



Emerging Challenges in Primary Care

18th Annual Conference Series - 2019

Crying and Laughing Inappropriately? Think Pseudobulbar Affect



Final Live Activities Outcomes Report Avanir Grant ID: 518

September 7, 2019



Participation



1,745
Total
Attendees



4 Live
Activities



1121
Certificates
issued to date



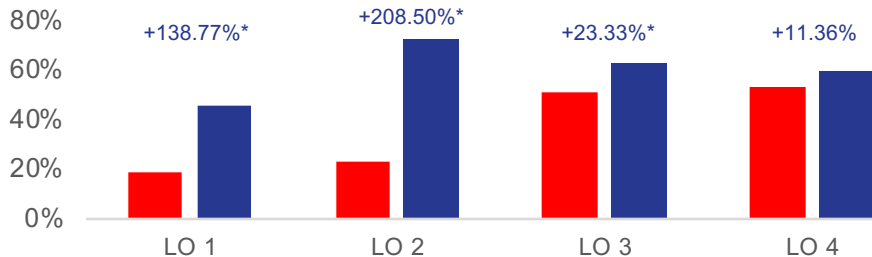
450
On Site



1,295
Simulcast &
Virtual Symposium

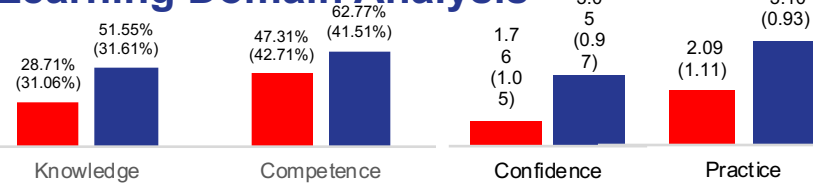
This education has the potential to impact 3,571,526 patients on an annual basis.

Learning Gains Across Objectives



- ❖ **LO 1:** Review the epidemiology and impact of pseudobulbar affect (PBA)
- ❖ **LO 2:** Discuss the importance of early recognition of PBA in the primary care, nursing home, and rehabilitation settings
- ❖ **LO 3:** Describe diagnostic tools and criteria for objective diagnosis of PBA
- ❖ **LO 4:** Utilize evidence-based therapies to effectively manage PBA.

Learning Domain Analysis



Substantial gains (33% to 80%) were achieved in all learning domains concerning the diagnosis and management of PBA

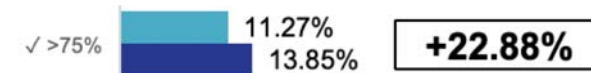
Post-Test scores on Knowledge and Competence remained low, following lower Pre-test scores indicating educational gaps

After 4 weeks, though learners were moderately more confident in their ability to consider a diagnosis of Pseudobulbar Affect in patients who report repeated episodes of laughing or crying, there are opportunities for further education in this area

Persistent Learning Gaps/Needs

1. Epidemiology of PBA

Learners remained challenged about the risk of PBA in patients taking psychotropic drugs other than tricyclic antidepressants



2. Detection and diagnosis

Learners remained unclear that Depression is the condition PBA is most often mistaken for



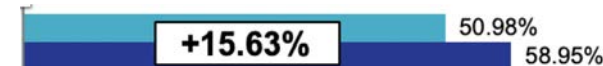
3. Management of PBA

Learners continued to struggle with appropriate treatment for PBA:

32% of participants would still prescribe an SSRI for PBA



41% are unsure how to manage unnecessary psychotropic medications in LTC facilities, according to the CMS Megarule



LEARNING RETENTION: Although net gains were measure from Pre-test to PCA, score slippage and persistent educational gaps indicate a continued need for education on the recognition and management of Pseudobulbar Affect

2018 Symposia	Date	Attendees
Miami, FL	4/27/19	188
Birmingham, AL	5/4/19	143
Birmingham, AL Simulcast	5/4/19	526
St. Louis, MO	5/11/19	119
Virtual Symposium	6/22/19	769
Total		1,745

Course Director

Gustavo Alva, MD, DFAPA

Medical Director, ATP Clinical Research
Volunteer Faculty (Assistant Clinical Professor)
Department of Psychiatry
University of California
Riverside, CA

Activity Planning Committee

Gregg Sherman, MD

Michelle Frisch, MPH, CHCP

Sandy Bihlmeyer, M.Ed.

Daniela Hiedra

Deborah Paschal, CRNP

Faculty

Alejandro Alva, MD

CEO/Chief Medical Officer
Pacific Neuropsychiatric Specialists
Costa Mesa, CA

Jason P. Caplan, MD, FAPA, FACLP

Chair of Psychiatry
St. Joseph's Hospital & Medical Center
Professor of Psychiatry
Creighton University School of Medicine
Phoenix, AZ

James Wymer, MD, PHD, CPI, FAAN

University of Florida
Professor of Neurology, Director of Neuromuscular Division
Professor of Neurology
Gainesville, FL



Emerging Challenges in Primary Care

18th Annual Conference Series - 2019

Commercial Support

- ❖ Amarin Pharma, Inc.
- ❖ Amgen, Inc.
- ❖ AstraZeneca Pharmaceuticals
- ❖ Avanir Pharmaceuticals
- ❖ AstraZeneca Pharmaceuticals LP
- ❖ Ferring Pharmaceuticals
- ❖ Gilead Sciences, Inc.
- ❖ Grifols
- ❖ Novo Nordisk, Inc.
- ❖ Shire

Overview

Learning Objectives

- ❖ Review the epidemiology and impact of pseudobulbar affect (PBA)
- ❖ Discuss the importance of early recognition of PBA in the primary care, nursing home, and rehabilitation settings
- ❖ Describe diagnostic tools and criteria for objective diagnosis of PBA
- ❖ Utilize evidence-based therapies to effectively manage PBA



3 Accredited Live Regional Symposia



1 Accredited Live Virtual Symposium: June 22, 2019



Enduring CME Symposium Webcast

Title	: Crying and Laughing Inappropriately? Think Pseudobulbar Affect		
Activity/Course #:	: NCME384		
Cost:	: Free		
Release/Start Date:	: Jul 30 2019		
Expiration Date:	: Jul 29 2020		
Topics:	: Primary Care Medicine		
Target Audience:	: Primary Care Providers, Psychiatrists, Neurologists		
Format:	: Webcast		
Estimated Time To Complete CME Activity:	: 1.0 Hour		
Credit(s):	: 1.0 AMA PRA Category I Credit(s)™ 1.0 AANP Contact hour(s) which includes 0.50 pharmacology hour(s)		

[View the Webcast](#)

Clinical Highlights eMonograph

eMonograph, containing key teaching points from the CME activity, was distributed 1 week after the meeting to all attendees.

