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Keynote: Escaping a Code Stroke: Impact of Escape Room Methodology on Nurses' Attitudes towards Acute Stroke Management Guidelines

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Escaping a Code Stroke: Impact of Escape Room Methodology on Nurses' Attitudes towards Acute Stroke Management Guidelines

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Disclosure

I do not have any relevant relationships with a commercial interest organization.

Objectives

- Describe the escape room methodology and its role in nursing education

- Review key metrics in successfully implementing a stroke escape room

- Identify barriers and successes of utilizing a stroke escape room

Background & Clinical Significance

- Increased stroke prevalence in the United States➔ 795K in the U.S. (Centers for Disease Control and Prevention [CDC], 2022)

- Preventable statistics through rapid recognition and stroke risk stratification (Jahan et al., 2019; Powers et al., 2019; Virani et al., 2020)

- Associated functional cognitive and quality of life decline after stroke (Dhamoon et al., 2017)

- Exuberant economic costs: $103.5 annual costs (Saini et al., 2021; Strilciuc et al., 2021; Virani et al., 2020)

What is an escape room?

A team navigates a "locked" room of puzzles with an overall objective to successfully escape (Nicholson, 2015)
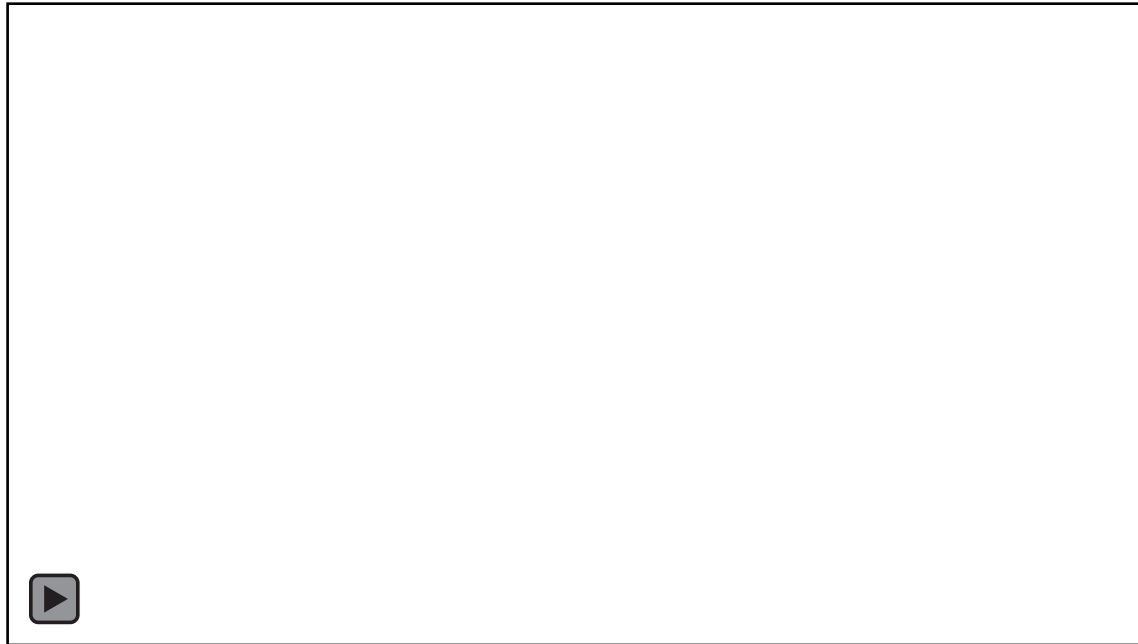
Review of Literature

- <mark>Delays in Endovascular Treatment</mark>

- Variances in practices across hospitals (Hendén et al., 2018; Jahan et al., 2019; Reynolds et al., 2016; Vukasinovic et al., 2019)

- Acknowledges necessity for standardization of systems of care and protocols (Vukasinovic et al., 2019)

- No single aspect of the stroke workflow associated with treatment delays (Hendén et al., 2018; Jahan et al., 2019; Reynolds et al., 2016; Vukasinovic et al., 2019)

- Inconsistency in adherence to guidelines (Reynolds et al., 2016)

Review of Literature

Perceived Barriers to Acute Stroke Management

• Lack of organizational resources and support (Baatiema, Otim, et al., 2017; Hill et al., 2020)

• Unwillingness to adopt evidence-based guidelines (Lowther et al., 2021; Moore et al., 2018)

• Provider unawareness and deficient knowledge of guidelines (Reynolds et al., 2016)

Review of Literature

==Game Based Learning & Escape Room Education==

• Transitioning of workforce to millennials and generation 'z'-ers (Gates & Youngberg-Campos, 2020)

• Increased use of escape rooms in medical education (Molina-Torres et al., 2022)

• Associated increased motivation and engagement of learners (Schei et al., 2020)

• Development of competence and advancement in clinical knowledge (Adams et al., 2018; Molina-Torres et al., 2022)

Methods

Design: Pre and Post Survey Quality Improvement Project

Location: 552-Bed South Orange County Hospital, Comprehensive Stroke Center

Sample: 40 participants, newly-hired nurses

Recruitment: Nursing Orientation

Tools

Acute Stroke Management Demographic Questionnaire

THANK YOU for your assistance in participating in the following demographic questionnaire, and pre and post Stroke Escape Room survey for the purposes of my doctoral quality improvement project. The questionnaire and responses to the survey are ANONYMOUS and WILL NOT be linked to your name/role.

