



# Feasibility of Behavioral Testing during Video EEG Monitoring with Seizure ROAR<sup>®</sup> Testing Protocol



Amerta Bai<sup>1</sup>, Lisa Lykken<sup>1</sup>, Paul Wang<sup>1</sup>, Eric Waldron<sup>1</sup>, David Darrow<sup>1</sup>, Tariq Hattab<sup>1</sup>, Melissa Mueller<sup>2</sup>, Megan Halverson<sup>2</sup>, Thomas R. Henry<sup>1</sup>, Sima Patel<sup>1</sup>  
Department of Neurology, University of Minnesota, Minneapolis; Fairview Practice and Education

## INTRODUCTION

- Behavioral assessments during video electroencephalogram (VEEG) are crucial in seizure localization and semiology, yet, there is no standardized tool widely utilized.
- At our center, we have utilized the ROAR<sup>®</sup> protocol since 2012 and have received positive feedback from our multidisciplinary team for ease of use and applicability.
- Nursing staff only received 20 minutes of online training once during their onboarding for ROAR<sup>®</sup> testing.

ICTAL ROAR	POST-ICTAL ROAR
“R” <u>R</u> emember a word	“R” <u>R</u> ecall the word and object
“O” Remember an <u>O</u> bject	“O” Ask <u>O</u> rientation questions
“A” Perform an <u>A</u> ction	“A” Ask about <u>A</u> ura/ typical spell
“R” <u>R</u> ead a sentence	“R” <u>R</u> ead a sentence

## OBJECTIVE

Evaluate the feasibility of the Seizure ROAR<sup>®</sup> testing protocol for behavioral testing during vEEG.