Emerging Challenges in Primary Care
LIVE CONFERENCE SERIES
2019 Clinical Highlights
Crying and Laughing Inappropriately? Think Pseudobulbar Affect

Faculty

Alejandro Alva, MD
CEO and Medical Director
Pacific Neuropsychiatric Specialists
Costa Mesa, CA

Jason P. Caplan, MD, FAPA, FACLP
Chair of Psychiatry

- PBA is an acquired neurologic condition that affects nearly one third of individuals who have an underlying neurological condition.
- PBA represents a disconnect between affect and inner state, meaning that symptoms of crying or laughing are *inappropriate*. Episodes may be incongruent or exaggerated relative to patient's underlying mood.
- Under normal conditions, cerebro-pontine-cerebellar circuitry is intact and works in concert to coordinate appropriate emotional expression. Neurologic conditions or injuries may disrupt this circuitry, affecting the normal control of emotional expression.
- PBA occurs secondary to a variety of otherwise unrelated neurologic conditions or injuries and is characterized by episodes of crying and/or

Outcomes Methodology

Learning outcomes were measured using matched Pre-Test and Post-Test scores for Knowledge, Performance, Confidence, and practice strategy and across all of the curriculum's Learning Objectives.

Outcomes Metric	Definition	Application
Percentage change	This is how the score changes resulting from the education are measured. The change is analyzed as a relative percentage difference by taking into account the magnitude of the Pre-Test average.	Differences between Pre-Test, Post-Test, and PCA score averages
P value (p)	This is the measure of the statistical significance of a difference in scores. It is calculated using dependent or independent samples t-tests to assess the difference between scores, taking into account sample size and score dispersion. Differences are considered significant for when $p \leq .05$.	Significance of differences between Pre-Test, Post-Test, and PCA scores and among cohorts
Effect size (d)	This is a measure of the strength/magnitude of the change in scores (irrespective of sample size). It is calculated using Cohen's d formula, with the most common ranges of d from 0-1: d < .2 is a small effect, d=.2-.8 is a medium effect, and d > .8 is a large effect.	Differences between Pre-Test and Post-Test score averages
Power	This is the probability (from 0 to 1) that the "null hypothesis" (no change) will be appropriately rejected. It is the probability of detecting a difference (not seeing a false negative) when there is an effect that is dependent on the significance (p), effect size (d), and sample size (N).	Differences between Pre-Test and Post-Test score averages
Percentage non-overlap	This is the percentage of data points at the end of an intervention that surpass the highest scores prior to the intervention. In this report, it will reflect the percentage of learners at Post-Test who exceed the highest Pre-Test scores.	Differences between Pre-Test and Post-Test score averages



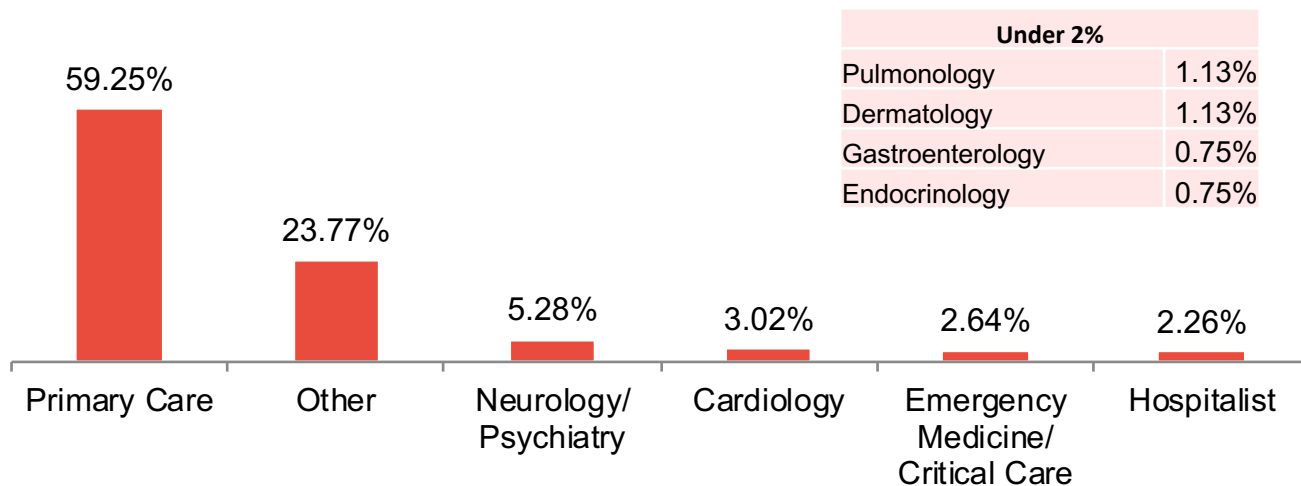
Level 1
Participation
Demographics
Patient Reach

Participation

2018 Meeting/Simulcast	Date	Attendees
Miami, FL	4/27/19	188
Birmingham, AL	5/4/19	143
Birmingham, AL Simulcast	5/4/19	526
St. Louis, MO	5/11/19	119
Virtual Symposium	6/22/19	769
Total		1,745

