



Understanding the Changing Treatment Landscape of Severe Asthma

Sunday, October 8 | 12:00 – 1:15 p.m.

Final Outcomes Summary
Live Program and Online Enduring
Online Data from: 11/28/2023 –
11/28/2024
Grant ID: 63215515

Table of Contents

Final Outcomes Summary – Online Outcomes and Live Program

Executive Summary (Slide 3)

Program Features (Slide 4)

Audience Generation (Slide 5)

Overall Program Impact (Slide 6)

Program Insights (Slide 7)

Online Enduring Outcomes (Slide 8)

 Educational Impact Summary (Slide 9)

 Level 1 – Participation (Slides 10-11)

 Level 2 – Satisfaction (Slide 12)

 Level 3&4 – Knowledge and Competence (Slides 13-17)

 Level 4 – Competence (Slide 18-19)

 Evaluation Survey Results (Slide 20)

Live Program Outcomes (Slide 21)

 Educational Impact Summary (Slide 22)

 Level 1 – Participation (Slides 23-24)

 Audience Engagement: Array Platform (Slide 25)

 Level 2 – Satisfaction (Slide 26)

 Level 3&4 – Knowledge and Competence
 (Slides 27-33)

 Level 4 – Competence (Slide 34-35)

 Evaluation Survey Results (Slide 36)

 Level 5 – Performance (Slides 37-38)

Accreditation (Slide 39)

Executive Summary

Final Outcomes Summary – Online Outcomes and Live Program

Program Faculty



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Denver, Colorado

Program Overview

This activity was presented as a live CME Satellite Symposium on October 8, 2023 during the American College of CHEST Physicians Annual Meeting (CHEST 2023) in Hawaii, and a studio produced recording was also endured on Healio. The program focused on the role of epithelial alarmins in the inflammatory cascade of asthma, and connecting clinical characteristics to patients' biomarkers for treatment. Special features include whiteboard animations to illustrate the inflammatory cascade and treatment targets, and patient case scenarios with interactive polling and faculty discussion. Additionally, use of the Array® technology allowed for audience engagement in the live symposium, giving attendees the option to participate in interactive polling, submit questions for faculty, and take notes directly on slides for future reference.

Learning Objectives

- Explain the mechanisms of action of biologic therapies for severe asthma and key features of severe asthma that are targets for treatment.
- Describe the role of the respiratory epithelium in asthma and the relationship to T2 and non-T2 airway inflammation.
- Evaluate the emerging data for new and emerging therapies that target the epithelial alarmins.
- Connect clinical characteristics and phenotypes to the targeted treatment.

Target Audience and Accreditation

Target Audience:

Live symposium - Pulmonologists who treat patients with severe asthma
Enduring - Pulmonologists, allergists, nurse practitioners and physician assistants in those specialties

Accreditation: National Jewish Health designates the live and enduring activities for a maximum of 1.0 *AMA PRA Category 1 Credit™*.

Live activity: October 8, 2023
Hawaii Convention Center
1801 Kalakaua Avenue
Honolulu, Hawaii

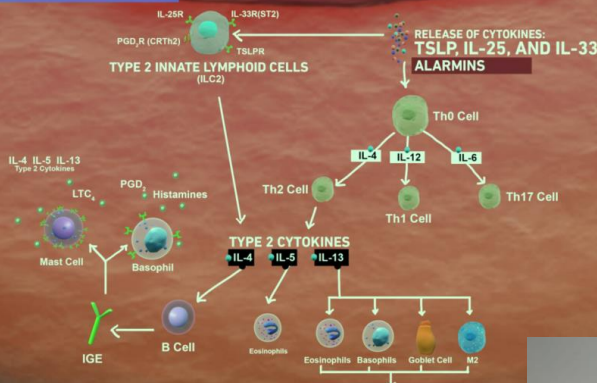
Enduring activity: November 28, 2023 – November 28, 2024
Healio: <https://cme.healio.com/allergy-asthma/20231106/understanding-the-changing-treatment-landscape-of-severe-asthma/overview>

Program Features

Final Outcomes Summary – Online Outcomes and Live Program

Whiteboard Animations

TEZEPELUMAB



90% of evaluation respondents reported the animations increased their understanding of severe asthma pathophysiology and treatment.

