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- The purpose of this quality improvement project was to use simulation as a teaching strategy to improve Emergency Department nurse confidence in the administration of Alteplase.
- In addition, the purpose of the performance improvement project was to improve administration times of Alteplase.
- Stroke causes significant long-term disability. Rapid Alteplase administration has been shown to decrease disability and improve patient outcomes.
- ED nurses play a significant role in the timely administration of Alteplase, from the recognition of stroke symptoms, notification of a stroke alert and the mixing and administration of Alteplase.
- The goal was to administer Alteplase within 60 minutes of arrival to the hospital in acute ischemic stroke patients.

INTRODUCTION

- Prior to this simulation, stroke education for the Emergency department staff consisted of an on-line module followed by a validation station where Alteplase was reconstituted.
- After identifying practice gaps through chart audits a stroke simulation scenario was developed using a standardized patient.

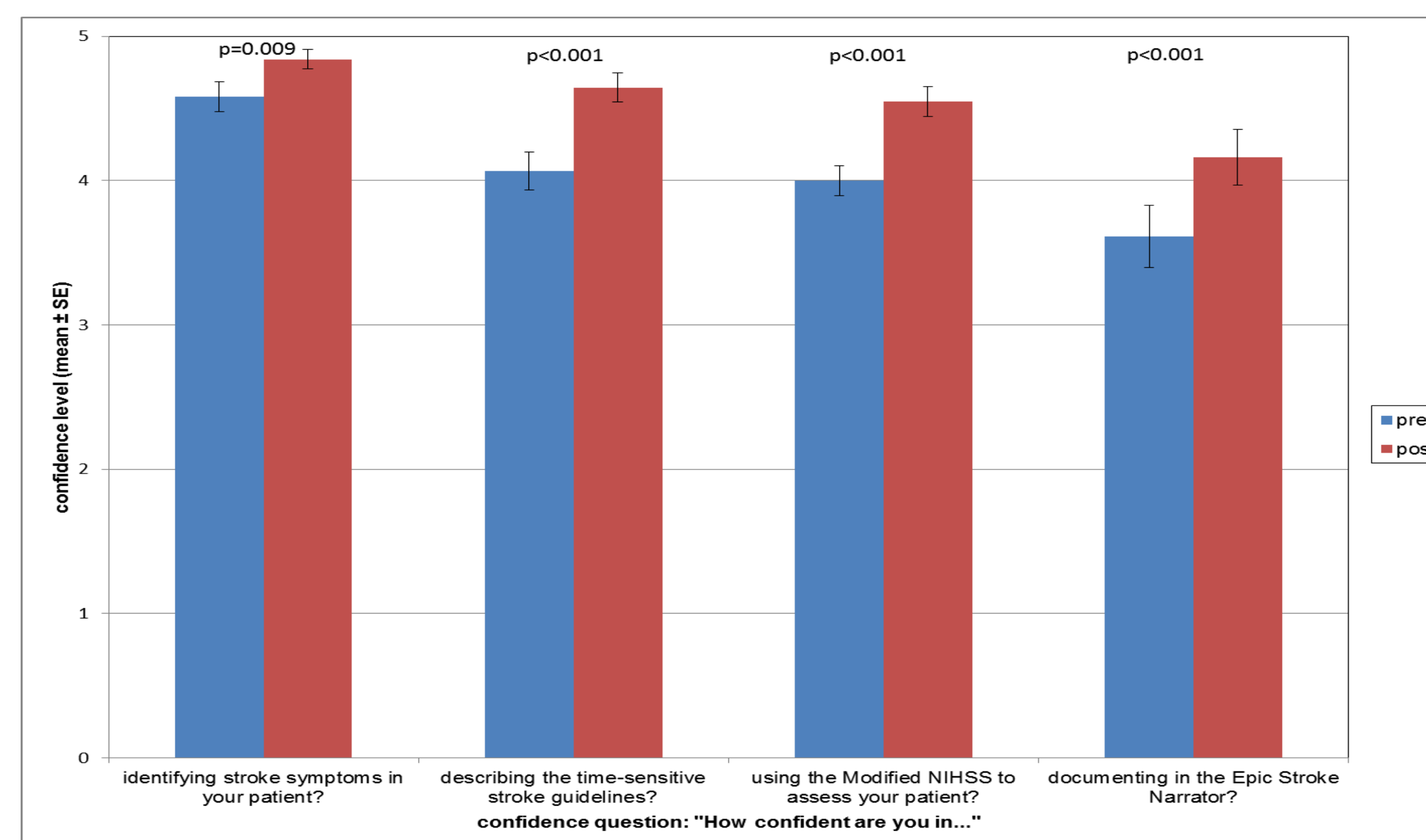
MATERIALS & METHODS

- Simulation sessions were scheduled for 30 minutes in groups of 3-4, in an Emergency department room.
- RNs completed the pre and post simulation survey which assessed knowledge and confidence levels of acute stroke care.
- The simulation focused on the assessment of an acute stroke patient using the mNIHSS, mixing the Alteplase and its administration using the smart pump.
- Each group was evaluated using a standardized checklist.
- Debriefing was conducted by the Stroke Coordinator after each simulation. Topics discussed included items on the pre-simulation survey, the importance of rapid Alteplase times and ideas to decrease administration times.
- In the time period studied, no additional educational initiatives occurred in the ED.
- A paired t-test was used when comparing confidence intervals.
- A Fisher's exact test was used when comparing door to Alteplase administration times and the percentage of improvement in those times.