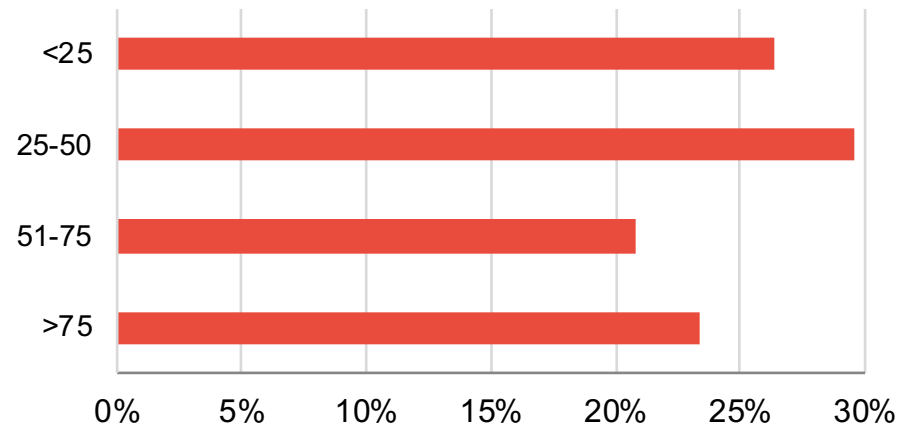
Level 1: Demographics and Patient Reach

Specialty



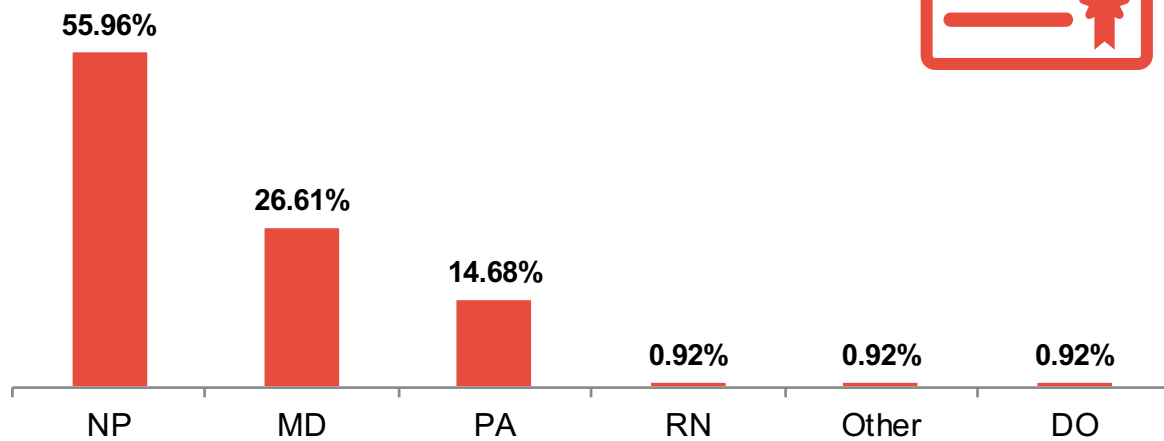
Patient Care Focus: 82%

Patients seen each week, in any clinical setting:

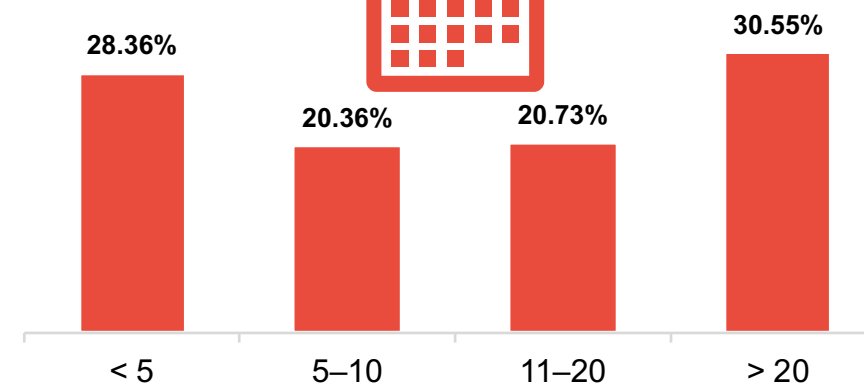


Average number of patients seen each week per clinician: 48

Profession



Years in Practice

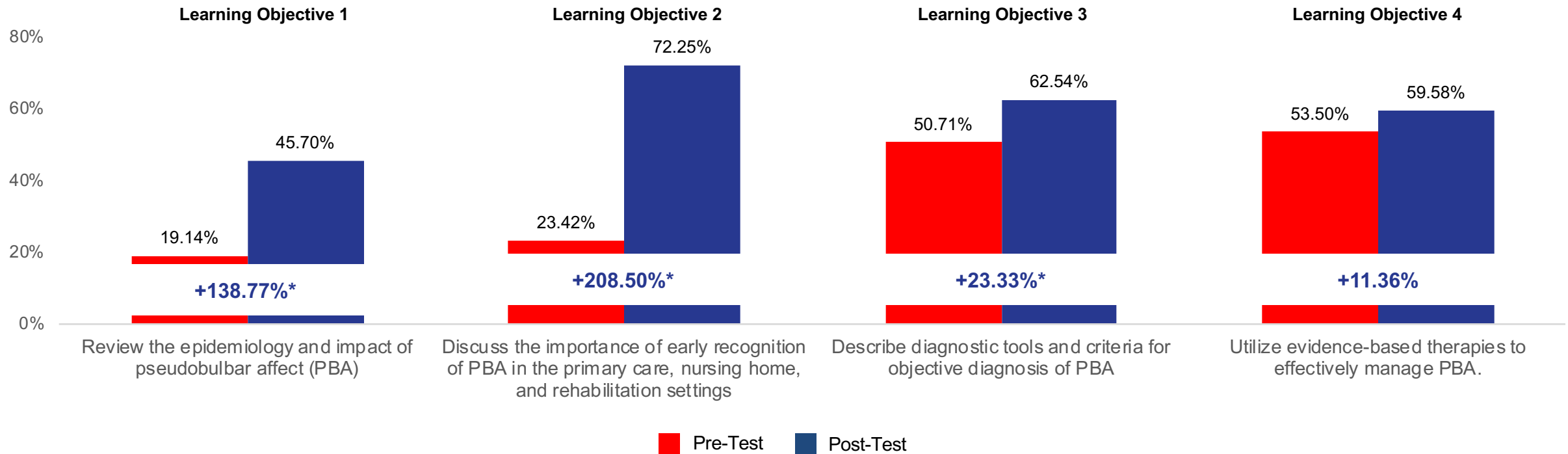




**Level 2-5:
Outcomes Metrics**

Learning Objectives Analysis

(N = 428–593)

