LERN Mock Stroke Scenarios

We thank you for your participation in LERNs Stroke System and your commitment to those that you serve. Evidence has supported that a facility that runs multi-disciplinary mock stroke codes improves their door to needle time. With this in mind, it is best practice for all facilities who have a low stroke code volume to complete monthly Mock Stroke Codes in order to ensure your team is ready to respond to some of its most critical patients. Low volume is defined as a facility that has less than 6 patients presenting <3.5 hours per quarter. If your facility meets this low volume criteria, LERN requires you to complete and submit monthly stroke codes with your quarterly report.

For your convenience, we have created the attached scenarios to assist you in completing these Mock Stroke Codes. Please use the Mock Stroke Code Documentation tool which can be found on LERN's website to document and submit your monthly Mock Stroke Codes. https://lern.la.gov/wp-content/uploads/Mock-Stroke-Code-documentation-tool-006.pdf

Tips for running a successful Mock Stroke Code:

- All staff members who would respond to a Stroke Code should be included i.e. ED MD, registration, nursing, radiology, ED tech, etc. (Should also include night shift when possible).
    - You can incorporate Tele-Stroke, if applicable, however usually has to be coordinated with the teams ahead of time.
- Choose a time that is not typically as busy in your ED to ensure you have better attention from your staff.
- While all of the below codes are written as EMS arrivals, we encourage you to use the scenarios as either EMS or Private Vehicle arrivals depending on how your stroke patients typically arrive.
- It is best to ask a person to participate as the patient. We have seen this done by a security guard, physical therapist, case manager, etc.
- You will find that the mock stroke codes are written in a "teach as you go" manner. This is encouraged, however if you want to run the drill and then ask these questions at the end, you are welcome to. What is crucial to a successful mock code is a debriefing session at the end. You should be asking your staff how they felt it went, offer praise for what went well and make note of what did not go well.

Please reach out to Sarah Templet (Sarah.templet@la.gov), LERN's stroke lead, for any questions regarding the mock stroke codes.

Mock Stroke Scenario 1

Lytic & LVO+ (known TSO)

Scene
Scene Town of _____ (choose one about 15 min from you) with _____EMS Agency.
@06:27 EM-7 to LERN Stroke report. LERN calls reports to the hospital with the below information.

History of Presenting Condition
61 year old male @ 06:12 while eating breakfast experienced sudden onset slurring of speech, facial droop on his left with weakness in left side upper and lower limbs. His wife Mary spotted these sudden onset of symptoms and immediately called for an ambulance. His wife said that his history includes hypertension and smoker 1PPD, no surgeries noted. ETA 15 min.

Pre-Hospital Assessment
Vitals: BP 140/90 mmHg Pulse 75 RR: 22 SpO2 98% RA GCS 14 CBG: 180
B.E.F.A.S.T
Left Facial Droop
Left Motor Weakness: Upper Limb no muscle activation, arm falling quickly. Lower Limb can move the limb, but unable to lift against gravity.
Slurred Speech
VAN
Vision RT gaze preference
Aphasia none
Neglect can't feel touch on the left

Patient Arrival: 06:48
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: 0612, LSN: 0612, TSN: 0612, VAN: positive

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to both! (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal)

Hospital Management

1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.
2. Then the patient should be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should not take >5 minutes.

3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Do you have a process to get QUICK results for you Stroke specific scans? i.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't may help to adopt one to speed up the results of these scans.
4. NCCT results: Hyperdensity in the M1 Segment of the Right Middle Cerebral Artery, with no other signs suggestive of an Ischemic Stroke noted.
    a. Discuss if this patient is a lytic candidate? Answer: yes
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 15)*
    c. Have your staff walk through the process of giving a thrombolytic. Questions: What does the patient's blood pressure need to be prior to administration? (*BP<185/110*) If it is out of range, what would be administered? (*discuss with your staff. guidelines do not recommend any one specific medication however Cardene is widely used*) What labs have to be obtained prior to lytic administration? (Answer: *glucose is the only mandatory lab to obtain prior to lytic administration unless the patient is on Coumadin, suspected bleeding abnormality or thrombocytopenia. Guidelines DO NOT recommend waiting on coagulopathy studies to administer lytic due to its time sensitive nature)*
5. CTA Performed, results: occlusion of the right M1 segment
    a. Ask your staff: Could this patient benefit from a thrombectomy? Answer: yes!
6. Prepare for transfer if your hospital does not perform thrombectomy in house.
7. Discuss blood pressure parameters after lytic administration and how frequently vital signs and neuro checks should be completed. (Answer: BP<180/105, DO NOT LOWER BP unless greater than this; Neuro checks/vital signs q 15 min x 2 hr, then q 30 minutes x 6 hr; then q 1 hr x 16hr). Should you insert an NG tube/place foley catheter or any invasive lines after lytic administered? (Answer: avoid when possible. If patient decompensates there may be some vital interventions but other than this you should avoid) Ask if you can give anticoagulant (ex. Coumadin, Xarelto, Eliquis) agents or antithrombotic (ex. Plavix, Aspirin) agents? (answer: NO, not until 24 hours post lytic with repeat NCCT which is negative for hemorrhage)
8. Discuss what the patient's HOB should be. Answer: For LVO+ patients, HOB should be flat unless there is an airway compromise.
9. Discuss if you will keep a post lytic patient at your facility or not, and the process for doing so.