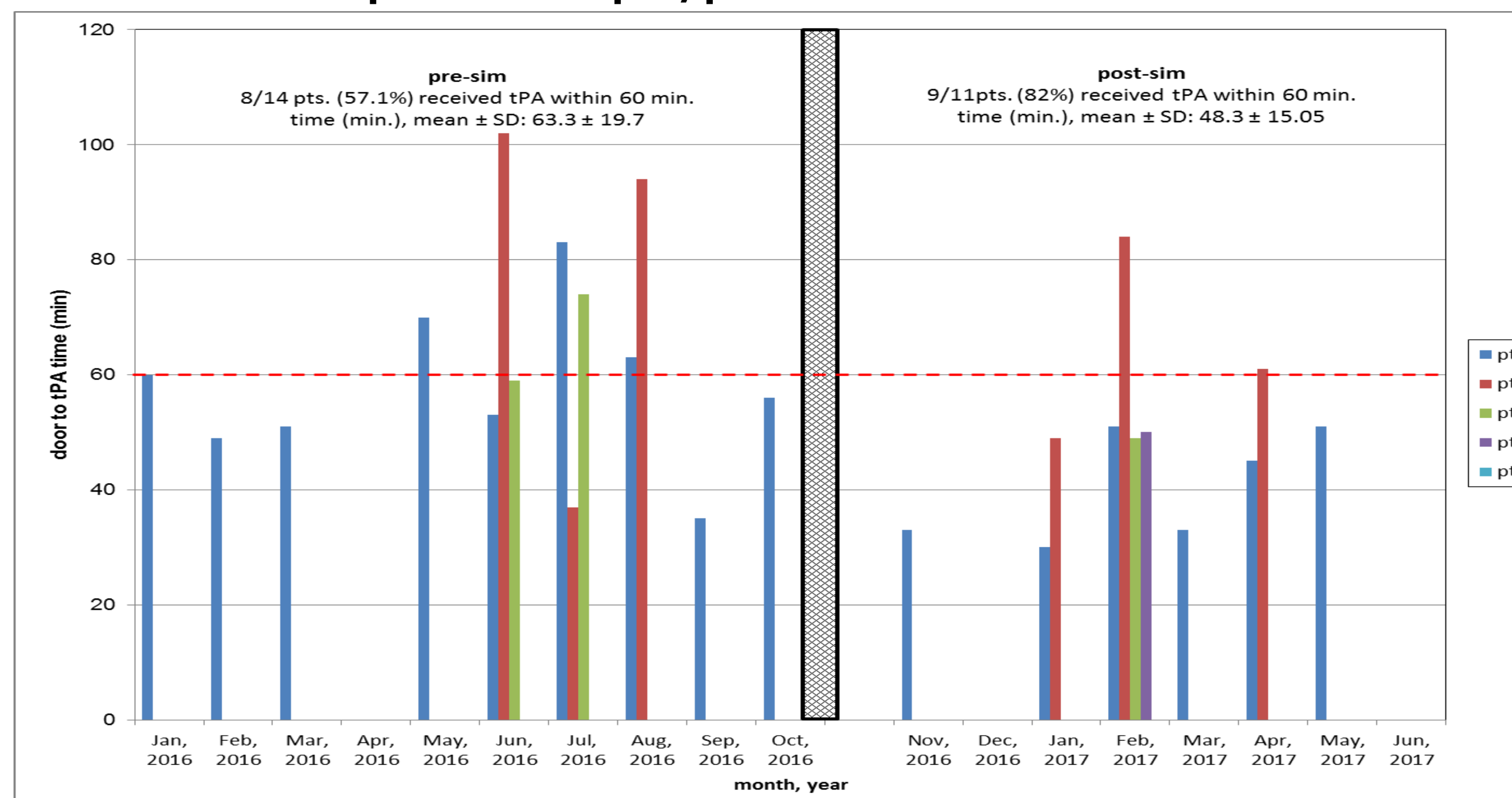
RESULTS

- Following simulation, RN participants reported higher level of confidence in all 4 nurse role action questions. ($p < 0.009$)
- The mean door to needle time decreased from 63 minutes pre-simulation (January 2016-October 2016) to 48 minutes post simulation (November 2016-June 2017) ($p = .162$).
- The percentage of eligible patient receiving Alteplase within 60 minutes was 57% pre-simulation and 82% post-simulation, and the likelihood to receive TPA in 60 minutes was 43% better after simulation (OR 1.43, $p = .442$).

Confidence Question results:



Door to Alteplase times pre/post simulation:



DISCUSSION

- Administration of IV Alteplase in acute ischemic stroke is the standard of care
- Using simulation as a teaching strategy mimics the stressful environment during Alteplase administration and helps to improve nurse comfort levels.
- Debriefing after the simulations allowed for information sharing and all staff questions to be answered.
- Though Alteplase administration times were not found to be statistically significant, this was due to low sample sizes.

CONCLUSION

- In this study, Alteplase administration times decreased by 15 minutes with a 43% better chance to receive Alteplase in 60 minutes.
- Simulation as a teaching strategy was shown to improve nurse confidence in delivery of acute stroke care.
- Results suggest knowledge and skills gained through simulation can positively impact patient outcomes by decreasing Alteplase administration times.

REFERENCES

Jauch, E. C., Saver, J. L., Adams, H. P., Bruno, A., Connors, J. J., Demaerschalk, B. M., . . . Yonas, H. (2013). Guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*, 44(3), 870-947.

Knippa, S., Cox, S., & Flynn Makic, M. (2015). Simulation improves nurses' adherence with stroke quality measures. *Journal for Nurses in Professional Development*, 31(4), 197-202.