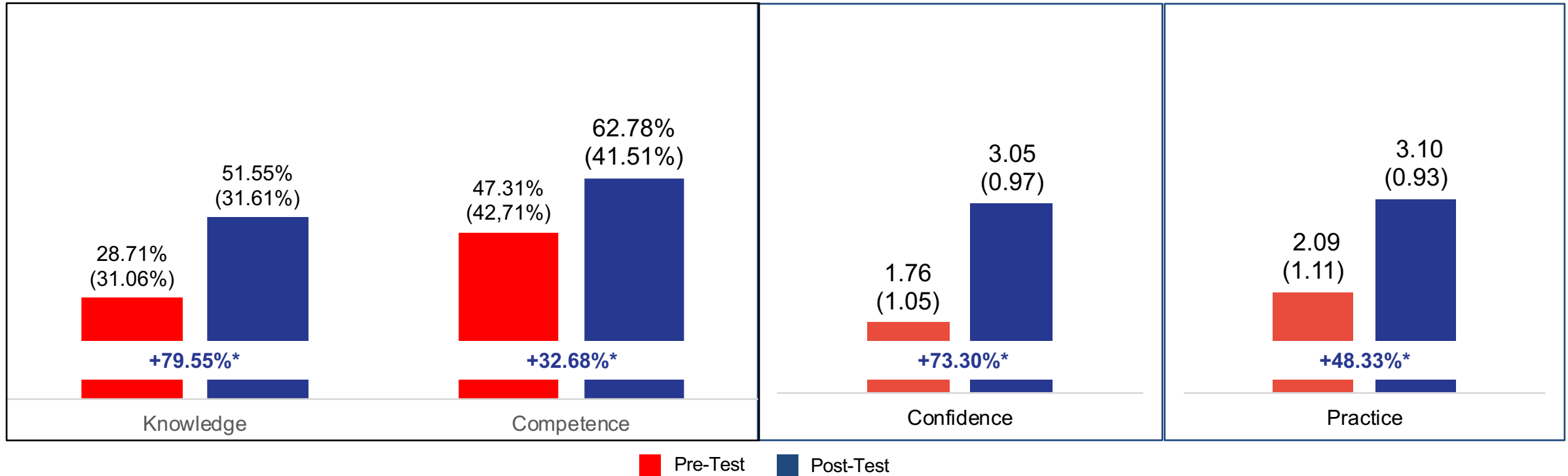


- ❖ Substantial and significant gains (of 139% and 209%) from low Pre-Test scores were measured on the Learning Objectives related to the epidemiology and early recognition of PBA
- ❖ Smaller score increases due to higher Pre-Test averages were measured on the other Learning Objectives, about diagnostic tools and criteria, and evidence-based therapies for PBA

*significant at the $p \leq 0.05$ level

Learning Domain Analysis

(N = 188–624)



- ❖ Substantial gains (33% to 80%) were achieved in all learning domains
- ❖ Post-Test scores on Knowledge and Competence remained low, following lower Pre-Test scores
- ❖ Very low Confidence and Practice ratings reflect the unfamiliarity of this audience with the target condition

Learning Objectives by Professional Cohort

Learning Domain	Physician				Nurse Practitioner			
	N	Pre-Test	Post-Test	% Change	N	Pre-Test	Post-Test	% Change
Review the epidemiology and impact of pseudobulbar affect (PBA)	112	20.09% (33.71%)	42.41% (30.04%)	+111.10%*	129	19.77% (31.39%)	52.33% (32.27%)	+164.69%*
Discuss the importance of early recognition of PBA in the primary care, nursing home, and rehabilitation settings	107	27.10% (44.45%)	75.70% (42.89%)	+179.31%*	124	23.39% (42.33%)	80.65% (39.51%)	+244.83%*
Describe diagnostic tools and criteria for objective diagnosis of PBA	118	61.02% (42.75%)	67.37% (39.80%)	+10.42%*	135	58.52% (38.75%)	65.93% (38.80%)	+12.66%
Utilize evidence-based therapies to effectively manage PBA	102	54.90% (49.76%)	62.75% (48.35%)	+14.29%*	122	63.11% (48.25%)	63.11% (48.25%)	0%

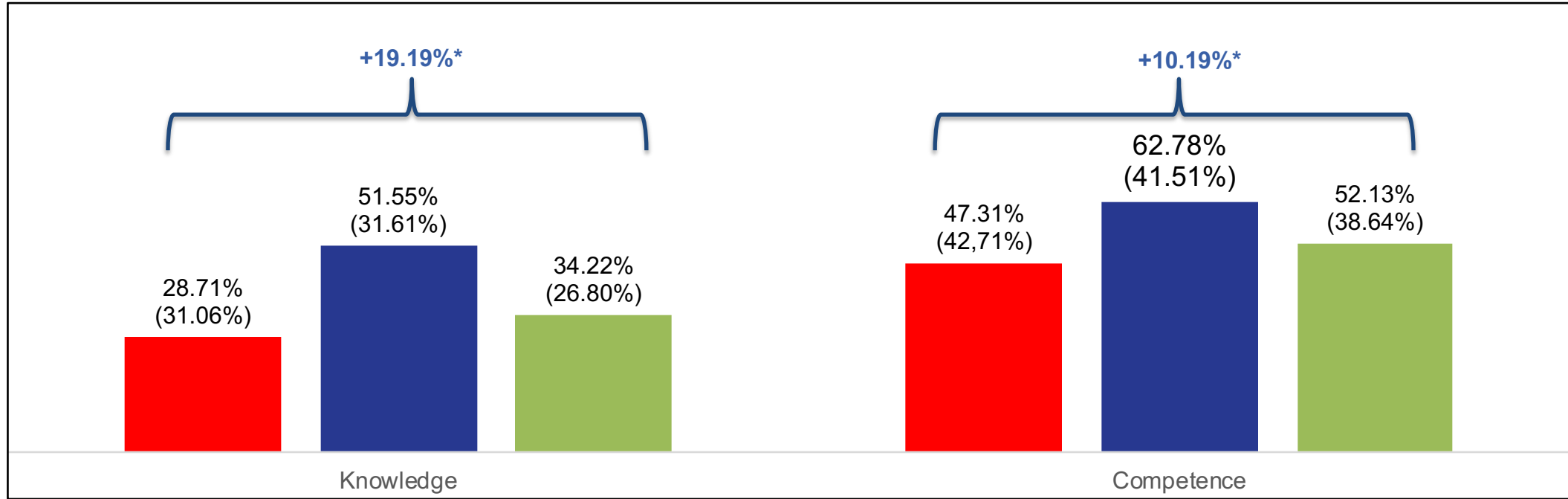
- ❖ Physicians and nurse practitioners (NPs) each had significant score increases on at least three of the four Learning Objectives. The remaining objective, about evidence-based therapies to manage PBA, had no change in score from NPs.
- ❖ Both Physicians and NPs had the highest Post-Test scores, and low Pre-Test scores, on the Learning Objective related to early recognition of PBA.
- ❖ Pre- and Post-Test scores were low on the Learning Objective related to the epidemiology and impact of PBA.