1. What is your job title? Please check or write in response.
   - ☐ Staff Nurse
   - ☐ Charge Nurse
   - ☐ Manager
   - ☐ Director
   - ☐ Educator
   - ☐ Advanced Practice Nurse (Midwife, Nurse Anesthetist, Nurse Practitioner, Clinical Nurse Specialist)
   - ☐ Other: _____
2. What is your specialty? Please check or write in response. You may check more than one answer.
   - ☐ Emergency medicine
   - ☐ Procedural (Interventional Radiology, Cardiac Cath Lab)
   - ☐ Neurology
   - ☐ Trauma
   - ☐ Maternal Child
   - ☐ Cardiac Telemetry
   - ☐ Critical Care
   - ☐ Surgery/Operating Room
   - ☐ Other: _____
3. What is the highest degree or level of school you have completed? If currently enrolled, check highest degree received.
   - ☐ High school graduate, diploma or the equivalent (for example: General Educational Development (GED)
   - ☐ Some college credit, no degree
   - ☐ Trade/technical/vocational training
   - ☐ Associate degree
   - ☐ Bachelor's degree
   - ☐ Doctorate degree
4. Are you:
   - ☐ Full-time
   - ☐ Part-time
   - ☐ Per diem
5. How many years of nursing experience do you have?
   - ☐ <2 years
   - ☐ 2-5 years
   - ☐ 6-10 years
   - ☐ 10 + years
6. Do you currently hold a specialty board certification? (i.e. Stroke Certified Registered Nurse (SCRN), Critical Care Registered Nurse (CCRN))
   - ☐ Yes: Please specify _____
   - ☐ No
7. Do you have any experience in caring for stroke patients (hemorrhagic and ischemic)?
   - ☐ Yes, how many years? _____
   - ☐ No
8. Do you have any experience with 2019 American Heart/American Stroke Management Guidelines?
   - ☐ Yes
   - ☐ No

THIS PROJECT HAS BEEN DETERMINED TO BE EXEMPT FROM REVIEW AND APPROVAL BY THE CALIFORNIA STATE UNIVERSITY, LOS ANGELES INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH.

Evidence-Based Practice Attitude Scale

EBPAS© Gregory A. Aarons, Ph.D.

Reference: Aarons, G. A. (2004). Mental health provider attitudes toward adoption of evidence-based practice: The Evidence-Based Practice Attitude Scale. Mental Health Services Research, 6(2), 61-74.

The following questions ask about your feelings about using the **2019 American Heart/American Stroke Management Guidelines.**

Manualized therapy refers to any intervention that has specific guidelines and/or components that are outlined in a manual and/or that are to be followed in a structured/predetermined way.

Fill in the circle indicating the extent to which you agree with each item using the following scale:

0	1	2	3	4
Not at All	To a Slight Extent	To a Moderate Extent	To a Great Extent	To a Very Great Extent

1. I like to use new types of therapy/interventions to help my clients.
2. I am willing to try new types of therapy/interventions even if I have to follow a treatment manual.
3. I know better than academic researchers how to care for my clients.
4. I am willing to use new and different types of therapy/interventions developed by researchers.
5. Research based treatments/interventions are not clinically useful.
6. Clinical experience is more important than using manualized therapy/treatment.
7. I would not use manualized therapy/interventions.
8. I would try a new therapy/intervention even if it were very different from what I am used to doing.

For questions 9-15: If you received training in a therapy or intervention that was new to you, how likely would you be to adopt it if:

9. it was intuitively appealing?
10. it "made sense" to you?
11. it was required by your supervisor?
12. it was required by your agency?
13. it was required by your state?
14. it was being used by colleagues who were happy with it?
15. you felt you had enough training to use it correctly?