Post Mock Stroke Debriefing Conversation Guide:

- ***<u>For hospitals who have to transfer LVO+ patients</u>: When was the transfer decision made and LERN/Transfer Center called? When would you have called EMS? (Note: if this is after the CTA results were obtained you are already behind the 8 ball. You can call the LERN call center on VAN+ status alone. Most endovascular centers will want CTA results, but you already have the process started. Discuss with your local ambulance provider if they will work with you to call on VAN+ status alone. Discuss how they can get you air vs ground fastest.
- What are complications of lytic administration? (answer: angioedema, bleeding internally or intracranially, neurologic decline) What would you do if any of these are noted? (Answer: Recommended treatment for angioedema includes – maintain airway, discontinue alteplase & hold ACEIs, administer IV methylprednisolone 125 mg, IV diphenhydramine 50 mg, and famotidine 20 mg IV. If there is an increase in angioedema despite therapy consider epinephrine (0.1%) 0.2-0.5mg IM or by neb (0.5 mL); for neurologic decline: promptly notify MD, anticipate a stat NCCT. Discuss what you would do if you see a bleed. (See LERN guideline for reversal of lytic induced intracranial hemorrhage guideline on LERN's website if you do not have a protocol in place at your facility.)

Mock Stroke Scenario 2

Lytic & LVO+ (unknown TSO)

Scene
Scene Town of _____, LA with _____EMS Service.
@09:10 U-401 to LERN Stroke report. LERN then calls your hospital with the below report.

History of Presenting Condition
A 58 year old male awoke at 6:00 am and was at work by 7:00 am. Co-workers had witnessed the patient and seemed in his normal state of health that AM. He was found sitting on a pallet at 9:00 am and when co-worker attempted to find out what was wrong, he noticed that his speech was gibberish, his face looked drooped on the left side and his left arm was weak. Another co-worker promptly called 911 and then notified his wife. His wife said that his only history includes type II Diabetes, hypertension and hyperlipidemia. EMS ETA to your hospital is 10 minutes.

Pre-Hospital Assessment
Vitals: BP 160/100 mmHg Pulse 80 RR: 20 SpO2 97% RA GCS 13 CBG: 98
No blood thinners
B.E.F.A.S.T
Left Facial Droop
Left Motor Weakness: Upper Limb no muscle activation, arm falling quickly. Lower Limb can move the limb, but unable to lift against gravity.
Slurred Speech
VAN
Vision RT gaze preference
Aphasia cannot follow commands
Neglect normal

Patient Arrival: 09:22
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: not known specifically but sometime between 0700-0900, LSN: 0700, TSN: 0900, VAN: positive

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers: Yes to both! (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal)

Hospital Management
1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.
2. Then the patient should be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should not take >5 minutes.

3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Do you have a process to get QUICK results for you Stroke specific scans? i.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't, may help to adopt one to speed up the results of these scans.
4. NCCT results: negative for hemorrhage
    a. Discuss if this patient is a lytic candidate? Answer: yes
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 13, however for this scenario his will be worsening. Talk about this)*
    c. Have your staff walk through the process of giving a thrombolytic. Questions: What does the patient's blood pressure need to be prior to administration? (*BP<185/110*) If it is out of range, what would be administered? (*discuss with your staff, guidelines do not recommend any one specific medication however Cardene is widely used*) What labs have to be obtained prior to lytic administration? (Answer: *glucose is the only mandatory lab to obtain prior to lytic administration unless the patient is on Coumadin, suspected bleeding abnormality or thrombocytopenia. Guidelines DO NOT recommend waiting on coagulopathy studies to administer lytic due to the time sensitive nature)*
5. CTA Performed, results: occlusion of the right middle cerebral artery
    a. Ask your staff: Could this patient benefit from a thrombectomy? Answer: yes!
6. Prepare for transfer if your hospital does not perform thrombectomy in house.
7. Discuss blood pressure parameters after lytic administration and how frequently vital signs and neuro checks should be completed. (Answer: BP<180/105, DO NOT LOWER BP unless greater than this; Neuro checks/vital signs q 15 min x 2 hr, then q 30 minutes x 6 hr; then q 1 hr x 16hr). Should you insert an NG tube/place foley catheter or any invasive lines after lytic administered? (Answer: avoid when possible. If patient decompensates there may be some vital interventions but other than this you should avoid) Ask if you can give anticoagulant (ex. Coumadin, Xarelto, Eliquis) agents or antithrombotic (ex. Plavix, Aspirin) agents? (answer: NO, not until 24 hours post lytic with repeat NCCT which is negative for hemorrhage)
8. Discuss what the patient's HOB should be. For LVO+ patients, HOB should be flat unless there is an airway compromise.
9. Discuss if you will keep a post lytic patient at your facility or not and the process for doing so.