*significant at the $p \leq 0.05$ level

4-Week Retention Analysis

■ Pre-Test ■ Post-Test ■ PCA

(N = 188 – 624)



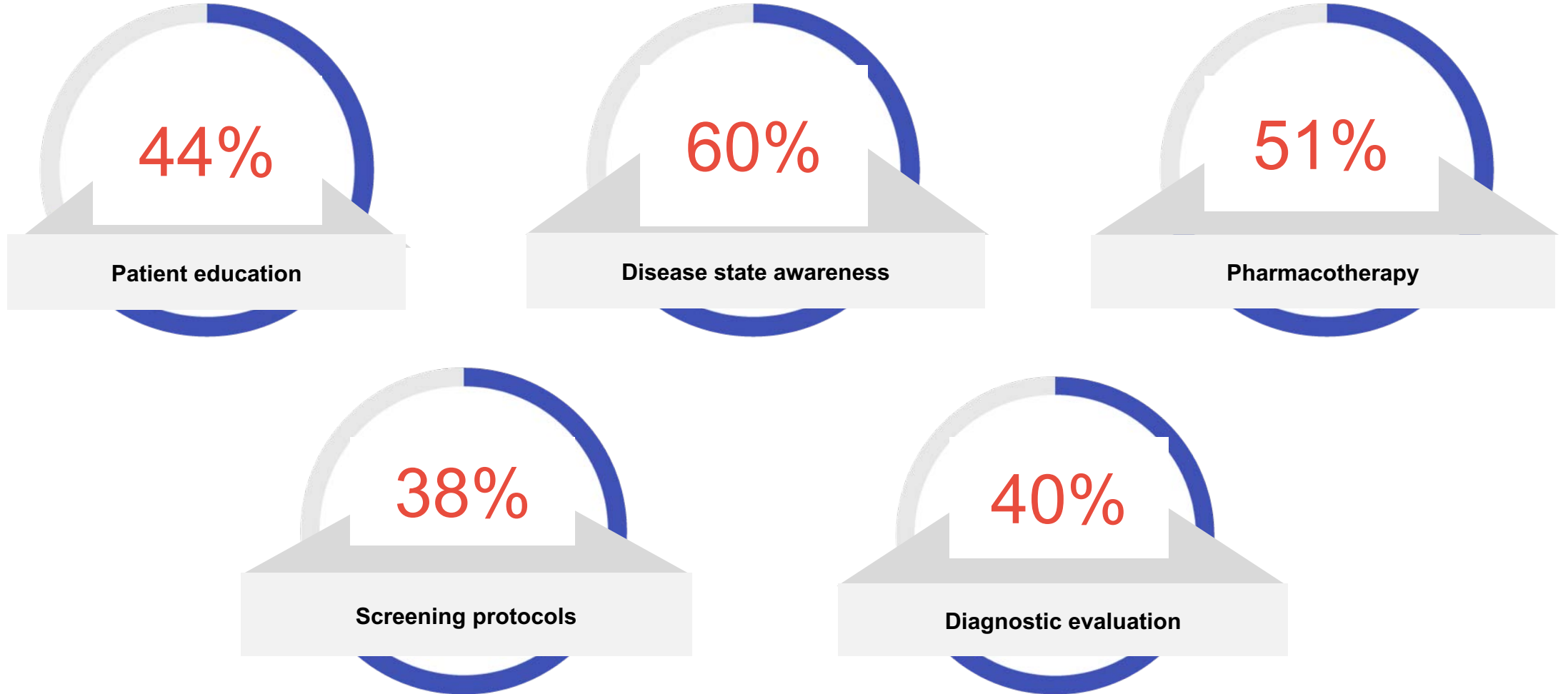
At follow-up:

- ❖ In addition to collecting Confidence and Practice data for the curriculum, the Post Curriculum Assessment (PCA) repeated questions from the Knowledge and Competence domains
- ❖ Statistically significant net gains were measured from Pre-Test to the Post Curriculum Assessment (PCA) in both Knowledge and Competence
- ❖ In both Knowledge and Competence, some decrease in score was measured between Post-Test and PCA

(4-week Post Assessment)

Please select the specific areas of skills, or practice behaviors, you have improved regarding the recognition and management of patients with Pseudobulbar Affect since this CME activity.
(Select all that apply.)

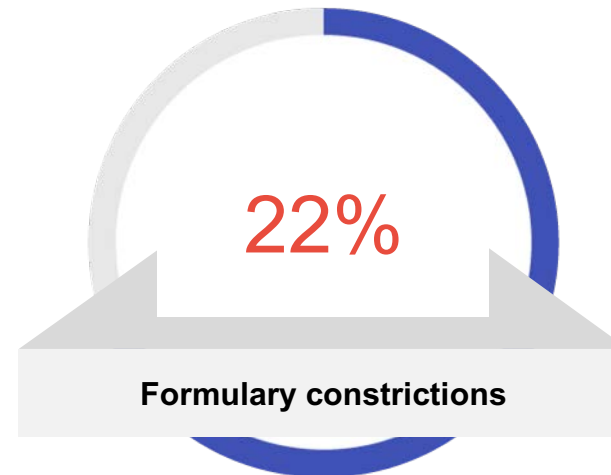
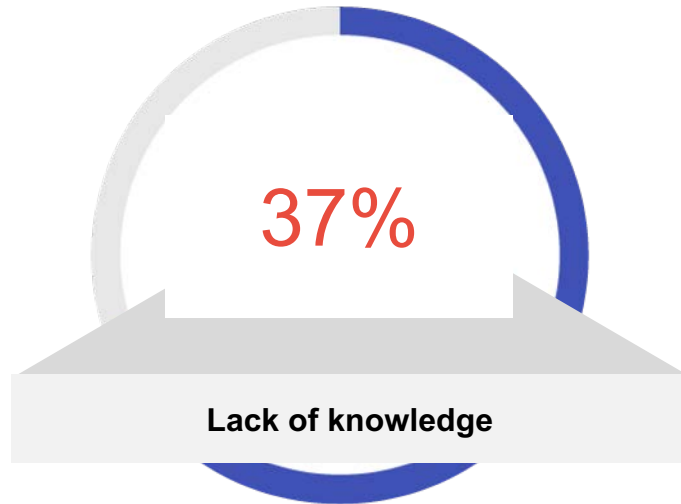
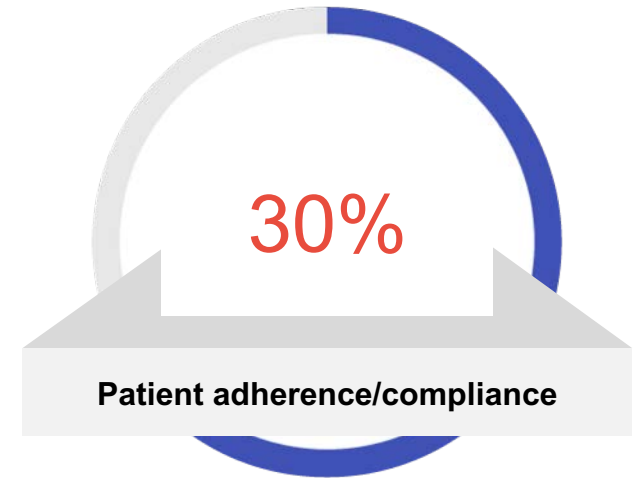
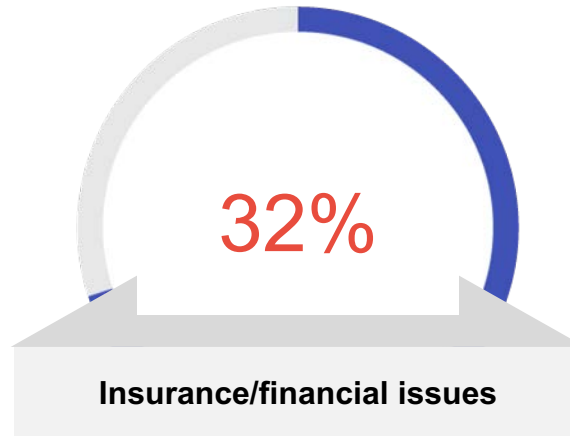
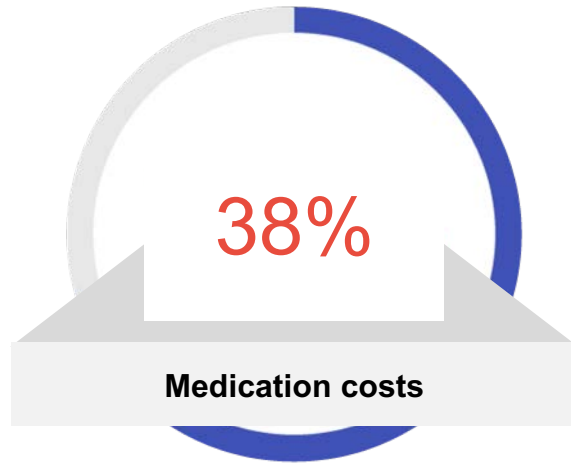
N=188



