Topic: Stroke & SOP Q&A	**Intended learners:** EMTs, PMs, PHRNs, ECRNs
Class facilitator(s): NWC EMSS CE instructors	**Time allotment:** 2 hours

Analysis (Needs assessment)

Checks for understanding following the SOP roll-out classes in November of 2016 revealed ongoing learning needs with respect to using the new stroke assessment process and determining patient destination using the decision tree algorithm. Ask the MD questions were submitted in writing and via e-mail and the "official" answers are provided during this class.

Student prerequisites: Foundational understanding of stroke pathophysiology, patient presentation, and new SOPs as applied to their scope of practice.

National EMS Education Standard being addressed:

Anatomy, physiology, epidemiology, pathophysiology, psychosocial impact, presentations, prognosis, and management of (complex depth, comprehensive breadth) stroke/intracranial hemorrhage/transient ischemic attack.

Essential Questions and Enduring Understandings

Enduring understanding: Major advances in research and endovascular interventions have positively impacted morbidity and mortality in patients with acute stroke within a comprehensive stroke system of care emphasizing the importance of each link in the chain of survival.

Essential question: How/why must EMS and ECRN personnel work collaboratively as part of the stroke care team to rapidly and accurately identify the various presentations of stroke; provide care consistent with best practice models, and transport patients with suspected stroke to the correct hospital in a timely manner?

Objectives:

Goal: To strengthen participants' ability to assess and recognize strokes and provide appropriate patient care and disposition based on evidence-based stroke management guidelines.

OBJECTIVES:

Upon completion of the assigned readings, class and study questions, each participant will do the following with at least an 80% degree of accuracy and no critical errors:

1. Define stroke and cite the incidence and epidemiology of stroke.
2. Differentiate the two main etiologies of stroke into ischemic and hemorrhagic.
3. Compare and contrast the types of ischemic stroke.
4. Explain the impact of modifiable and non-modifiable risk factors for stroke.
5. Sequence the impact of disrupted CBF and how the brain becomes injured in stroke explaining the importance of salvaging the penumbra.
6. Discuss each link in the stroke chain of survival and explain why these pts are time sensitive.
7. Identify and provide rationale for the EMS resources that must be prepared to identify and/or treat stroke.
8. Explain the five goals of stroke management.
9. Explain the diagnostic importance of information to be obtained in a SAMPLE history for stroke.
10. Sequence the appropriate methods to secure an airway in a patient with a possible stroke.
11. Explain the dangers of hypoxia and hyperoxia when giving O_2 to pts experiencing a stroke.
12. Discuss the indications, timing, and preferred sites for vascular access and IVFs in pts with stroke.
13. Explain the indications for dextrose and midazolam for pts experiencing a possible stroke.
14. Describe preferred positioning and environmental controls to protect a pt with stroke.
15. Explain anticipated changes in vital signs in pts with stroke and the thresholds for treatment.
16. Compare and contrast the components, timing, and predictive value of the Cincinnati Prehospital Stroke Scale (CPSS), the Los Angeles Stroke Scale and the Miami Emergency Neurologic Deficit (MEND) exam.
17. Explain and sequence the components of a complete pt assessment for stroke.
18. Map the presenting S&S of ischemic and hemorrhage strokes, cerebral aneurysm, SAH and acute intracerebral hemorrhage.
19. Identify diseases/conditions that must be considered in the differential diagnosis of stroke.
20. Recognize alternate S&S of stroke that may be present with or without alterations to the quick stroke scales or exams.
21. Explain common complications of stroke and their implications for EMS care.
22. State the factors that contribute to poor outcomes in stroke.
23. Differentiate a TIA from a stroke.
24. Determine the most appropriate receiving hospital using the Stroke Decision Tree in the SOPs.
25. Explain the importance of calling a stroke alert to the appropriate receiving stroke center.

Resource materials/handouts/classroom environment			
AV equipment needs: PC, LCD projector with sound and INTERNET connectivity, PowerPoint presentation with video links; mobile advance		**Room set up: Table pods that enable group work on assigned stroke patient.**	
Teaching resources/supplies/equipment: ▪ Class attendance form: ensure all have signed ▪ Class evaluation forms		**References for educators:** ▪ Article: Ketamine Considerations for Prehospital Use ▪ 2016 SOP	
Handouts: • In-station handout with stroke mind map templates and SOP Q&A • ISM; including NWC EMSS Stroke Alert Checklist			