	Demographic Survey	Pre-Test Survey	Post-Survey

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Procedure

Pre-Briefing Session (10 min)
- Scenario Video
- Demographic Survey / Pre-Survey

Escape Room Intervention (20 min)

Debriefing Session (10 min)
- Lessons learned
- Post-Survey

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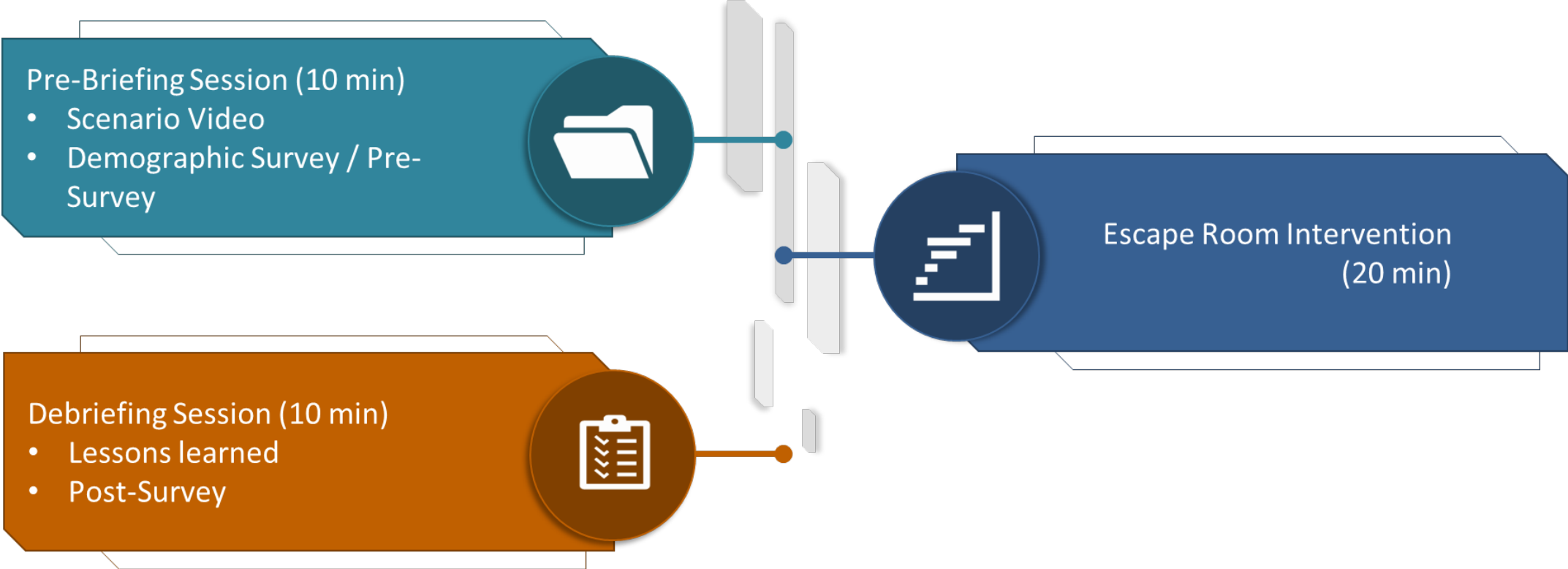
Data Analysis

- Project-lead in collaboration with committee chair to collate data

- Data analyst for validation

- Frequencies/Descriptive statistics/univariate analysis (demographic information)

- Comparison of pre and post survey score data with paired t-test, evaluation of statistical significance

Reference:

Aarons, G. A. (2004). Mental health provider attitudes toward adoption of evidence-based practice: The Evidence-Based Practice Attitude Scale. *Mental Health Services Research, 6*(2).

Item #	Scale	Factor Loading	Alpha
	Scale 1: Requirements		.90
12	Agency required	.99	
11	Supervisor required	.88	
13	State required	.78	
	Scale 2: Appeal		.80
10	Makes sense	.89	
9	Intuitively appealing	.83	
14	Colleagues happy with therapy	.56	
15	Enough training	.55	
	Scale 3: Openness		.78
2	Will follow a treatment manual	.61	
4	Will try therapy/interventions developed by researchers	.81	
1	Like to use new therapy/interventions	.62	
8	Would try therapy/interventions different than usual	.66	
	Scale 4: Divergence		.59
5	Research based treatments/interventions not useful	.65	
7	Would not use manualized therapy/interventions	.76	
6	Clinical experience more important	.42	
3	Know better than researchers how to care for clients	.34	
	EBPAS Total		.77

SCORING THE SCALES

The score for each subscale is created by computing a mean score for each set of items that load on a given subscale. For example, items 11, 12, and 13 constitute Scale 1. If there is missing data in your data set, computing means may be done allowing for one fewer items than make up the scale.

COMPUTING THE TOTAL SCORE

Only for the total score (not the individual scale scores), items from subscale 4 (Divergence) **must be reverse scored** and the subscale score recomputed. After the reverse scoring is complete, then a mean of the scale scores may be computed to yield the mean score for the total EBPAS.