(N=799)

Audience Engagement via the Array® Platform (Live Symposium)

- Interactive polling
- Save slides
- Take notes directly on slides
- Submit questions for expert faculty

Case Discussion with Polling

Patient Case 1

Patient: Dave 27-year-old man

Asthma History:

Early childhood symptoms worsened to age 21
2020 visited ER 4xs, admitted 2xs for flare ups

Current medication:

- High dose ICS/LABA
- SABA
- Intranasal corticosteroids daily
- OCS bursts 4Xs last year
- FEV₁: 70%

Bronchodilator reversibility: 14%

Biomarkers of Type 2 Inflammation

- IgE(U/mL): 225
- Blood EOS (cells/ μ L): 330
- FeNO(ppb): 36

Past Medical History:

- Non-smoker
- Good inhaler adherence

Additional Test Results:

- Negative serological ABPA testing

Polling Question 1

Which therapy would you choose for this patient?

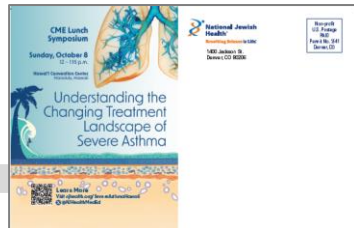
- A. Omalizumab
- B. Mepolizumab
- C. Benralizumab
- D. Dupilumab
- E. Tezepelumab

Audience Generation

Final Outcomes Summary – Online Outcomes and Live Program

Personalized targeting tools across numerous tactics reach HCPs by leveraging demographic data (such as location, profession, specialty) and behavioral data (such as learner participation history, areas of interest).

Personalized emails sent to
CHEST registrants & NJH
faculty (live; and to the Healio
database (enduring)



Brochure mailed to
CHEST registrants



Digital and print ads on
CHEST website and Welcome
Back Edition magazine

Understanding the Changing Treatment Landscape of Severe Asthma

This educational activity is supported by an educational grant from AstraZeneca Pharmaceuticals.