Post Mock Stroke Debriefing Conversation Guide:

- ***For hospitals who have to transfer LVO+ patients: When was the transfer decision made and LERN/Transfer Center called? When would you have called EMS? (Note: if this is after the CTA results were obtained you are already behind the 8 ball. You can call the LERN call center on VAN+ status alone. Most endovascular centers will want CTA results, but you already have the process started. Discuss with your local ambulance provider if they will work with you to call on VAN+ status alone. Discuss how they can get you air vs ground fastest.
- What are complications of lytic administration? (answer: angioedema, bleeding internally or intracranially, neurologic decline) What would you do if any of these are noted? (Answer: Recommended treatment for angioedema includes – maintain airway, discontinue alteplase & hold ACEIs, administer IV methylprednisolone 125 mg, IV diphenhydramine 50 mg, and famotidine 20 mg IV. If there is an increase in angioedema despite therapy consider epinephrine (0.1%) 0.2-0.5mg IM or by neb (0.5 mL); for neurologic decline: promptly notify MD, anticipate a stat NCCT. Discuss what you would do if you see a bleed. (See LERN guideline for reversal of lytic induced intracranial hemorrhage guideline on LERN's website if you do not have a protocol at your facility)
- Ask your staff what went well or did not go well for them during the mock stroke code.

Mock Stroke Scenario 3

Lytic & LVO+ (Unknown TSO)
WAKE UP STROKE

Scene
Scene Town of _____, LA with _____EMS Service.
@07:30 U-62 to LERN Stroke report. LERN then calls your hospital with the below report.

History of Presenting Condition
A 63 year old right handed female who lives alone, went to bed at 10pm. The patient did not show up to work and her employer notified her daughter at 0700. Her daughter then went to her mother's house at 0715 and found her mother in bed with stroke like symptoms. She had dysarthria, left hemiplegia and right gaze preference. Her history includes hypertension and 1PPD smoker. ETA to your facility 15 minutes.

Pre-Hospital Assessment
Vitals: BP 188/110 mmHg Pulse 72 RR: 18 SpO2 98% RA GCS 13 CBG: 98
No blood thinners
B.E.F.A.S.T
Dysarthria
Left Facial Droop
Left Motor hemiplegia: Upper Limb no muscle activation, arm falling quickly. Lower Limb unable to lift against gravity.
VAN
Vision RT gaze preference
Aphasia cannot follow commands
Neglect normal

Patient Arrival: 0748
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: not know specifically but sometime between 2200 the night before and 0700 this morning, LSN: 2200, TSN: 0715, VAN: positive
***Since the TSO is unknown, we should ask the following questions to better differentiate: Did she get up to use the bathroom during the night? Did she notice the time on the clock? Was it dark or light outside? Just because it was unwitnessed, doesn't always mean the patient cannot assist determining an onset time. In this scenario, the patient will likely not be able to participate due to receptive aphasia.

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to thrombectomy and maybe to lytic if you have a wake up/unknown onset stroke protocol! (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal) ***see LERN website>stroke>guidelines>wake up unknown stroke for more information

Hospital Management

1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.
2. Then the patient should then be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should take <5 minutes.
3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Do you have a process to get QUICK results for you Stroke specific scans? I.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't may help to adopt one to speed up the results of these scans.
4. NCCT results: negative for hemorrhage
    a. Discuss if this patient is a lytic candidate? Answer: maybe (wake up process if you have one- walk through it. You will discover a stat MRI shows a DWI/Flair mismatch so the patient is a lytic candidate) If you do not have a wake up protocol, skip all lytic parts and proceed to thrombectomy eligibility because the patient will not be a candidate at your hospital. Please look into creating a protocol because it is standard of care. (reach out to sarah.templet@la.gov for assistance)
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 13)*
5. CTA Performed, results: occlusion of the right middle cerebral artery
    a. Could this patient benefit from a thrombectomy? Answer: Yes
    b. Should the patient receive a lytic? Answer: since the patient was a "wake up stroke" then you should discuss this with the receiving center and discuss this, however your emphasis is still to transfer the patient for a thrombectomy
6. Prepare for transfer if your hospital does not perform thrombectomy in house.
7. If this patient would NOT get a lytic at your hospital, the BP should not be lowered unless >220/120 and the HOB should remain flat for increased perfusion to the penumbra. For LVO+ patients it should be flat unless there is an airway compromise.

