Virtual Patient Stroke Simulation for Residents and Medical Students Improves Knowledge, Skill Sets and Confidence in Acute Stroke Care

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Introduction

At most teaching hospitals, first- and second-year residents must respond quickly to and judiciously during a “Stroke Alert” where “Time is Brain.” Interpreting neurologic signs and symptoms, correcting abnormal vitals, and ordering appropriate tests, labs, and imaging are complex, multifaceted processes that typically are incompletely understood by incoming residents and students. Hence, their need to contribute is offset by a serious lack of experience. In many medical specialties, simulated instruction improves performance and addresses patient safety needs without harm to, or practice upon, a real-live patient. Thus, we designed a virtual stroke patient simulation training course: to boost knowledge, skill sets, and confidence in managing hyperacute stroke scenarios with this new first-responder audience in mind.

Methodology

Incoming Neurology residents and medical students with minimal if any exposure to stroke underwent our stroke simulation course at the Center for Advance Medical Learning and Simulation (CAMSLS) in Tampa, Florida. It included 3 lectures on acute stroke by USF faculty and 10 simulated Stroke Alerts using actors and electronic patient simulators. After each scenario, debriefing sessions reviewed participants’ performance in Declarative and Procedural “Cognitive” knowledge as well as self-reported “Confidence” in handling these complex hyperacute stroke cases. Results were analyzed using Likert scale on data collected prior to, and after, the course.

Results

A repeated measures ANOVA demonstrated that, compared to pre-testing data, post-testing data of Acute Stroke management statistically significantly improved for Declarative and Procedural “Cognitive” Knowledge ($F=14.05$, $p=.002$) and self-reported “Confidence” ($F=33.37$, $p<.001$). This finding was significant for both residents and medical students alike.

Conclusion

In conclusion, simulation training for acute stroke management in our virtual stroke course at CAMLS in Tampa can statistically significantly improve care and confidence for residents and medical students. To address patient safety needs without harm to, or practice upon, real-live patients, Neurology and Emergency Medicine residency programs across the country should consider designing similar programs or utilizing ours at CAMLS for optimal stroke care among beginning residents at the front line of stroke care and avoid the “learner’s curve” for these patients.