Dedicated landing page
on NJH website and the
Healio platform

Social media
ads and posts

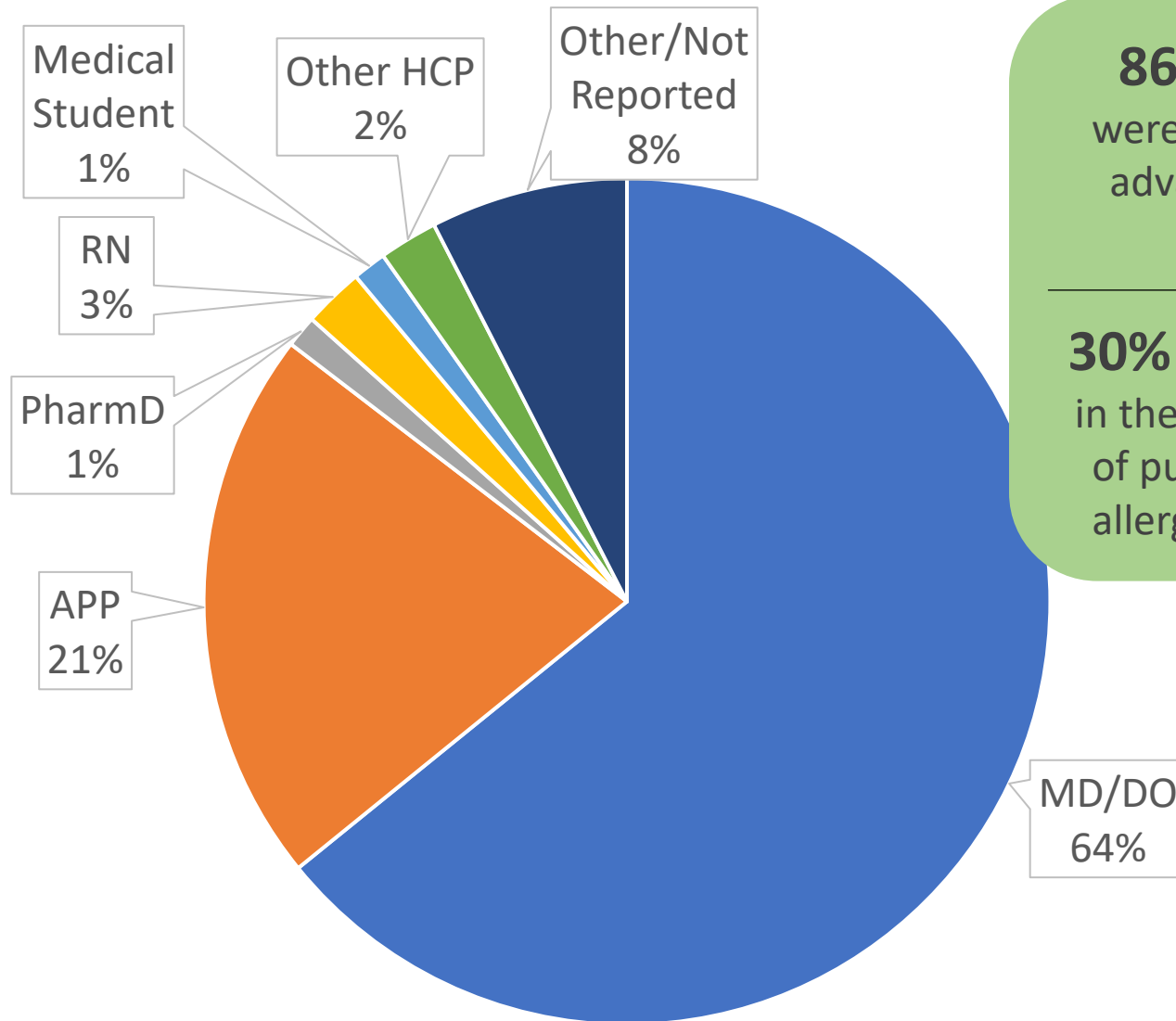


Featured Event Listing
on CHESTDailyNews.org



Overall Program Impact

Final Outcomes Summary – Online Outcomes and Live Program



86% of learners were physicians and advanced practice providers

30% of learners were in the target audience of pulmonology and allergy/immunology

Degree	Total
MD/DO	945
APP	313
PharmD	18
RN	34
Medical student	19
Other HCP	33
Other/Not Reported	111
Total Learners	1473

Exceeded the total program guarantee of 1330 learners!