Post Mock Stroke Debriefing Conversation Guide:

- ***For hospitals who have to transfer LVO+ patients: When was the transfer decision made and LERN/Transfer Center called? When would you have called EMS? (Note: if this is after the CTA results were obtained you are already behind the 8 ball. You can call the LERN call center on VAN+ status alone. Most endovascular centers will want CTA results, but you already have the process started. Discuss with your local ambulance provider if they will work with you to call on VAN+ status alone. Discuss how they can get you air vs ground fastest.
- Please review LERN's Wake-Up/Unknown Symptom Onset stroke guideline: Wake-up-Unknown-Sympton-Onset-Stroke-Guideline.pdf with your staff and discuss how this could be incorporated in this scenario if you do not have a protocol at your facility.
- Ask your staff what they felt went well or could be improved in the Mock Code they ran. Offer feedback.

Mock Stroke Scenario 4

No Lytic & No LVO (Known TSO)

Scene
Scene Town of _____, LA and _____EMS
@08:40 U-28 to LERN Stroke report. LERN Calls report to the hospital and the patient will arrive in 10 min.

History of Presenting Condition
A 72 year old male, went to bed at 9pm and had spoken to son on the phone. Patient did not answer phone at 0800 when his son called him and his son went to his house and found father in bed with stroke like symptoms at 0830. His father is able to report he got weak on the left side could not get out of bed and had a headache shortly after awaking, beginning at 0700.

Pre-Hospital Assessment

Vitals: BP 158/98 mmHg Pulse 68 RR: 16 SpO2 95% RA GCS 15 CBG: 110
On Eliquis for A-Fib.
B.E.F.A.S.T
Slurred speech
Left Facial Droop
Left Motor hemiparesis: Upper Limb mild drift. Lower Limb able to lift against gravity but also week.
VAN
Vision: normal
Aphasia: none noted
Neglect: not appreciated

Patient Arrival: 0854
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: yes, 0700 because the patient could tell us LSN: 0700, TSN: 0700, VAN: negative

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to lytic and yes to thrombectomy however patient is VAN neg so LVO is not likely.
(Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal)

Hospital Management
1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are

supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.

2. Then the patient should then be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should take <5 minutes.
3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Do you have a process to get QUICK results for you Stroke specific scans? i.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't may help to adopt one to speed up the results of these scans.
4. NCCT results: old right sided lacunar stroke
    a. Discuss if this patient is a lytic candidate? Answer: no (*since the patient is on an anti-coagulant (Eliquis) if he last took it within 48 hours.*)
        i. Other lytic contraindications: Active internal or intracranial bleeding, Intracranial or intraspinal surgery or trauma within 2 months, Known bleeding diathesis, Current severe uncontrolled hypertension, Presence of intracranial conditions that may increase the risk of bleeding (e.g., intracranial neoplasm, arteriovenous malformation, or aneurysm), use of an anticoagulant and last dose within 48 hours.
        ii. Reminder: while use of an anticoagulant with last dose within 48 hours is a contraindication to lytic, an anti-thrombotic medication (Plavix, aspirin, brilinta) is not a contraindication.
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 16)*
5. CTA Performed, results: no large vessel occluded
    a. Is the patient a thrombectomy candidate? Answer: no.
6. Discuss your hospitals process for this patient? Would you transfer a suspected stroke patient? Would you keep them and admit? Do you have MRI capability?

Post Mock Stroke Debriefing Conversation Guide:

- Ask your staff what the care for a stroke patient who did not receive a lytic or is anticipating a thrombectomy should look like in your ED?
    - Monitor vitals per protocol, Maintain BP <220/110. Allow for permissive hypertension to enhance blood flow to the damaged area of the brain.
    - Cardiac monitoring should be in place to monitor for cardiac dysrhythmias, and any noted should be reported
    - Maintain O2>94%
    - Treat fever
    - Perform bedside swallow screen prior to any oral intake. This is due to the fact that many post stroke patient experience dysphagia (difficulty swallowing).
    - Discuss with ED MD if an antithrombotic (Plavix, aspirin) would be warranted for your patient.
- Ask your staff what they felt went well or could be improved in the Mock Code they ran. Offer feedback.

Mock Stroke Scenario 5

No Lytic & LVO +

Scene
Scene town of _____, LA with _____EMS.
@1400 U-36 to LERN Stroke report. LERN calls your hospital with the below report and lets you know ETA 5 min.

