

UC San Diego

Independent Study Projects

Title

Using high-fidelity simulation to teach neurological emergency and neurocritical care skills: A systematic review of the literature

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A Comprehensive Simulation-Based Curriculum in Acute Neurological Emergencies

at UC San Diego: Preliminary Results and Findings

UC San Diego Health

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INTRODUCTION

- High-fidelity simulation is quickly becoming a crucial component of medical education
- Research in simulation-based learning in acute neurology is relatively scarce and is performed on a single-case basis
- In 2018, a call-to-arms was published urging neurology educators to invest in simulation

Objective: to introduce preliminary results of a new *comprehensive simulation curriculum* for UC San Diego (UCSD) neurology residents

THE CURRENT UCSD CURRICULUM

The UCSD curriculum on acute neurological emergencies includes:

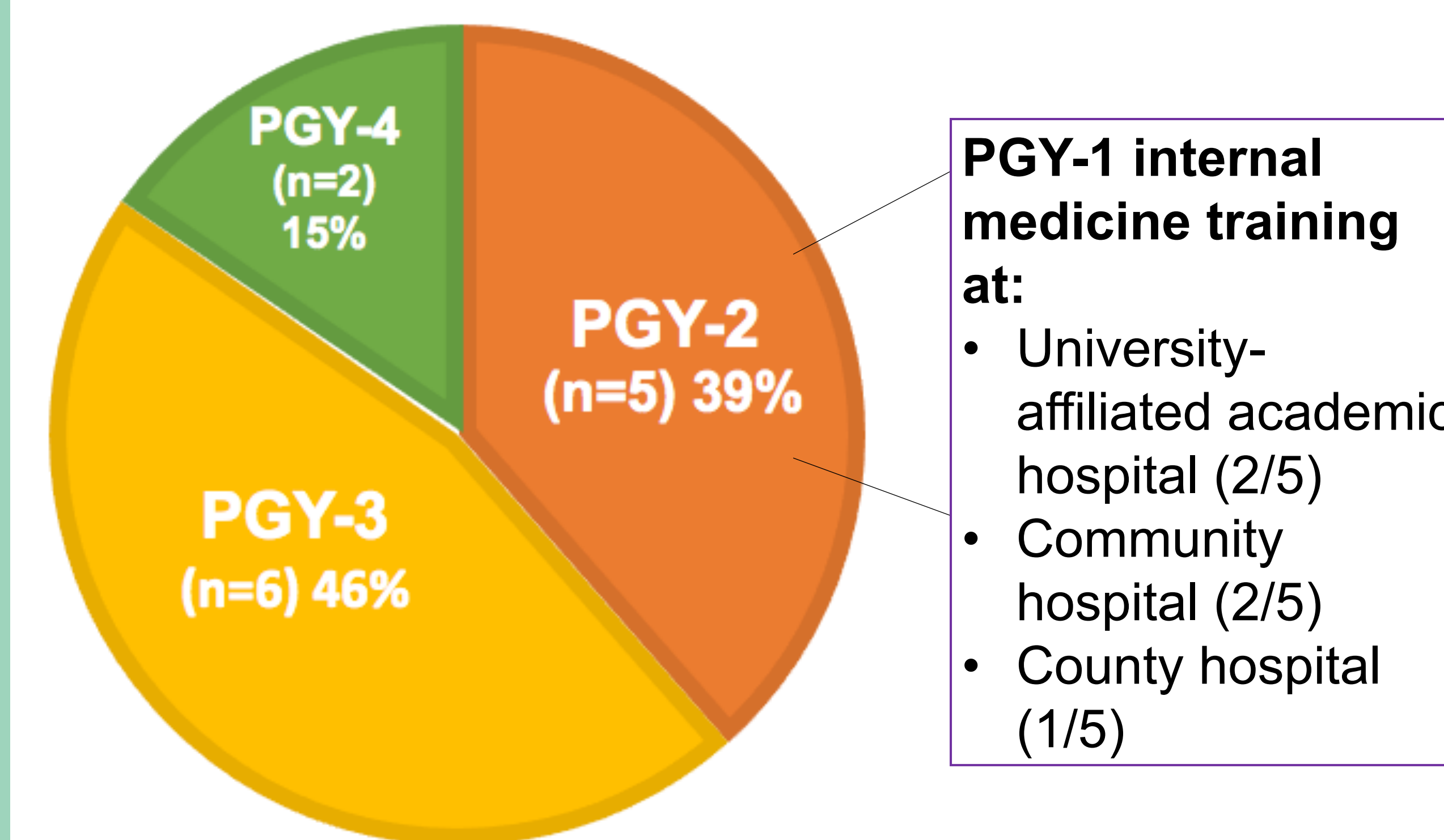
- Traditional **lectures** by faculty during protected didactic times
- **Institution-wide protocols** created by the Neurointensive Care Unit and Comprehensive Stroke Center
- Easy-to-access **website**: www.neurocriticalcare.ucsd.edu
- Interactive, **case-based simulation** scenarios at various points throughout academic year

Disclosure statement:
The authors have no disclosures.