You may contact Dr. Aarons by email at: gaarons@ucsd.edu

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Escape Room Activity

Number of Players: 35 (max)

Time allotted for total experience: 45 minutes

Time for set up: 15 minutes

Time for Introduction, rules, and pre-brief: 10 minutes

Escape room limit: 30 minutes

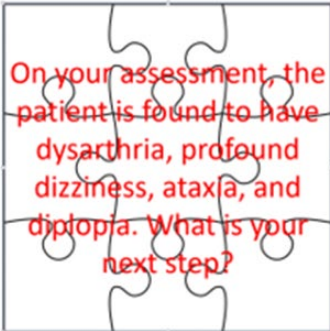Time for debrief: 10 minutes

Escape Room Activity, Scenario

Ms. DT is a 45 year old Hispanic female with a past medical history significant for HTN, high cholesterol, and diabetes who presents to the emergency room for dizziness and headache. She was admitted to your unit for observation. Initial CT was negative for any intracranial abnormality. This patient has been a real PUZZLE for the staff to treat as her symptoms appear vague. Good luck in PIECING together information in this room. Remember... you have to start with the basics.

Implementation Plan: Escape Room Activity - Station 1

The first clue is that the nurses need to ASSESS the patient first. They will need to go to the center of the room and find the puzzle pieces underneath the patient.

Once the puzzle pieces are found and the puzzle is assembled, the group will see:

On your assessment, the patient is found to have dysarthria, profound dizziness, ataxia, and diplopia. What is your next step?

CODE 711 will be used to open the portable safe located at the phone. Inside the safe will be a notecard with this message:

Great! You have activated a code stroke by calling 711.

While you are waiting for RRT to arrive,

what would information do you need to have?

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This clue will take them to the medication room. Inside the room will be a few items

- Glucometer
- Blood pressure
- Pupillometer
- IV fluid
- Lab tubes
- Labetalol
- Black light
- Gloves
- Tape
- Alcohol swabs
- Washable marker

In the blood pressure cuff, will be a hidden key. The key will open a tacklebox and they will find cards
Circle of Willis with the following clue:

You need to localize your symptoms...which artery is affected?
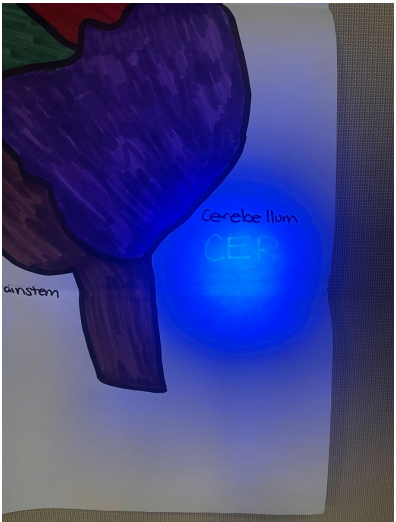
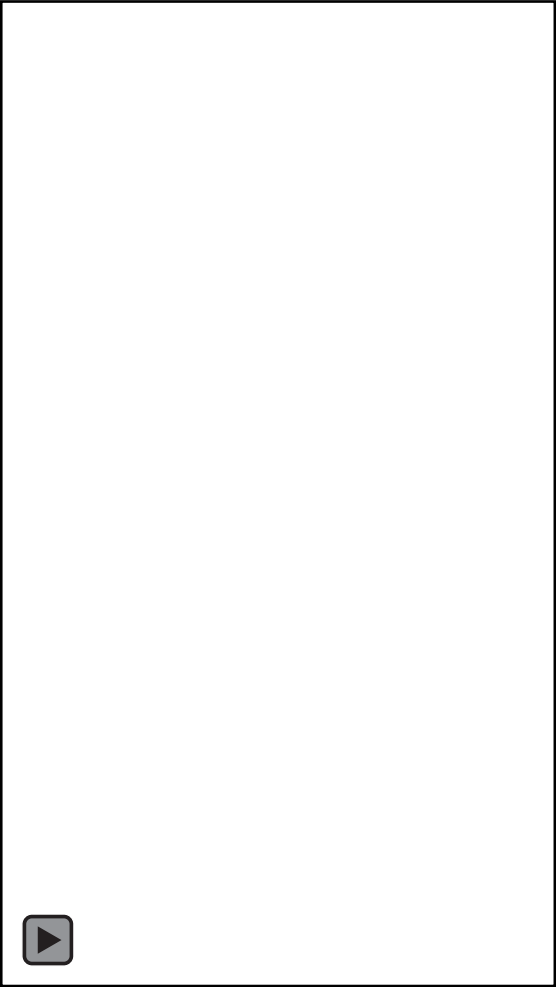# Implementation Plan: Escape Room Activity - Station 3
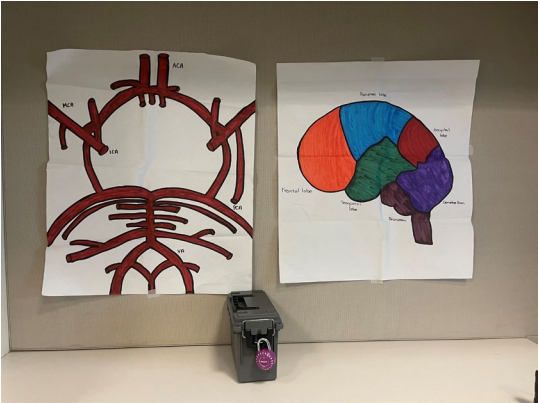
The participants will go to the Circle of Willis poster and label the arteries.

