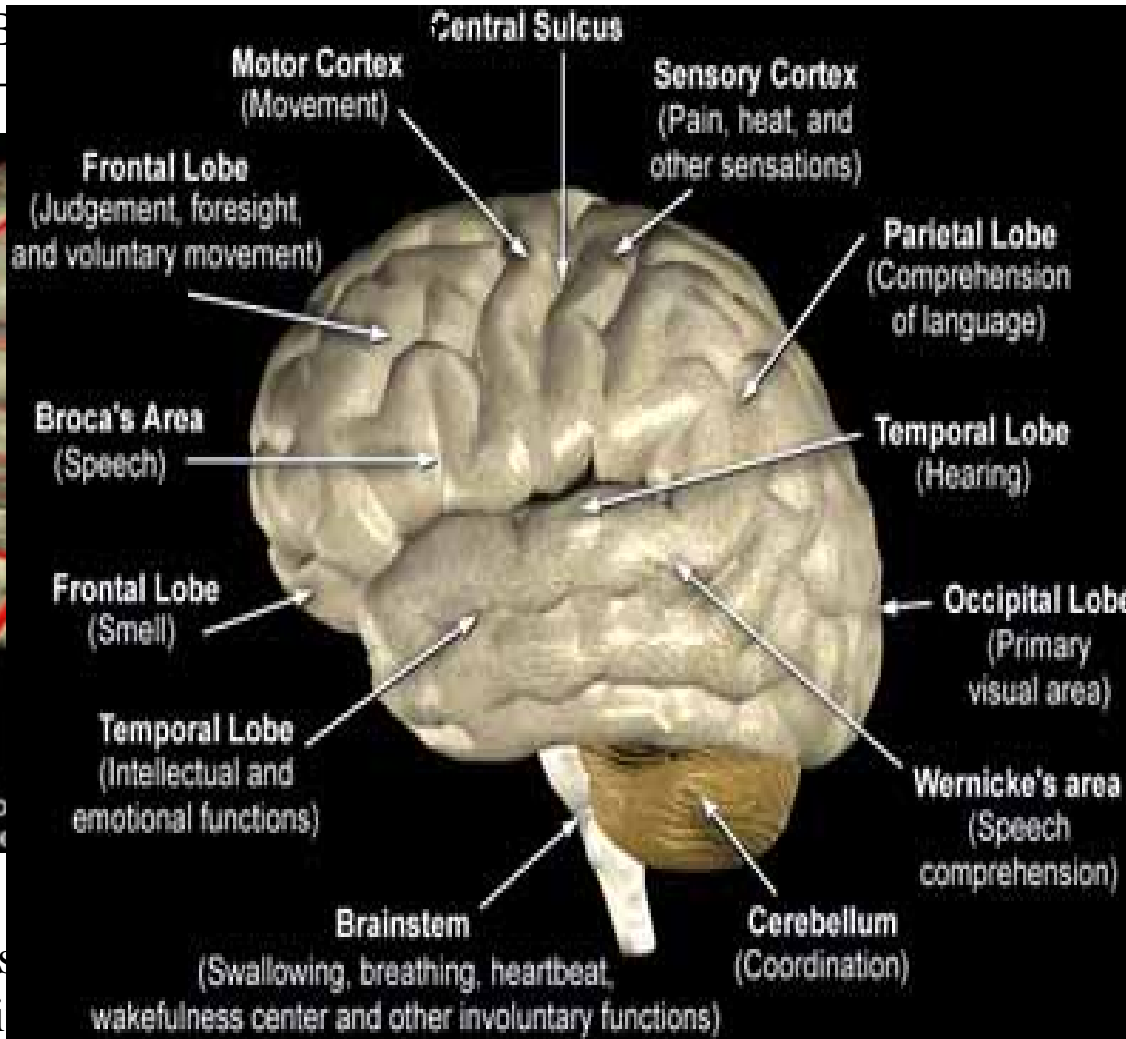
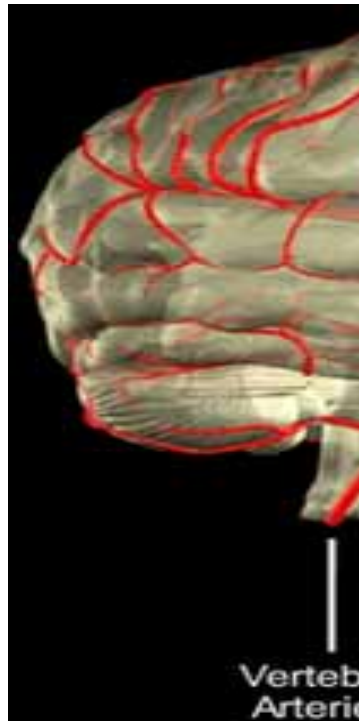
## What are the advantages of CTA vascular imaging?