History of Presenting Condition
A 64-year-old man is at home with sudden altered mental status. His family was with him and noted that he was in his normal state of health around 0700 but when they left to go to the store and returned at 0900, they noted he was altered. They waited until 1315 to call 911 because he is an alcoholic, they assumed he may have been drinking. On EMS arrival at 1330 they noted him to be unconscious, minimally responsive, snoring respirations.

Pre-Hospital Assessment
Vitals: BP 173/102 mmHg Pulse 77 RR: 14 SpO2 95% RA GCS 6 CBG: 107 Eyes closed, snoring respirations, not following commands, withdraws to pain. The medic said that he noted some right sided weakness that then resolved.
No blood thinners
B.E.F.A.S.T
Non-verbal
Unable to follow commands
Dysconjugate gaze
VAN
Visual: unable to assess
Aphasia: mute
Neglect: gaze noted

Patient Arrival: 1407
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: unknown, however sometime between 0700 and 0900, LSN: 0700, TSN: 0900, VAN: positive

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to thrombectomy and no to lytic (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal). If his TSN to arrival at your facility was < 4.5 hours, the patient would be a possible candidate for Wake Up/Unknown Onset Stroke Protocol.

Hospital Management
1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are

supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.

2. Then the patient should then be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should take <5 minutes.
    a. This patient would likely need to be emergently intubated which would be an acceptable interruption (ABCs). Discuss this with your staff and that while airway stabilization is an immediate need, you would still need to prioritize getting the patient to the scanner post intubation. Ex. Would you drop an NG/OG tube or wait and get a CT first? Discuss.
3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no to a CTA, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Do you have a process to get QUICK results for you Stroke specific scans? i.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't may help to adopt one to speed up the results of these scans.
4. NCCT results: negative for hemorrhage
    a. Discuss if this patient is a lytic candidate? Answer: no (out of the window)
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 26)*
5. CTA Performed, results: Occlusive thrombus in the basilar artery
    a. Would this patient benefit from a thrombectomy? Answer: yes
    b. Prepare for transfer if your hospital does not perform thrombectomy in house.
    c. Some stroke specialists will extend the lytic treatment window for basilar artery occlusions. Discussion should be had with your neurological expert as to whether extended window treatment with IV lytic is recommended
6. Discuss with your staff what this patient's blood pressure parameters should be? (answer: specifics should be deferred to neuro expert at your hospital but allow permissive hypertension) What should the patient's head of bead be? (answer: flat if airway and secretion management) Discuss whether this patient could benefit from IV fluids? (answer: yes)

Post Mock Stroke Debriefing Conversation Guide:

- ***For hospitals who have to transfer LVO+ patients: When was the transfer decision made and LERN/Transfer Center called? When would you have called EMS? (Note: if this is after the CTA results were obtained you are already behind the 8 ball. You can call the LERN call center on VAN+ status alone. Most endovascular centers will want CTA results, but you already have the process started. Discuss with your local ambulance provider if they will work with you to call on VAN+ status alone. Discuss how they can get you air vs ground fastest.
- A basilar artery occlusion can be a VERY difficult occlusion for hospitals to detect because of a patients presentation. Any patient with a sudden decrease in LOC not explained by BP derangement, HR, oxygen, CO2, glucose or drug exposure should raise suspicion for a brainstem injury. This is why having a CTA protocol in place for either all stroke patients, all VAN+ patients or with NIH>6 can assist you with capturing this population.
- Ask your staff what they felt went well or could be improved in the Mock Code they ran. Offer feedback.

Mock Stroke Scenario 6

Lytic & No LVO

Scene
Scene town of _____, LA with _____EMS.
At 15:32 U-210 to LERN Stroke report. LERN then calls your hospital and alerts you the patient has a 10 min ETA.

History of Presenting Condition

A 59-year-old Hispanic man is noted to have a right facial drop and slurred speech. Patient had lunch with family at 12: 30. They dropped him off at home at 2:00 PM. He called them at 2:30 PM and they could not understand him. They asked his neighbor to check on him who noticed the facial droop and that his speech was not right. The neighbor called 911 at 3:00PM. Patient denied visual disturbance, headache, chest pain, palpitations, dyspnea, dysphagia, fever, dizziness, loss of consciousness, bowel or urinary incontinence, or trauma.