Nursing Orientation: Brain lobes; participants will scan brain to obtain code.

On the back of the correct artery, will be code LDL to open the box next to the COW poster. Inside the box will be the following clue:

Congratulations! You have localized your symptoms.

How will you confirm your suspicion? What test

will you order?

Implementation Plan: Escape Room Activity - Station 4

This will lead them to a computer and find the next clue with multiple orders.

- CT Brain
- CTA Head
- CTA Neck
- CT Perfusion
- MRI Brain
- MRA Head
- MRA Neck

The CT brain will have CODE 911 on the back of the card that will open the box with the following clue:

You're back from CT scan. What is your next assessment?

Implementation Plan: Escape Room Activity - Station 5

This will take the participants back to the patient and there will be several NIHs laid out. They will be blank and they will have to use the black light from the med room to obtain the right NIH. The secret message will say: you will need to document several stroke measures. The stroke measures will be in an envelope labeled EPIC.

Stroke Measures

- Anti-platelet/anti-_ _ _ _ _O_ _ _ _ therapy by day 2
- _O_ _ _ _ _ _ _ _ Screen by Day 2
- Stroke Education: RiskO_ _ _ _ _ _ _, Signs and Symptoms of Stroke, When to Call 911, Medications on Discharge, and Follow-up
- Modified Rankin onO_ _ _ _ _ _ _ _ & Discharge
- NursingO_ _ _ _ _ _ screen
- _O_ Prophylaxis by Day 2
- Discharge on statin medication

They will use the red letters to open up the cryptex.

In the cryptex; It will say

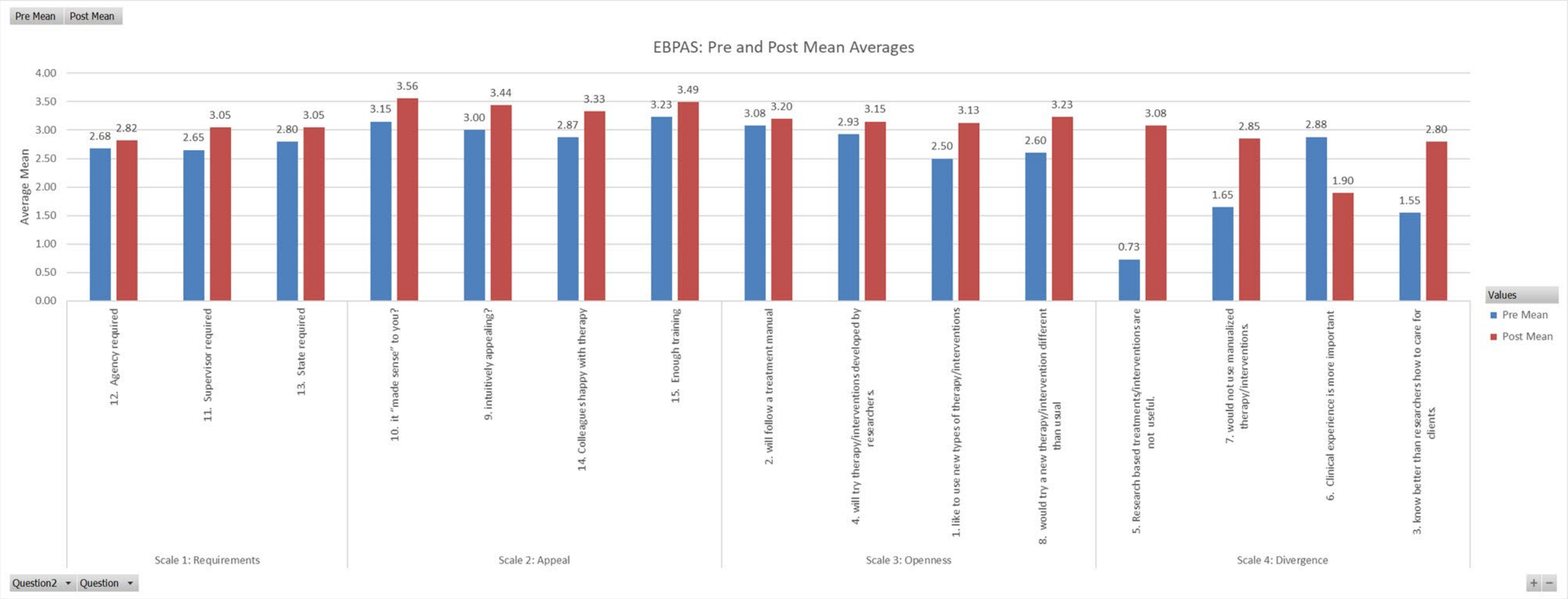Congratulations, YOU SURVIVED A CODE STROKE!