(4-week Post Assessment)

What specific barriers have you encountered that may have prevented you from successfully implementing strategies for patients with pseudobulbar affect since this CME activity? (Select all that apply.)

N=188



Identified Learning Gap 1 of 2: *Epidemiology of PBA*

Despite improvements in score on a Knowledge item related to epidemiology of PBA, learners remained challenged at Post-Test.

In the PRISM registry study, about what proportion of patients taking psychotropic drugs other than tricyclic antidepressants had CNS-Lability Scale scores that might suggest PBA?

Results:

- At Post-Test, only 14% of learners correctly answered: “>75%” indicating that many patients with PBA might be treated with non-tricyclic antidepressant antipsychotic medications, due to lack of recognition of PBA

Identified Learning Gap 2 of 2: *Detection and Diagnosis of PBA*

Despite improvements in score on Knowledge items related to the diagnosis of PBA, learners remained challenged at Post-Test.

For which of the following conditions is Pseudobulbar Affect most often mistaken?

Results:

- At Post-Test, only 70% of learners correctly answered: “Depression”

Proposed diagnostic criteria for Pseudobulbar Affect include all of the following, EXCEPT:

Results:

- At Post-Test, only 65% of learners correctly answered: “Symptoms are dependent on, and proportional to, identified stimulus”

Identified Learning Gap 3 of 3: *Management of patients with PBA*

On two Competence items involving the management of PBA, learners finished with low Post-Test scores after some improvements from Pre-Test:

A 68-year-old woman with a history of hypertension, type 2 diabetes, and ischemic stroke presents complaining of excessive crying. She says the crying started after her stroke and makes her reluctant to socialize. She denies depressive symptoms and cannot give a reason for why she cries. All of the following might be appropriate at this time, EXCEPT:

Results:

- At Post-Test, only 68% of learners correctly answered: “If further workup suggests PBA, consider prescribing empiric SSRI”

A 76-year-old man is a resident of a skilled nursing facility. He has a history of hypertension, dyslipidemia, and ischemic stroke. Nursing staff report frequent crying episodes, and his clinician started an SSRI, with minimal effect on crying symptoms. Further workup suggested PBA, and dextromethorphan/quinidine was started, leading to reduced frequency and duration of crying episodes. According to the recent CMS Megarule, which of the following might be appropriate at this time?

Results:

- At Post-Test, only 59% of learners correctly answered: “Consider gradually reducing dose of and then discontinuing the SSRI”

Overall Educational Impact

- ❖ **Significant improvements (ranging from 33% – 80%) were seen across all learning domains.**
 - Live online learners experienced stronger score increases in Knowledge and Competence compared to live onsite learners, though online learners had lower Post-Test scores in both domains
 - Final scores on Confidence, reflecting the ability to diagnose PBA, and practice strategy question reflecting the willingness to consider a diagnosis of Pseudobulbar Affect in patients who report repeated episodes of laughing or crying, were moderate (3.05 and 3.10), indicating a remaining lack of comfort with this condition
- ❖ Improvements ranging from 11% to 208% were measured across all Learning Objectives
 - Improvements were significant on three of the four learning objectives.
 - The strongest increases, from very low Post-Test scores, were on Learning Objectives related to the epidemiology, impact, and importance of early recognition of PBA.
 - The lowest Post-Test score (46%) was on the objective related to the epidemiology and impact of PBA

Overall Educational Impact

- ❖ The analysis of the Knowledge and Competence domains identified three **persistent learning gaps related to identification and management of patients with PBA**
 - **Epidemiology:** Pre- and Post-Test scores (11% and 14%) were low on a Knowledge item about the risk of PBA in patients taking psychotropic drugs other than tricyclic antidepressants
 - **Diagnosis:** Despite an improvement of 195%, learners remained challenged on conditions commonly mistaken for PBA, with Depression being the correct answer, selected at a rate of only 70% at Post-Test
 - **Management:** On both Competence questions, learners were asked to recommend treatment actions for patients with possible PBA, and struggled at Post-Test to identify appropriate medication for a patient with PBA and how to manage unnecessary psychotropic medications in LTC facilities, according to the CMS Megarule.

Appendix

Learning Objectives Analysis – Live Onsite vs. Live Online Audience

- “Live onsite learners” include only those attending in-person meetings.
- “Live online learners” include those from both the Simulcast and Virtual Symposium.