Pre-Hospital Assessment

Vitals: BP 184/102 mmHg Pulse 80 RR: 18 SpO2 97% RA GCS 15 CBG: 90
On Plavix
B.E. F.A.S.T
Right facial droop and slurred speech

Patient Arrival: 1540
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: unknown, sometime between 1400 and 1430, LSN: 1400, TSN: 1430, VAN: negative (no unilateral weakness noted)

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to thrombectomy and yes to lytic (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal)

Hospital Management

1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.
2. Then the patient should then be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should take <5 minutes.
3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)

   a. Do you have a process to get QUICK results for you Stroke specific scans? i.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't may help to adopt one to speed up the results of these scans.
   b. Some hospitals have adopted "CTA for all approach", some obtain a CTA when VAN+ or some have adopted for NIH>6. Think about what you would do for this specific patient.
4. NCCT results: old right sided lacunar stroke
   a. Discuss if this patient is a lytic candidate? Answer: yes; *(If your staff mention that the patient is on Plavix it would be an important time to teach that anticoagulants if taken within 48 hours would be a contraindication to a lytic but not an antiplatelet agent such as Plavix*)
   b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 4)*
   c. Have your staff walk through the process of giving a thrombolytic. Questions: What does the patient's blood pressure need to be prior to administration? (*BP<185/110*) If it is out of range, what would be administered? (*discuss with your staff. guidelines do not recommend any one specific medication however Cardene is widely used*) What labs have to be obtained prior to lytic administration? (Answer: *glucose is the only mandatory lab to obtain prior to lytic administration unless the patient is on Coumadin, suspected bleeding abnormality or thrombocytopenia. Guidelines DO NOT recommend waiting on coagulopathy studies to administer lytic due to its time sensitive nature)*
5. CTA Performed, results: no large vessel occluded, not a thrombectomy candidate
6. Discuss blood pressure parameters after lytic administration and how frequently vital signs and neuro checks should be completed. (Answer: BP<180/105, DO NOT LOWER BP unless great than this; Neuro checks/vital signs q 15 min x 2 hr, then q 30 minutes x 6 hr; then q 1 hr x 16hr). Should you insert an NG tube/place foley catheter or any invasive lines after lytic administered? (Answer: avoid when possible. If patient decompensates there may be some vital interventions but other than this you should avoid) Ask if you can give anticoagulant (ex. Coumadin, Xarelto, Eliquis) agents or antithrombotic (ex. Plavix, Aspirin) agents? (answer: NO, not until 24 hours post lytic with repeat NCCT which is negative for hemorrhage)
7. Discuss if you will keep a post lytic patient at your facility or not and the process for doing so.

Post Mock Stroke Debriefing Conversation Guide

- What are complications of lytic administration? (answer: angioedema, bleeding internally or intracranially, neurologic decline) What would you do if any of these are noted? (Answer: Recommended treatment for angioedema includes – maintain airway, discontinue alteplase & hold ACEIs, administer IV methylprednisolone 125 mg, IV diphenhydramine 50 mg, and famotidine 20 mg IV. If there is an increase in angioedema despite therapy consider epinephrine (0.1%) 0.2-0.5mg IM or by neb (0.5 mL); for neurologic decline: promptly notify MD, anticipate a stat NCCT. Discuss what you would do if you see a bleed. See LERN guideline for reversal of lytic induced intracranial hemorrhage guideline on LERN's website if you do not have)
- Ask your staff what they felt went well or could be improved in the Mock Code they ran. Offer feedback.

Mock Stroke Scenario 7

No Lytic & No LVO, Hemorrhagic Stroke

Scene
Scene town of _____, LA with _____EMS.
At 2142 Unit 798 calls to LERN with Stroke report. LERN then calls your hospital and alerts you the patient has a 10 min ETA.

History of Presenting Condition

A 45 year old male with no known previous medical history presents with disorientation, slurred speech, facial droop and right sided weakness. He was seen in his normal state of health by a neighbor at about 1830. His neighbor noticed him sitting on his porch and didn't seem right, so he walked over at 2130 and called 911. There are no signs of trauma noted.

Pre-Hospital Assessment

Vitals: BP 198/100 mmHg, Pulse 83, RR: 18, SpO2 97% RA, GCS 14, CBG: 109
No blood thinners
B.E. F.A.S.T
Drowsy but follows Commands
Confused
Right facial droop
Right sided weakness
Slurred Speech
VAN
Vision: no abnormalities noted
Aphasia: mild
Neglect: not appreciated

Patient Arrival: 2155
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: unknown, sometime between 1830-2130, LSN: 1830, TSN: 2130, VAN: positive

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to thrombectomy and yes to lytic (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal)

Hospital Management

1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are

supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.