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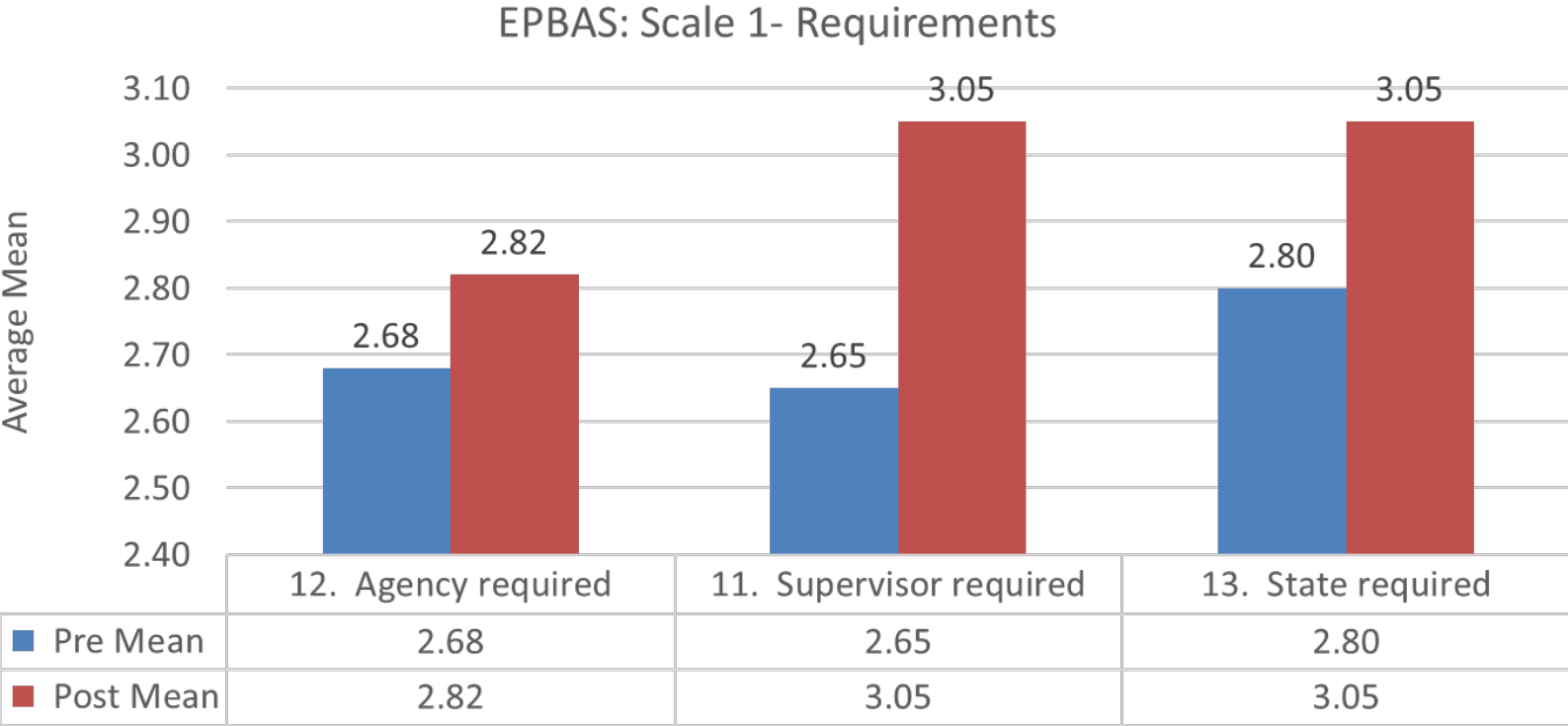Mission Hospital