General class content/activities	Instructional methods	Time
Instructional set. Play wavefile from dispatch center. Not always apparent from caller what may be going on. Maybe, I'm still thinking about this one.	Dispatch tape	
Ensure that all have a copy of the SOPs - open to Stroke pages		
First ask: "Who knows who the new EMS Medical Director is?" I'd sort of like to know how effectively our communication network is working… **Next ask** each participant what they want to know most about stroke during this session. Write them down on a white board or piece of paper so you can ensure that all points have been covered before class is done.		3 minutes
Outline the general approach to the class		1 minute
Open to the ISM document Briefly highlight major content on each page so they see where points of information may be found	Overview for global learners	Less than 30 sec per page
Pg. 1: Unmodifiable risk factors: Age; gender		
Pg. 2: Anterior and posterior cerebral circulation; areas of brain impacted by anterior vs. posterior vessels		
Pg. 3: Risk factors for stroke: HTN, heart disease, diabetes		
Pg. 4: High cholesterol, Smoking, obesity, high alcohol consumption		
Pg. 5: Cocaine use, other drugs of abuse, head/neck injuries, infections, genetics, vascular malformation. Classifications of stroke: ischemia vs. infarctions, penumbra		
Pg. 6. Thrombotic, embolic, hemorrhagic strokes; SAH and spontaneous bleed		
Pg. 7: Disruption to CBF; chemical controls that vasodilate or constrict vessels Evolution of stroke care; systems of care		
Pg. 8: Stroke chain of survival; EMS and stroke care priorities		
Pg. 9: Primary assessment/resuscitative interventions		
Pg. 10: Secondary assessment; vital signs		
Pg. 11: History and essential questions to ask; SAMPLE history; list of anticoagulant drugs;		
Pg. 12: Full listing of PMH risk factors to discover; establishing pt functional baseline; prehospital stroke screen: mental status: GCS and speech		
Pg. 13: Cranial nerve assessment: facial asymmetry, vision,		
Pg. 14: Pupils; eye movement; Motor assessment (arm drift); sensory deficits		
Pg. 15: Point location testing; extinction & inattention; cerebellar testing; TRANSPORT DECISION factors; CALL BACK NUMBER; differential diagnosis		
Pg. 16: Complications; EMS/ECRN Documentation; hospital interventions		
Pg. 17: Nice to know only about endovascular interventions and tPA; patient outcomes and advances on horizon		
Pg. 18: tables for easy reference: distinctive S&S of stroke; characteristics of thrombosis, embolism, ICH, SAH; changes based on GCS; stroke mimics		
Pg. 19: MEND pocket card; Differentials for ANTERIOR vs POSTERIOR strokes; limitations of GCS		

Pg. 20: NIH Stroke Scale used by hospitals		
Pg. 21: References		
Pg. 22: Stroke risk scorecard; A&P map of brain by functional areas		
Pg. 23-27: Effect of stroke and screen shots of Elite pages		
Pg. 28: Most important page in whole handout: Prehospital CHECKLIST for stroke Recommend that this gets laminated and used on every stroke call.		
Transition to student-centered activity Divide into 6 groups; if class is 6 persons or less, each person gets one or more cases to create. Very small class; create them collaboratively.		
Each of the groups should be assigned one blank mind map to be filled in based on the nature of the stroke patient in the center circle and where that patient should be transported. Each group is to create a patient that meets that profile and fill in each node with the history, meds, and physical presentation etc. they would expect see in that patient. Use the ISM and stroke checklist as references.	Collaborative learning in groups Creating; Complex problem solving;	10 min to create
Activity (Student-led activity to reinforce this lesson): After each group has created their patient, they are to present their profile with rationales to the whole group. All should be encouraged to take notes on each map as the cases are presented in sequence to solidify their understanding of the decision tree.	student led discussion	10 min for each group to present
Ask probing questions if anything about their created case is inconsistent with that type of stroke, if anything important is missing, or they have not created the case correctly to meet the criteria for that type of stroke center transport.	Facilitation	Embedded in reports
After 60 minutes into class give a 9 minute 30 second break. Start on time – even if they are not all back..		9 min, 30 sec
Check for understanding: Closing out stoke: Go over their identified learning needs and ensure that each point has been covered.	Facilitation	8 min
Transition to Q&A: Format is divided by the SOP to which the question reasonably belongs. There is some overlap due to the number of questions about ketamine. You can ask them to read the questions on each page and let them identify which ones they want to explore the answers as a group if this is not a burning hot button for them – or you can given them the reader's digest answer and ask if they have any follow up questions they would like to ask of us.	Instructor led discussion	30 minutes
Do not get sucked into a slimy mire on this. These answers are pretty straight forward and the System is more than happy to discuss with any individual that would like to contact us. Actually very few individuals provided these questions. Those that did submit questions often had several – so I don't think we have large numbers of System members with gaps in their understanding of the protocols- but we'd like to find them and close the loop if possible. PLEASE READ THIS PART OF THE DOCUMENT THOROUGHLY BEFORE CLASS.		
Closure – Ask, if they could ask the System to address ONE THING right now, what would it be? Please note their comments and return to me. Please remind them that the System website has all the major updates stemming from the SOPs posted and we encourage them to check it out to stay informed of System happenings.	**Socratic questioning**	

Evaluation:

Have students fill out class evaluations; collect and send to D. Sordo.
Enter class attendance into each participant's face sheet located in 3 ring binders ; use colored ink. Forward attendance roster to D. Sordo.

Independent practice:

Digging deeper: Will post credit questions on this material shortly if they wish to do those.

Reflection/notes (what went well, what should be changed?) Sent to all educators.

Some participants did not understand why it is important for EMS personnel to recognize anterior and posterior strokes; better back ground needed in this area. Some do not like mind maps and student-centered learning activities; will continue to gently pull them out of their comfort zones. Biggest learning value of class was customized assistance with stroke physical exams.