2. Then the patient should then be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should take <5 minutes.
3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Do you have a process to get QUICK results for you Stroke specific scans? i.e. specific name for scan (ex. CT Head for Stroke), or a process to notify the radiologists? If you don't may help to adopt one to speed up the results of these scans.
    b. Some hospitals have adopted "CTA for all approach" or some have adopted for NIH>6. Think about what you would do for this specific patient.
4. NCCT results: large acute intraparenchymal hemorrhage noted in the left basal ganglia. Approximately 3.2 x 1.5 CMs, ruptured into the left lateral ventricle and small amount of blood noted in the right lateral ventricle and 3rd ventricles.
    a. Discuss if this patient is a lytic candidate? Answer: no (*hemorrhage noted on NCCT*)
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 12)*
    c. Discuss with your staff what your process is for patients who have a noted hemorrhagic stroke. Would you transfer the patient? What is acute management for this patient?
        i. What should this patient's target blood pressure be? (Answer: SBP 130-140 to reduce hematoma expansion. No specific medication has shown more effective at achieving this than others)
        ii. How quickly would you want to reduce this patient's blood pressure? (Answer: within the first hour or two of your care, however not too rapidly. Be careful not to drop the patient's blood pressure too low which can cause more adverse outcomes)
        iii. Would you anticipate this patient requiring any platelets or anticoagulation reversal agents? (Answer: no. The patient is not on anticoagulants that we are aware of. Platelets are not indicated for patients with a hemorrhagic stroke unless known to be on an antiplatelet agent and will have a neurosurgical procedure)
        iv. What position should the patient's HOB be? (answer: 30 degrees)
        v. What are other interventions you can anticipate? (answer: cardiac monitoring, frequent neurologic/vital sign exams, monitoring the patient's airway for decline and need for intubation, potentially transferring the patient, antiseizure medication in the present of a seizure however is it not indicated prophylactically, possible EVD if performed at your hospital; Mannitol may be given if vasogenic edema is noted)
        vi. When is the patient most at risk for hematoma expansion (worsening bleeding)? (Answer: within the first 6 hours. Why the care you provide is crucial!)
5. CTA Performed, results: no vascular abnormality or aneurysm
    a. Does your hospital routinely perform CTAs on hemorrhagic stroke patients? CTA head should be considered to identify patients at risk of hematoma expansion and to evaluate for underlying vascular malformations. Refer to LERN's ED Stroke Provider Guide for more details: ED-provider-emergent-STROKE-care-version-6_20250505.pdf or LERN's Spontaneous Intragranial Hemorrhage Guideline Spontaneous-ICH-Guideline-1.pdf
6. Many hospitals will transfer these patients to a higher level of care. Discuss this process with your staff for these patients.

Post Mock Stroke Debriefing Conversation Guide

- If your hospital does not have particular protocols on the care of hemorrhagic stroke patients, please visit LERN's website to view LERN's guidelines. https://lern.la.gov/lern-stroke-system/guidelines-and-protocols/
- It would also be VERY beneficial to review with your staff what care would have changed should this patient have been on an anti-coagulant medication. (see LERN's guideline on Anti-coagulant Associated Intracranial Hemorrhage Guideline) Your goal should be to offer these patient's the appropriate reversal agent within the first hour of noticing the hemorrhage. This will potentially save the patient's life! It will be helpful to review which reversal options you have for which agents. Please reach out to Sarah Templet at sarah.templet@la.gov with any questions.
- Ask your staff what they felt went well or could be improved in the Mock Code they ran. Offer feedback.

Mock Stroke Scenario 8

Pregnant Patient

Scene
Scene town of _____, LA with _____EMS.
At 1043 Unit 548 calls to LERN with Stroke report. LERN then calls your hospital and alerts you the patient has a 10 min ETA.

History of Presenting Condition
A 32 year old female who is currently 18 weeks pregnant with no past medical history noticed at 0930 she had a headache. Moments later her speech became garbled and her left side numb. She got the attention of her partner who called 911. When EMS arrived they noticed that her left side was weak and numb, and noted dysarthria. The patient is anxious but alert and able to follow commands.

Pre-Hospital Assessment
Vitals: BP 169/88 mmHg, Pulse 112, RR: 20, SpO2 95% RA, GCS 15, CBG: 122
No blood thinners
B.E. F.A.S.T
Left arm weakness and numbness
Arm and leg have some effort against gravity
Speech is slurred however can understand much of what the patient is saying
VAN
Vision: no abnormalities noted
Aphasia: none noted
Neglect: not noted

Patient Arrival: 1054
Ask your staff the following:
What is the patients time of symptom onset (TSO), last seen normal (LSN) and time symptoms noted (TSN). Also ask what the patient's VAN status is? If they are unable to answer, recommend to them the VAN certification found on LERN's website under Stroke System>Education Materials>Get VAN Certified.
Answers:
TSO: 0930, LSN: 0930, TSN: 0930. Since the patient is aware and can note when everything occurred, all times are the same. VAN: negative. Note dysarthria is not aphasia so does not count towards aphasia.

Now ask your staff:
Is this patient in the window for a thrombolytic or a thrombectomy?
Answers:
Yes to thrombectomy and yes to lytic (Thrombolytic: window 4.5 hours from last seen normal; Thrombectomy: window is 24 hours from last seen normal) Pregnancy is a RELATIVE contraindication to thrombolytic but not absolute.