Stroke Escape Room

Results: Descriptive Statistics

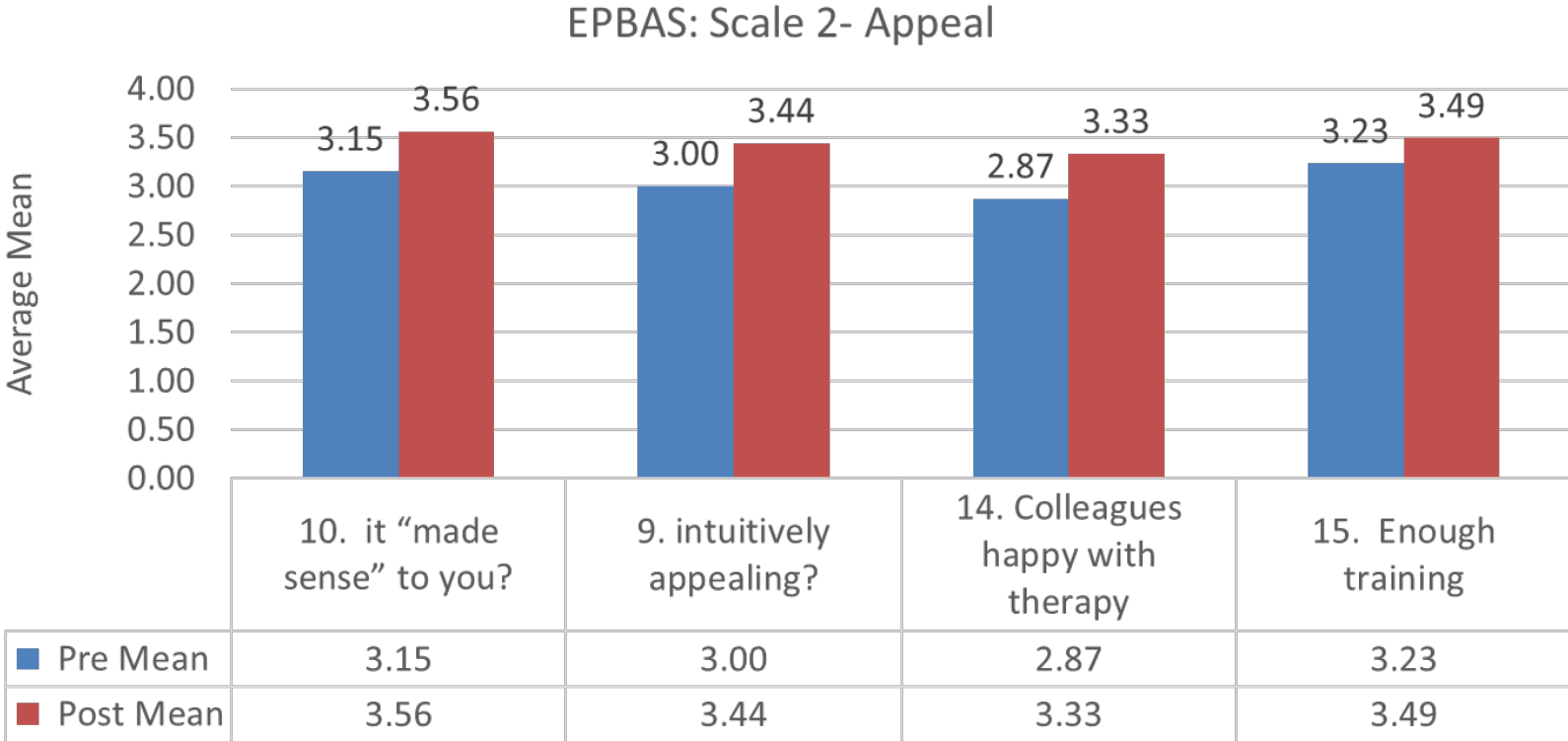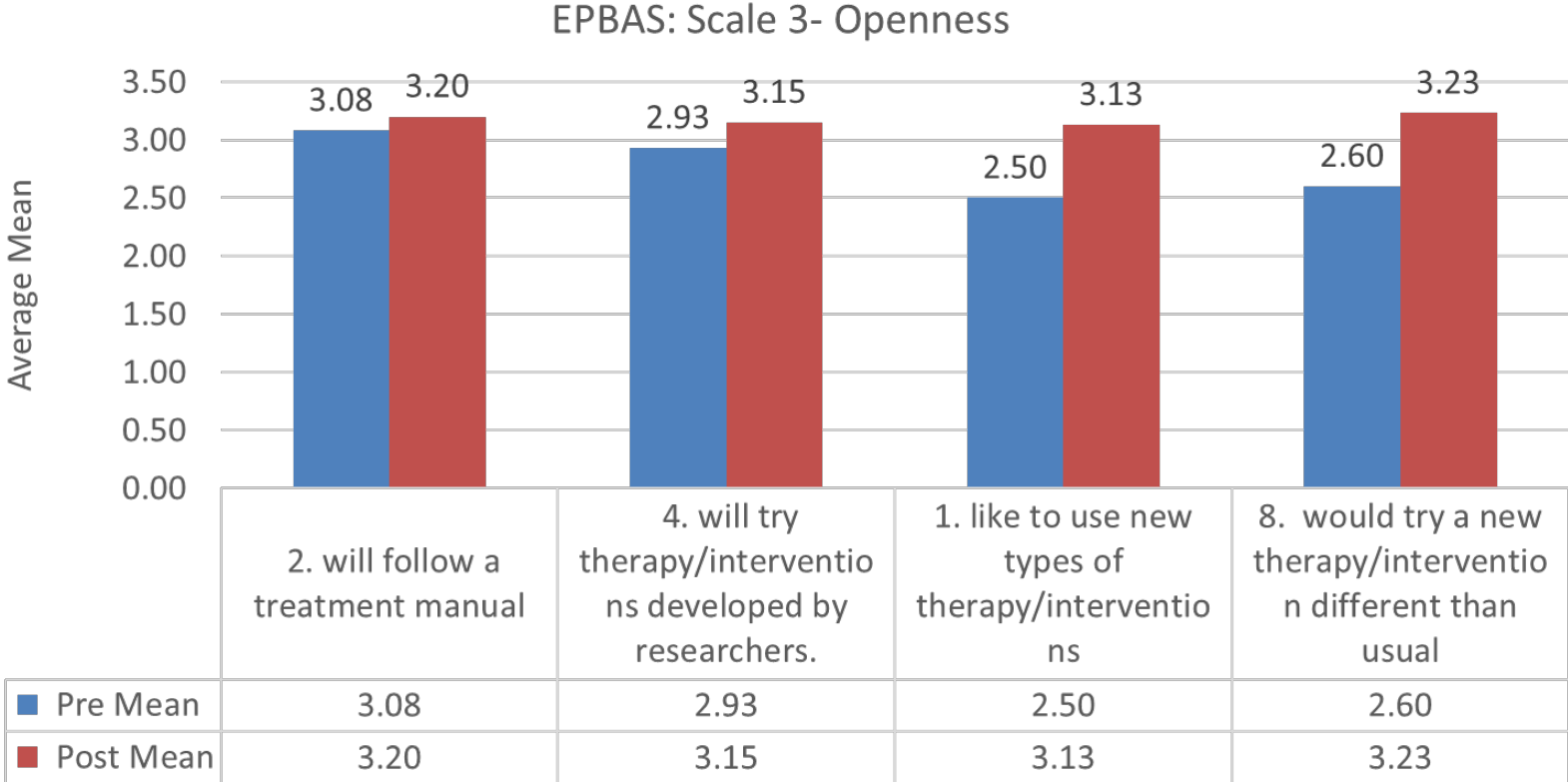| Variables	Total n (%)
Female	32 (80)
Age in years 22-30	21 (53)
31-40	15 (38)
Full-time Employment Status	40 (100)
Bachelor's Degree	39 (98)
Staff Nurse	37 (93)
Specialty by department Emergency	16 (41)
Cardiac Telemetry	8 (21)
Previous Stroke Experience	27 (68)
Previous Experience with AHA/ASA Stroke Guidelines	21 (53)
Nursing Experience in years <2	23 (58)