Learning Objective	Live Onsite Learners				Live Online Learners			
	N	Pre-Test	Post-Test	% Change	N	Pre-Test	Post-Test	% Change
Review the epidemiology and impact of pseudobulbar affect (PBA)	301	20.43% (32.95%)	48.34% (32.56%)	+136.61%*	292	17.81% (30.26%)	42.98% (36.92%)	+141.33%*
Discuss the importance of early recognition of PBA in the primary care, nursing home, and rehabilitation settings	282	22.34% (41.65%)	79.43% (40.42%)	+255.56%*	273	24.54% (43.03%)	64.84% (47.74%)	+164.18%*
Describe diagnostic tools and criteria for objective diagnosis of PBA	306	57.52% (41.13%)	65.36% (39.52%)	+13.63%*	256	42.58% (44.23%)	59.18% (44.67%)	+38.99%*
Utilize evidence-based therapies to effectively manage PBA	266	53.76% (49.86%)	59.02% (49.18%)	+9.78%*	162	53.09% (49.90%)	60.49% (48.89%)	+13.95%*

- ❖ Across all four Learning Objectives, live onsite and live online learners both demonstrated significant score increases
- ❖ For both groups, these score increases were greatest on the learning objectives related to epidemiology and the importance of early recognition of PBA
- ❖ Post-Test scores remained uniformly low for both groups, especially on the Learning Objective related to the epidemiology and impact of PBA

*significant at the $p \leq 0.05$ level

Learning Domain Analysis – Live Onsite vs. Live Online Audience

- “Live onsite learners” include only those attending in-person meetings.
- “Live online learners” include those from both the Simulcast and Virtual Symposium.

Learning Domain	Live Onsite Learners				Live Online Learners			
	N	Pre-Test	Post-Test	% Change	N	Pre-Test	Post-Test	% Change
Knowledge	314	33.70% (31.52%)	55.94% (28.81%)	+65.98%*	310	23.66% (29.75%)	47.10% (33.64%)	+99.07%*
Competence	299	50.00% (42.30%)	64.88% (40.53%)	*29.77%*	202	43.31% (43.00%)	59.65% (42.72%)	+37.70%*

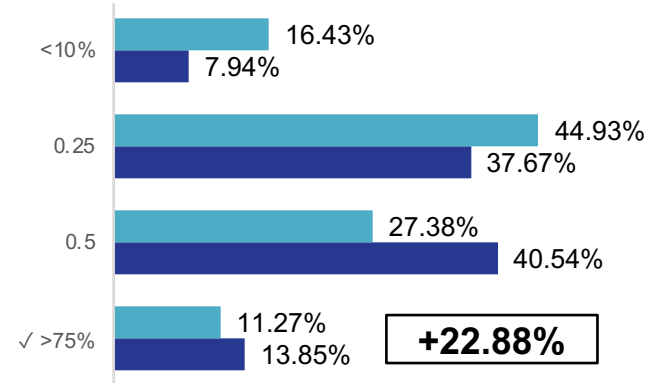
- ❖ Live onsite and live online learners achieved substantial and significant score improvements across both Knowledge and Competence domains
- ❖ For both Knowledge and Competence, live online learners had larger score increases, but lower overall scores

Knowledge Items

Pre-Test
Post-Test

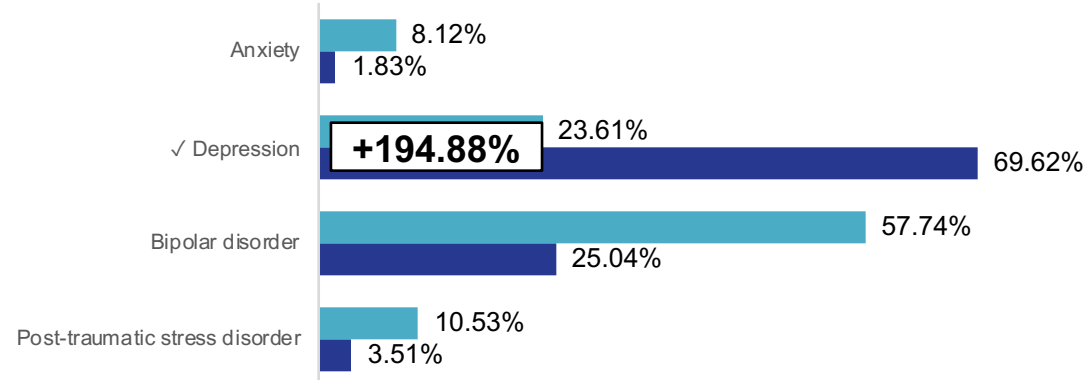
In the PRISM registry study, about what proportion of patients taking psychotropic drugs other than tricyclic antidepressants had CNS-Lability Scale scores that might suggest PBA?

N = 592 – 621



For which of the following conditions is Pseudobulbar Affect most often mistaken?

N = 655 – 665



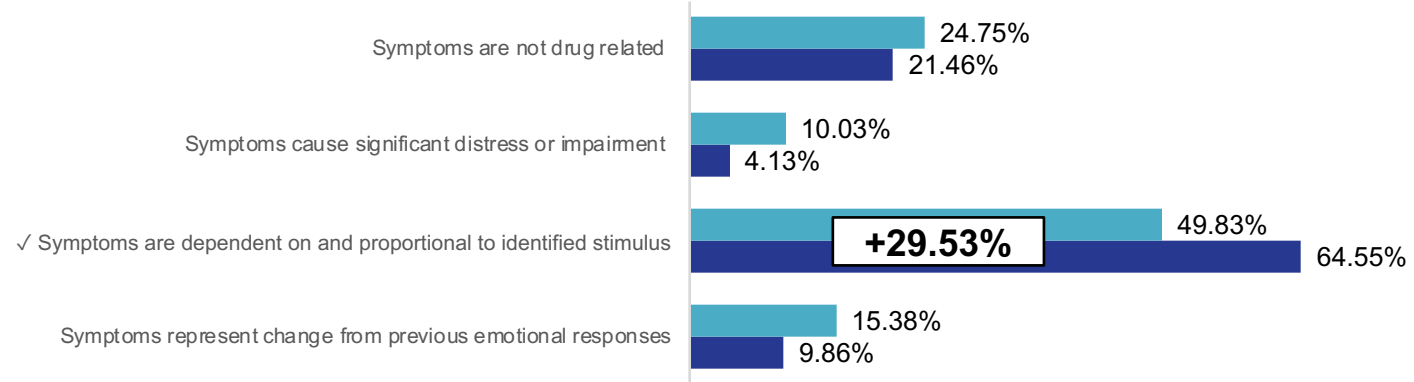
Note: data are matched.
Correct answer is designated by a ✓.