349 learners in the live activity
1124 learners in the online enduring activity

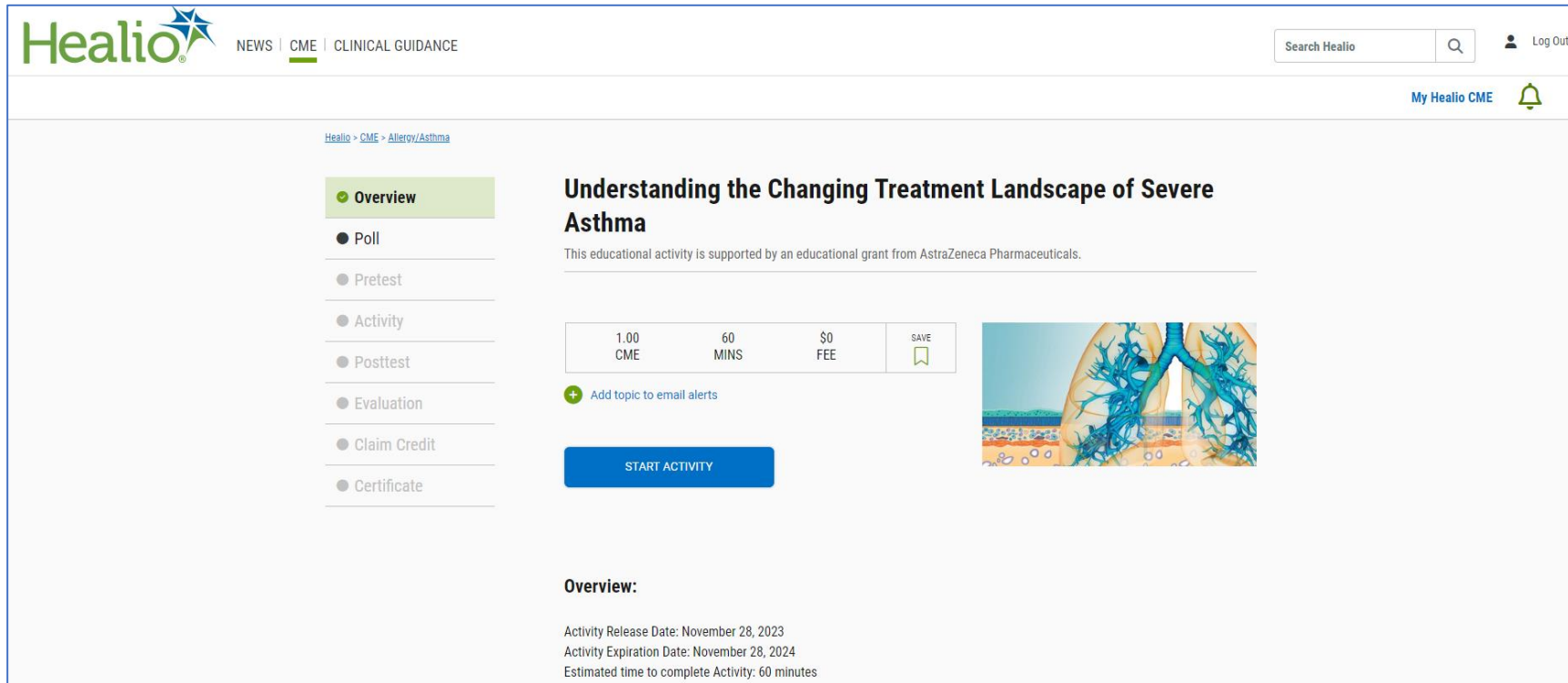
Program Insights

Final Outcomes Summary – Online Outcomes and Live Program

- Learners demonstrated significant gains in knowledge with regard to the role of the airway epithelium and its relationship to T2 and non-T2 inflammation in severe asthma.
- However, learners in both the live and online activities demonstrated a gap in knowledge with regard to features of severe asthma that are targets for biologic therapies. More education may be needed on the pathophysiology of severe asthma and the mechanism of action of biologic therapies.
 - *30% of online learners (N=444) and 41% of live learners (N=39) did not answer correctly post-activity.*
- While confidence increased significantly from pre- to post-activity among learners, post-activity confidence with regard to the learning objectives was slightly lower than expected among online learners, with an average of 77% (N=405) reporting confidence at post-activity. This may be due to persistent gaps among healthcare providers, demonstrating a need for continued education on severe asthma pathophysiology and personalized treatment selection.
- Evaluation respondents reported the case scenarios were helpful for illustrating treatment selection. There were some comments about the need for patient materials, which might be considered in future programs.

Online Enduring Program

Final Outcomes Summary – Online Outcomes



The screenshot displays the Healio CME website interface. At the top, the Healio logo is on the left, and navigation links for NEWS, CME, and CLINICAL GUIDANCE are in the center. On the right, there is a search bar labeled 'Search Healio', a user profile icon with 'Log Out', and a 'My Healio CME' link with a bell icon. The main content area shows a breadcrumb trail: 'Healio > CME > Allergy/Asthma'. A sidebar on the left contains a list of activity stages: Overview (selected with a green checkmark), Poll, Pretest, Activity, Posttest, Evaluation, Claim Credit, and Certificate. The main title is 'Understanding the Changing Treatment Landscape of Severe Asthma'. Below the title, a note states: 'This educational activity is supported by an educational grant from AstraZeneca Pharmaceuticals.' A table displays activity details: 1.00 CME, 60 MINS, \$0 FEE, and a 'SAVE' button with a bookmark icon. Below the table is a '+ Add topic to email alerts' link. A prominent blue 'START ACTIVITY' button is centered. To the right of the button is an illustration of human lungs. At the bottom, an 'Overview:' section lists the activity release date (November 28, 2023), expiration date (November 28, 2024), and estimated completion time (60 minutes).