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Results: Overall Scores

Results

EPBAS: Scale 1- Requirements

	12. Agency required	11. Supervisor required	13. State required
■ Pre Mean	2.68	2.65	2.80
■ Post Mean	2.82	3.05	3.05

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Results

EPBAS: Scale 2- Appeal

	10. it "made sense" to you?	9. intuitively appealing?	14. Colleagues happy with therapy	15. Enough training
Pre Mean	3.15	3.00	2.87	3.23
Post Mean	3.56	3.44	3.33	3.49

Results

EPBAS: Scale 3- Openness

	2. will follow a treatment manual	4. will try therapy/interventions developed by researchers.	1. like to use new types of therapy/interventions	8. would try a new therapy/intervention different than usual
Pre Mean	3.08	2.93	2.50	2.60
Post Mean	3.20	3.15	3.13	3.23

Results

EPBAS: Scale 4- Divergence

	5. Research based treatments/interventions are not useful.	7. would not use manualized therapy/interventions.	6. Clinical experience is more important	3. know better than researchers how to care for clients.
Pre Mean	0.73	1.65	2.88	1.55
Post Mean	3.08	2.85	1.90	2.80

T-Test Analysis

Results of the paired t test indicated that there is a significant medium difference between BEFORE (M=2.6 ,SD=0.7) and AFTER (M=3.1,SD=0.4), t(14)=2.8, p = .014.

Summary

Increased knowledge base of AHA/ASA 2019 Stroke Guidelines

Increased overall attitude towards AHA/ASA 2019 Stroke Guidelines

Successful pilot of new education methodology

Unable to **explore** relationship between years of experience & adoption of guidelines

Summary continued

STRENGTHS

- Utilization of valid and reliable tool
- Implementation strategy
- Low associated budget

LIMITATIONS

- Escape room design was not developed with an interprofessional team
- Time constraints
- Consistency
- Small sample size
- Small community hospital

Conclusion and Practice Implications/Future Applications

- Implementation of escape room provides insight into the potential effectiveness of a non-traditional educational approach

- New dynamic, highly-adaptable and interactive way for education and establishing an engaging learning environment

- Integration of escape rooms in other avenues of nursing education: nursing orientation, unit-based onboarding processes, skills days

- Correlation between experienced vs non-experienced (New Graduate) nurses/generational differences

g is missing…

References

Thank you