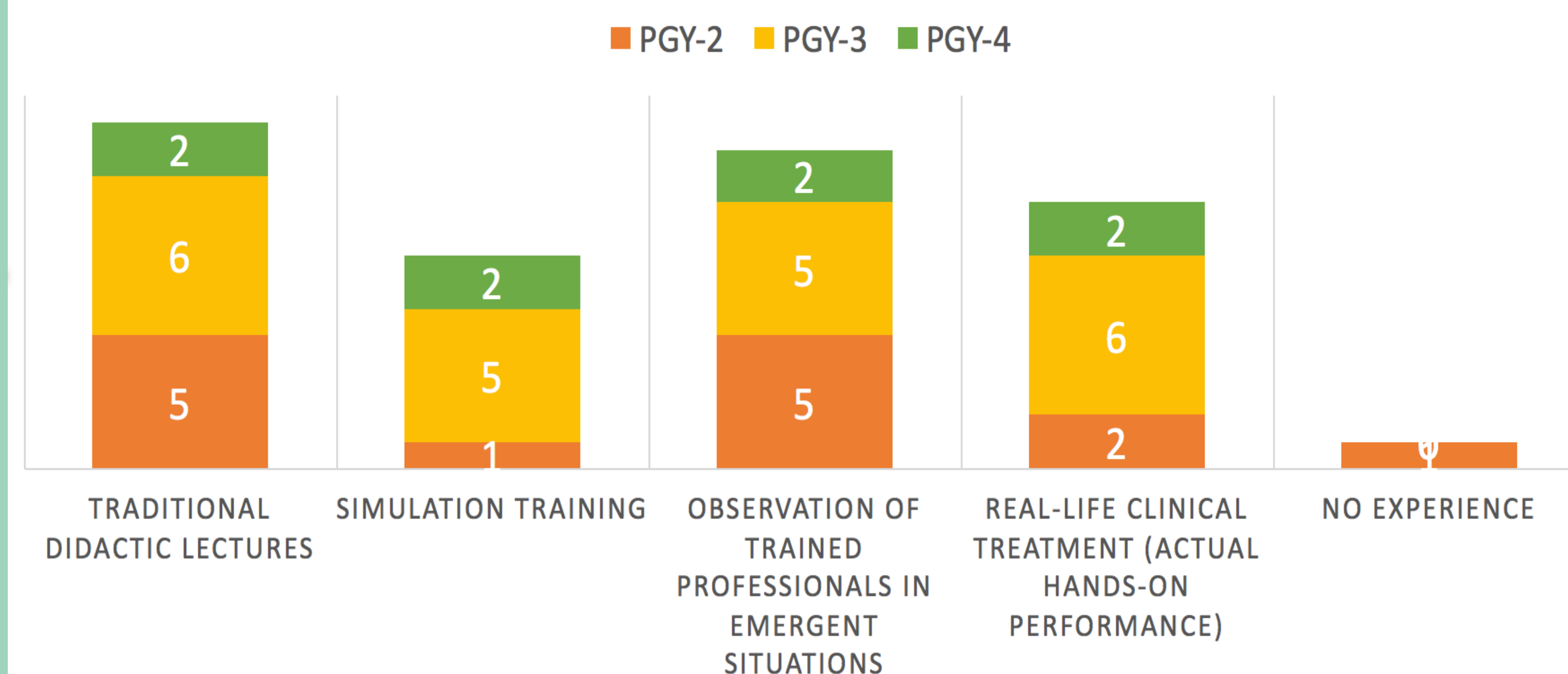
OUR NEUROCRITICAL CARE SIMULATION SESSIONS

Format	Group-based <ul style="list-style-type: none"> • ~2 participants/group (role of junior/senior) • Other participants observing • Observers participate in different cases • SimMan used
Facilitator	Attending physicians <ul style="list-style-type: none"> • Neurointensivist • Stroke
Duration/Frequency	2 hours per session Sessions occur 2x/year (July, January)
Pre-reading	None <ul style="list-style-type: none"> • Participants work through case on day-of (increased fidelity)
Debrief	<ul style="list-style-type: none"> • Facilitator-led (45 mins) • Observers also participate
Current established cases	Ischemic stroke, intracerebral hemorrhage, status epilepticus
Study design	Currently pre/post Critical actions checklist Longitudinal (pending)

PARTICIPANT DEMOGRAPHICS



EXPERIENCE WITH NEUROLOGICAL EMERGENCIES PRIOR TO SIMULATION SESSION



FUTURE DIRECTIONS

- Longitudinal assessment of skills gained in simulation and how it applies to clinical practice
- Introduction of more nuanced case types
- Involvement of interdisciplinary team-members/consults (nurses, RT, neurosurgery, internal medicine trainees)
- Control groups and increased randomization
- Checklist items into evaluation process

SAMPLE CHECKLIST ITEMS

- For ischemic stroke, NIHSS score ASAP
- For status epilepticus (first 3-10 mins), lorazepam 2-4mg IV q5mins → page anesthesia for possible intubation
- For brain code, call NCC/NSGY FIRST

PRELIMINARY RESULTS AND LEARNER SENTIMENTS

Results from July 2018 simulation session:

- Prior to session, 30% of learners reported feeling either **not comfortable** or **having never treated** neurological emergencies
- Following the session, 90% felt more comfortable and confident in treating acute ischemic stroke and 80% with intracerebral hemorrhage
- Learners found the following to be the most valuable components of the session: “being put on the spot” and “going through real-life cases” (100% interested in attending more sessions)

CONCLUSION

Preliminary results suggest that UCSD Neurology residents find simulation training helpful, especially during PGY-2 orientation (July). Future directions are to increase the diversity of cases in the simulation curriculum and increase evaluative rigor.

RESOURCES:
Bradley, P. (2006) *Med Educ*, (40)3
Karanjia, N. www.neurocriticalcare.ucsd.edu