Knowledge Items

Pre-Test
Post-Test

Proposed diagnostic criteria for Pseudobulbar Affect include all of the following, EXCEPT:

N = 598 – 629

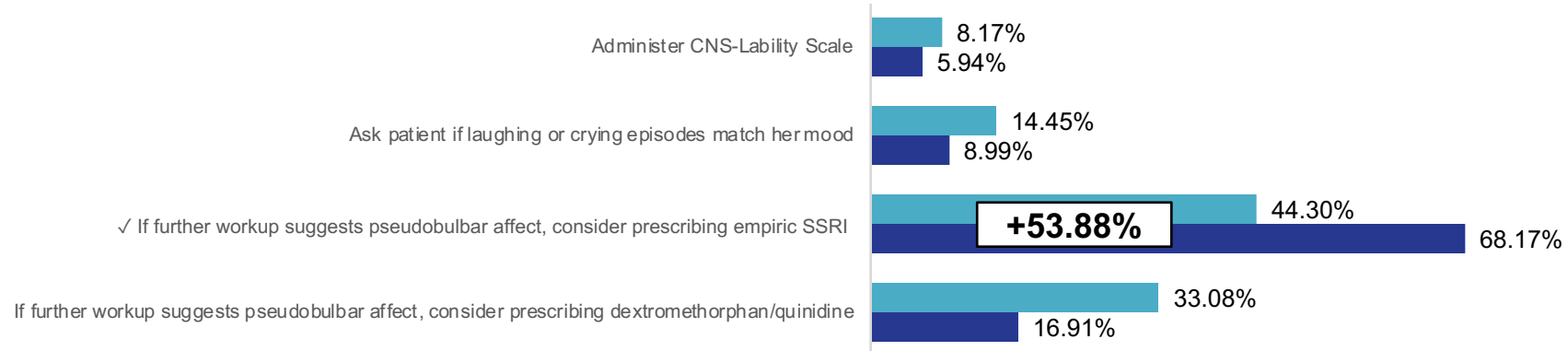


Competence Items

Pre-Test
Post-Test

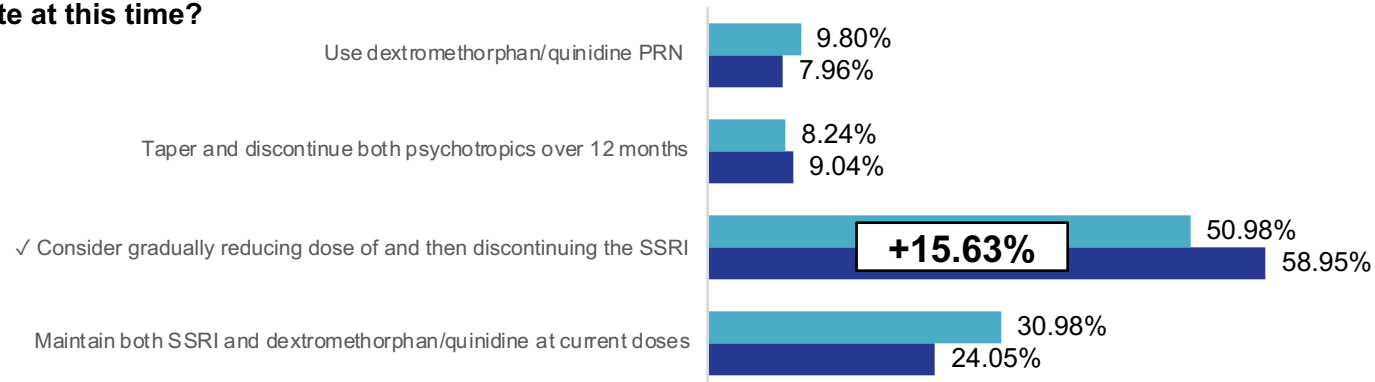
A 68-year-old woman with a history of hypertension, type 2 diabetes, and ischemic stroke presents complaining of excessive crying. She says the crying started after her stroke and makes her reluctant to socialize. She denies depressive symptoms and cannot give a reason for why she cries. All of the following might be appropriate at this time, EXCEPT:

N = 526 – 556



A 76-year-old man is a resident of a skilled nursing facility. He has a history of hypertension, dyslipidemia, and ischemic stroke. Nursing staff report frequent crying episodes, and his clinician started an SSRI, with minimal effect on crying symptoms. Further workup suggested PBA, and dextromethorphan/quinidine was started, leading to reduced frequency and duration of crying episodes. According to the recent CMS Megarule, which of the following might be appropriate at this time?

N = 510 – 553

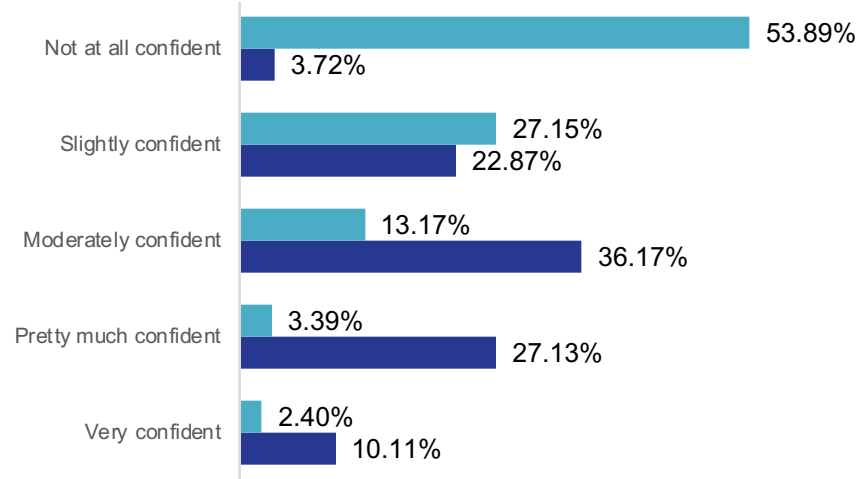


Confidence and Practice Strategy Items – PCA 4 weeks after activity

Pre-Test
PCA

Please rate your confidence in your ability to recognize Pseudobulbar Affect in your patient population:

N = 188 – 501



How often do you consider a diagnosis of Pseudobulbar Affect in patients who report repeated episodes of laughing or crying?

N = 188 – 495

