

# Stroke Simulation Protocol for Advanced Practice Providers in the Emergency Department

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## Introduction

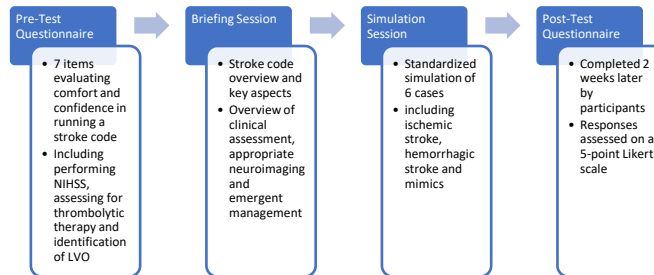
- For patients with acute stroke, rapid identification and triage of presenting symptoms requires team to work quickly and efficiently for prompt diagnosis and management.
- Advanced practice providers (APPs) are important members of stroke teams, including those in the emergency department.
- Statistics show that a significant number of eligible patients did not receive thrombolytics or thrombectomy<sup>1,2</sup>.
- Presumably, lack of provider experience and confidence with tissue plasminogen activator (tPA), or Tenecteplase (TNK), could be one of the factors contributing to the underutilization of these treatment options.
- Stroke code simulation training has been utilized to improve confidence and efficiency amongst neurology residents and APPs<sup>3,4</sup>.

## Method

- A Prospective quasi-experimental, pretest/posttest study was conducted.
- Participants included 13 Emergency Department APPs in a standardized simulation of 6 various stroke cases (ischemic, hemorrhagic, stroke mimic).
- A questionnaire was sent to all participants prior to the study and then two weeks post-simulation.
- Questionnaire included items on subjective confidence with leading a stroke code, assessing for thrombolytics, performing the NIHSS, and assessing for large vessel occlusion.
- Responses were analyzed using the Mann-Whitney U test.

## Procedure

- Participation letter was sent to Emergency Department leadership which was then disbursed to APPs. Participants completed NIHSS and mRS certifications online prior to simulation.
- Pre-test questionnaire was sent to all participants prior to simulation day and was anonymously submitted to RedCap system for analysis.
- Participants completed 4-hour simulation training on 6 various stroke cases conducted in a simulation center.
- A debrief was held after each case and at the end of the session once all cases were completed.
- Post-test questionnaire was sent two weeks after simulation day.



## Conclusion

- Subjective improvements in comfort and confidence surrounding stroke code management in the emergency department setting, accompanied by increased subjective comfort in assessing for LVO and need for thrombolytic and endovascular treatment, were clearly identified among Emergency Department APPs following their engagement in the simulation-based training.
- Further simulation-based training for stroke code management in the emergency department setting should be utilized in hospital systems to better prepare their growing advanced practice provider groups in treating and managing the stroke population.

## Significance

- Limitations to this study included small sample size and voluntary participation. Participants were compensated by predetermined/allocated CME time and money.
- Participants felt that the simulation-based exercises improved their comfort in performing NIHSS and being a part of multidisciplinary team when responding to a stroke code in the emergency department.
- Further simulation-based stroke training would be beneficial to improve preparedness and confidence levels in acute stroke management and deployment of multidisciplinary teams for acute stroke management.

## References

- Rai, AT, Seldon AE, Boo S, et al. A population-based incidence of acute large vessel occlusions and thrombectomy eligible patients indicates significant potential for growth of endovascular stroke therapy in the USA. J Neurointerventional Surg. 2017; 9(8):722-726. doi:10.1136/neurintsurg-2016-012515.
- Messé SR, Khatri P, Reeves MJ, et al. Why are acute ischemic stroke patients not receiving IV tPA? Neurology. 2016;87(15):1565-1574. doi:10.1212/WNL.0000000000003198
- Ruff IM, Liberman AL, Caprio FZ, et al. A resident boot camp for reducing door-to-needle times at academic medical centers. Neurol Clin Pract. 2017;7(3):237-245. doi:10.1212/CJP.0000000000000367
- Khan, Baird GL, Price T, et al. Stroke code simulation benefits advanced practice providers similar to neurology residents. Neurol Clin Pract. 2018;8(2):116-119. doi:10.1212/CJP.0000000000000435

## Results

- On a 5-point Likert scale, median score for trainee comfort in leading a stroke code increased from **3 to 4** ( $p \leq 0.001$ ) and **2 to 4** ( $p \leq 0.001$ ) in comfort assessing for LVO.
- APPs also reported a **33.3% increase** in score (3 to 4) in comfort assessing for thrombolytics ( $p \leq 0.001$ ) and **30% score increase** ( $p \leq 0.0001$ ) in preparedness for their next stroke code.