Hospital Management
1. Run through your process with your staff. Do you activate a stroke alert/code overhead? Do you activate prior to the patient's arrival? Have them tell you the process. If there are supplies they are supposed to have ready for the patient's arrival, have them walk through it (verbally or hands on). If you use tele-stroke services, discuss when that should be activated.

2. Then the patient should be PROMPTLY and SWIFTLY brought to CT with NO interruptions other than ED MD assessment which should take <5 minutes.
3. Discuss if this patient should get a NCCT and/or CTA head and neck with your staff. If the answer is no, why not? (hint: best practice is to pair CT/CTA when at all possible)
    a. Refer to your hospitals specific policies and protocols for imaging pregnant patients. If you don't have a specific protocol, discuss with your imaging leaders.
4. NCCT results: negative for hemorrhage
    a. Discuss if this patient is a lytic candidate? Answer: Yes. Pregnancy does not automatically rule a patient out for a thrombolytic. This is when informed consent will have to come into play. This scenario is meant to help you look at this patient population and discuss what you would do for them. Questions like: Would we get written consent or not? Would we use TNK or TPA? Are our ED MDs comfortable with this? Would we need outside neurologic expertise if we do not use tele-stroke? Unfortunately, while not extraordinarily common, these patients will arrive to your ED. We should be prepared to treat them appropriately.
    b. What is the patients NIH? Answer: *(you don't have all the pieces but discuss with staff. Should be about 6)*
    c. IF you were to administer a lytic to this patient, have your staff walk through the process of giving a thrombolytic. Questions: What does the patient's blood pressure need to be prior to administration? (*BP<185/110*) If it is out of range, what would be administered? (*discuss with your staff, guidelines do not recommend any one specific medication however Cardene is widely used*) What labs have to be obtained prior to lytic administration? (Answer: *glucose is the only mandatory lab to obtain prior to lytic administration unless the patient is on Coumadin, suspected bleeding abnormality or thrombocytopenia. Guidelines DO NOT recommend waiting on coagulopathy studies to administer lytic due to the time sensitive nature)*
5. CTA Performed, results: no LVO.
6. Discuss with your staff how you would handle the care of this patient? Do you transfer patients OB patients? If you would keep this population, would your MDs feel comfortable with a stroke workup? Would transferring the patient change if they received a lytic? Meant to help you think through this scenario and prepare for when it takes place in your ED.
7. If you administered a lytic to this patient, discuss blood pressure parameters after lytic administration and how frequently vital signs and neuro checks should be completed. (Answer: BP<180/105, DO NOT LOWER BP unless greater than this; Neuro checks/vital signs q 15 min x 2 hr, then q 30 minutes x 6 hr; then q 1 hr x 16hr). Should you insert an NG tube/place foley catheter or any invasive lines after lytic administered? (Answer: avoid when possible. If patient decompensates there may be some vital interventions but other than this you should avoid) Ask if you can give anticoagulant (ex. Coumadin, Xarelto, Eliquis) agents or antithrombotic (ex. Plavix, Aspirin) agents? (answer: NO, not until 24 hours post lytic with repeat NCCT which is negative for hemorrhage)
8. If you administered a lytic to this patient, discuss what are complications of lytic administration? (answer: angioedema, bleeding internally or intracranially, neurologic decline) What would you do if any of these are noted? (Answer: Recommended treatment for angioedema includes – maintain airway, discontinue alteplase & hold ACEIs, administer IV methylprednisolone 125 mg, IV diphenhydramine 50 mg, and famotidine 20 mg IV. If there is an increase in angioedema despite therapy consider epinephrine (0.1%) 0.2-0.5mg IM or by neb (0.5 mL); for neurologic decline: promptly notify MD, anticipate a stat NCCT. Discuss what you would do if you see a bleed. See LERN guideline for reversal of lytic induced intracranial hemorrhage guideline on LERN's website if you do not have)

Post Mock Stroke Debriefing Conversation Guide

- "The use of thrombolysis in pregnancy and postpartum has been reported in over 200 cases. However, pregnant women have generally been excluded from all randomised controlled trials (RCTs). As per current American Heart Association/American Stroke Association guidelines, intravenous administration of rt-PA may be considered in pregnancy when the benefits of treating moderate or severe stroke outweigh the increased risks of uterine bleeding. Although rt-PA does not cross the placenta, there is a theoretical risk of placental bleeding and intrauterine fetal death" (citation A review of stroke in pregnancy: incidence, investigations and management - Khalid - 2020 - The Obstetrician & Gynaecologist - Wiley Online Library)
- It could be beneficial to reach out to your stroke experts to ask what their recommendations would be from the pregnant population prior to a "real event" in order to prepare well.