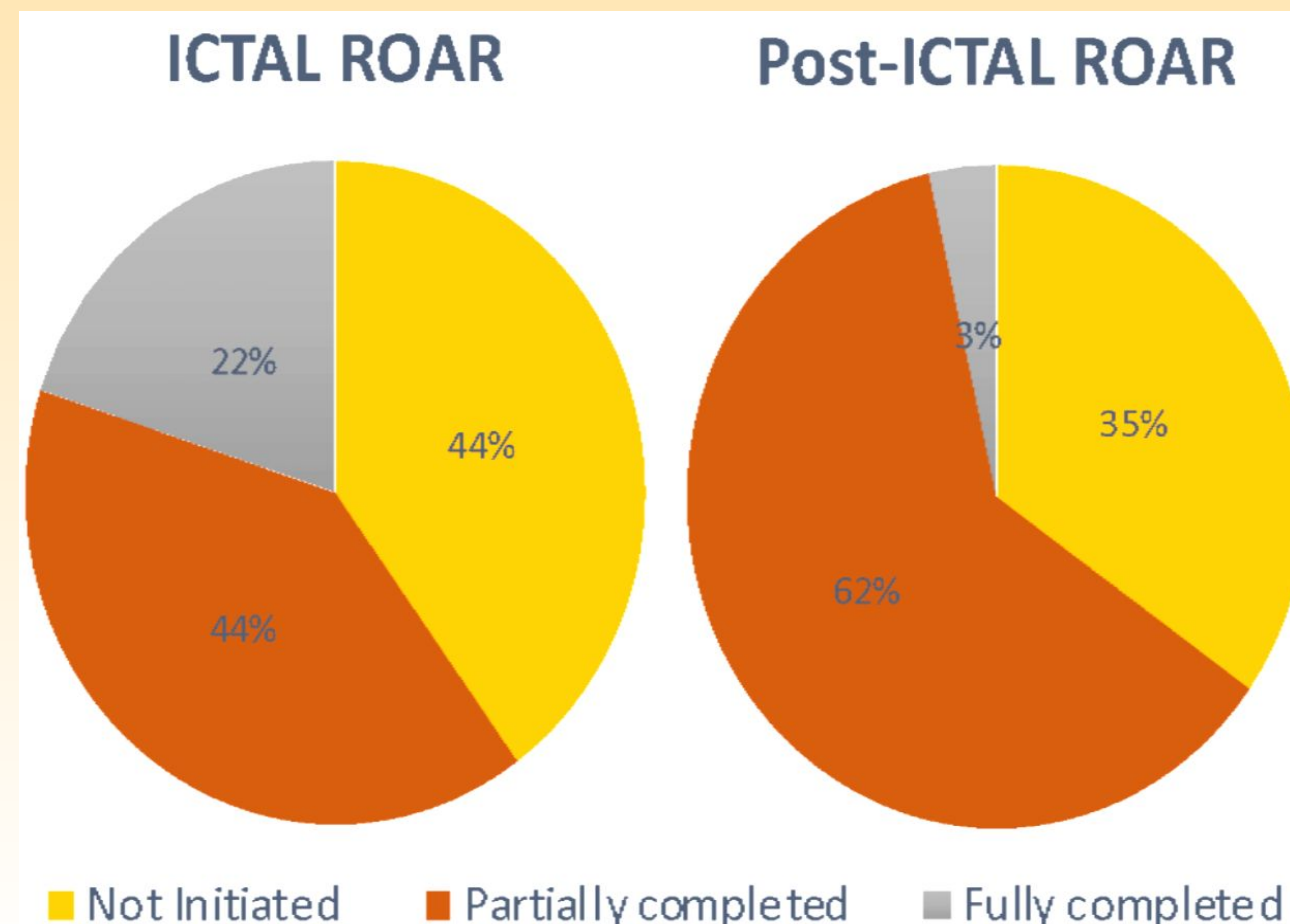
## METHODS

- Patients and Data:**
- Retrospective study
  - Reviewed 200 events of Epilepsy Monitoring Unit (EMU) patients from 2018-2023
  - Data was entered into a RedCap database.
- Statistical analysis:**
- Descriptive statistics were calculated for:
    - Demographic data
    - Diagnosis and spell type
    - Median time to initiate ictal and postictal ROAR
    - Completion rates for both ictal and postictal testing
    - Completion rates for each seizure type

## RESULTS

DEMOGRAPHICS		MEDIAN TIME TO INITIATE TESTING	
Age	~41yrs (Median)	ICTAL ROAR	POST-ICTAL ROAR
Sex	66% Females		
Race	85% white	68s	96s
Diagnosis	26% PNES		
Spell type	54% non-epileptic		

## COMPLETION RATES OF ROAR TESTING (GENERAL)



## COMPLETION RATES FOR EACH SEIZURE TYPE

Spell type	Completion rate (ICTAL)	Completion rate (POST-ICTAL)
PNES	52.25%	35%
GTS	45%	30%
GTCS	13.89%	16.65%
FAUWOM	48%	25%
FAUWM	40%	24.5%
FIAWOM	50%	34%
FIAWM	55.4%	31%

PNES: Psychogenic non-epileptic spells, GTS: Generalized tonic seizures, GTCS: Generalized tonic-clonic seizures, FAUWOM: Focal aware unimpaired without motor, FAUWM: Focal aware unimpaired with motor, FIAWOM: Focal impaired awareness without motor, FIAWM: Focal impaired awareness with motor

## CONCLUSIONS

- ROAR<sup>®</sup> protocol was initiated ~65% of the time, with full completion rate of 22% and 3.5% for ictal & post-ictal ROAR respectively.
- It is applicable in various seizure types with reasonable completion rates.
- Ongoing education/training for staff can improve the execution and completion of ROAR as studies show that more training is helpful (1)

## FUTURE DIRECTIONS

- Further research is needed to test ROAR's inter-rater reliability to improve diagnostic accuracy and patient care in epilepsy evaluation.

## REFERENCES

(1)Wulf JA. Evaluation of seizure observation and documentation. *J Neurosci Nurs.* 2000;32(1):27-36. doi:10.1097/01376517-200002000-00008