- Identifies large artery occlusion in ischemic stroke
- Reveals underlying vascular pathology (carotid or vertebral atherosclerosis, carotid or vertebral dissection, etc)

## CTA results:

- Large artery occlusions- posterior circulation
  - Basilar artery thrombosis

Case Study Dx: E



The vertebralbas  
posterior two-fi  
of the cerebellum, and the brain stem.



door-to-needle  $\leq 60$  min



Suspected stroke patient arrives at hospital



$\leq 10$  min  
Initial MD evaluation (including patient history, lab work initiation, and NIHSS assessment)



$\leq 15$  min  
Stroke team notified (including neurologic expertise)



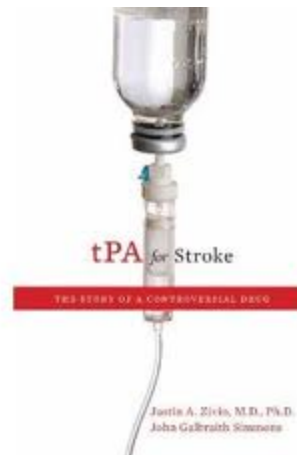
$\leq 25$  min  
CT scan initiated



$\leq 45$  min  
CT and labs interpreted



$\leq 60$  min  
Activase (t-PA) given if patient is eligible\*



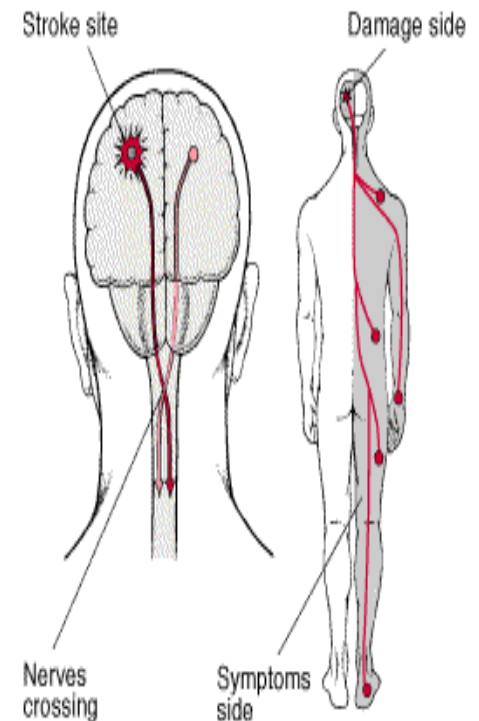
# Case Study

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- 64 yo male without any significant past medical hx. LSN at 0720 by wife as they were getting ready to go for their morning walk. Wife heard him fall, diaphoretic, HR 60, aphasic with right hemiparesis
  
- NIHSS: 25

# NIHSS Score

- ❑ LOC 1a: 0- alert
- ❑ LOC 1b: 2-answers both questions incorrectly
- ❑ LOC 1c: 2- follows neither correctly
- ❑ Gaze: 2- forced deviation
- ❑ Visual field: 2- complete hemianopia
- ❑ Facial Paresis: 2- partial paralysis
- ❑ Motor- R arm: 4- no movement
- ❑ Motor- L arm: 0- no drift
- ❑ Motor- R leg: 4- no movement
- ❑ Motor- L leg: 0- no drift
- ❑ Ataxia: 0- absent
- ❑ Sensory: 2- severe sensory loss
- ❑ Language: 3- mute/global aphasia
- ❑ Dysarthria: 2- severe dysarthria
- ❑ Neglect: 0- no evidence of neglect



[www.psastroke.org](http://www.psastroke.org)

What kind of stroke do you think the patient is having? Left or right?

# Stroke Syndromes: large artery occlusions

## Large artery occlusion: anterior circulation

- Left hemisphere:
  - aphasia with or without hemiparesis
  - Right gaze paresis (left gaze deviation), right visual field cut
  - Right hemiparesis (face & arm > leg)
- Right hemisphere:
  - Acute confusion, left hemi-neglect
  - Left gaze paresis( right gaze deviation), left visual field cut
  - Left hemiparesis (face & arm > leg)

## Large artery occlusion: posterior circulation

- Often multiple levels of involvement- brainstem, cerebellum, occipital and medial temporal lobes
- Classis brainstem syndromes
- Symptoms found on the opposite sides left and right of face and body (eg. Left face, right arm and leg) indicate brainstem involvement
- Cerebellar infarction
- Basilar artery thrombosis with obtundation, eye findings, and quadraparesis

door-to-needle  $\leq 60$  min



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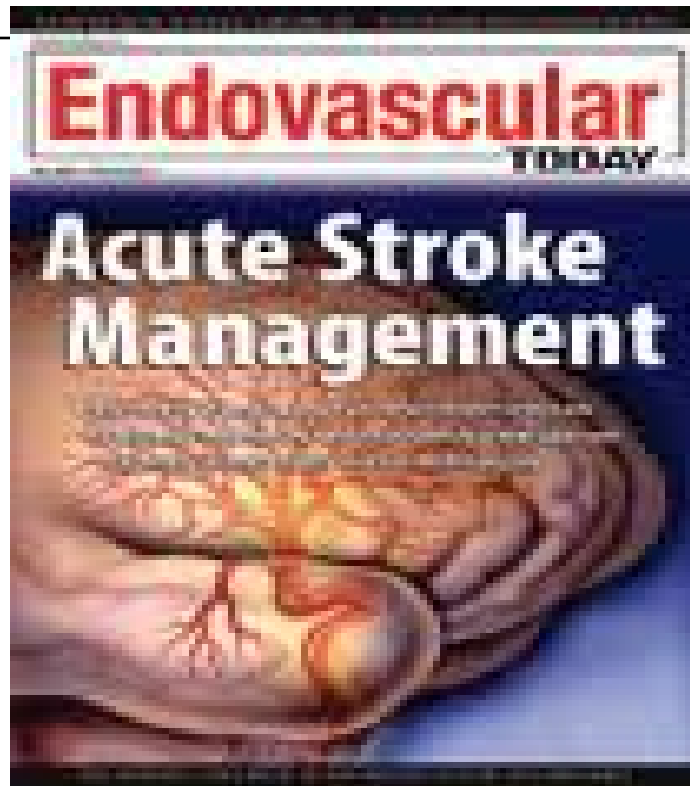
- IV TPA given 1 hour from sx onset
- NO improvement or slight improvement after IV TPA infusion
- CTA obtained: Dense L MCA stroke



What happens now?  
Do we wait and see...



ED MD consults with Stroke Neurologist and Neurointerventionalist



- Endovascular stroke treatment may be considered in selected patients with large artery occlusion
- *Did this patient have a large artery occlusion and has a significant clinical deficit (NIHSS > 8)?*
  - Yes- L MCA, NIHSS: 25
- Time of onset within 8 hours for anterior circulation stroke or within 12 hours for posterior circulation stroke?
  - Yes
- THRIVE score: recently developed Total Health Risk in Vascular Events (THRIVE) score for endovascular stroke treatment outcomes



# THRIVE SCORE

## THRIVE Score Calculator

The THRIVE Score is a clinical scoring system intended to help clinicians better understand a patient's chances of having a good outcome after endovascular stroke treatment.

(THRIVE = Total Health Risks in Vascular Events)

What is your patient's NIH Stroke Scale (NIHSS) score?

What is your patient's age?

Does your patient have a history of hypertension? YES NO

Does your patient have a history of diabetes mellitus?  
YES NO

Does your patient have a history of atrial fibrillation? YES NO

Calculate THRIVE Score

<http://www.thrivescore.org/>

- Patient transferred to KRWC
- Interventional stroke treatment 4 hours from symptom onset
- Patient with successful recanalization

# Our Stroke Team









**Questions?**



# Resources:

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1. Kaiser Permanente 2010 Clinical Practice Guideline
2. <http://www.strokecenter.org>
3. <http://www.medicinenet.com>
4. [www.ninds.nih.gov](http://www.ninds.nih.gov)
5. [www.medterms.com](http://www.medterms.com)
6. [www.genentech.com](http://www.genentech.com)
7. [www.psastroke.org](http://www.psastroke.org)
8. [www.thrivescore.org/](http://www.thrivescore.org/)