Healio CME

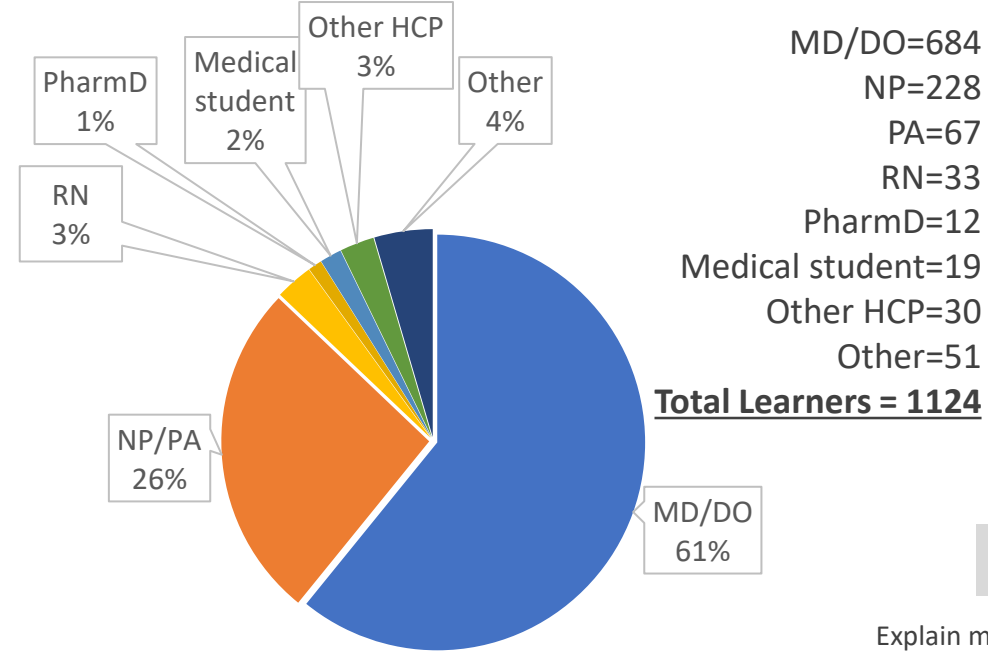
Launched 11/28/2023

<https://cme.healio.com/allergy-asthma/20231106/understanding-the-changing-treatment-landscape-of-severe-asthma/overview>

Educational Impact Summary

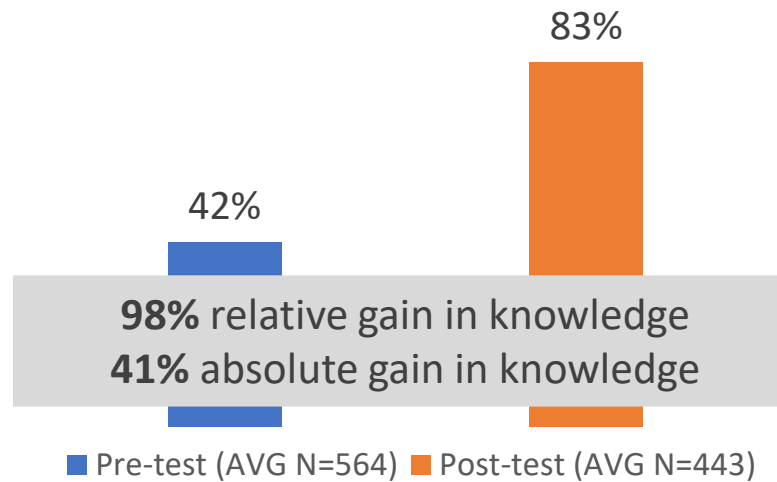
Final Outcomes Summary – Online Outcomes

Participation

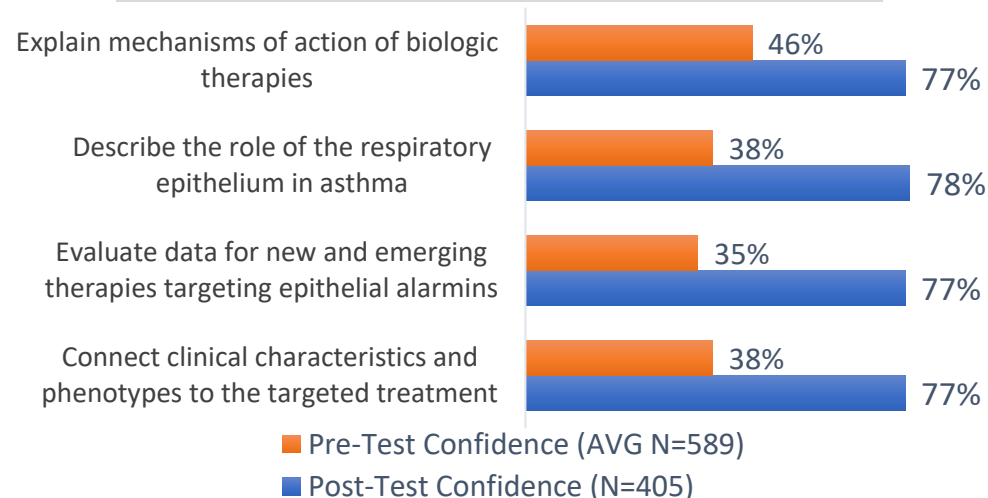


**Potential Impact To
130,968
Patient Visits This Year**

Learning Gain Across Objectives



Confidence Across Objectives



Evaluation

Met their educational needs
(87%)



Reinforced or improved
current skills **(87%)**



Improved ability to treat
patients **(84%)**

N=406

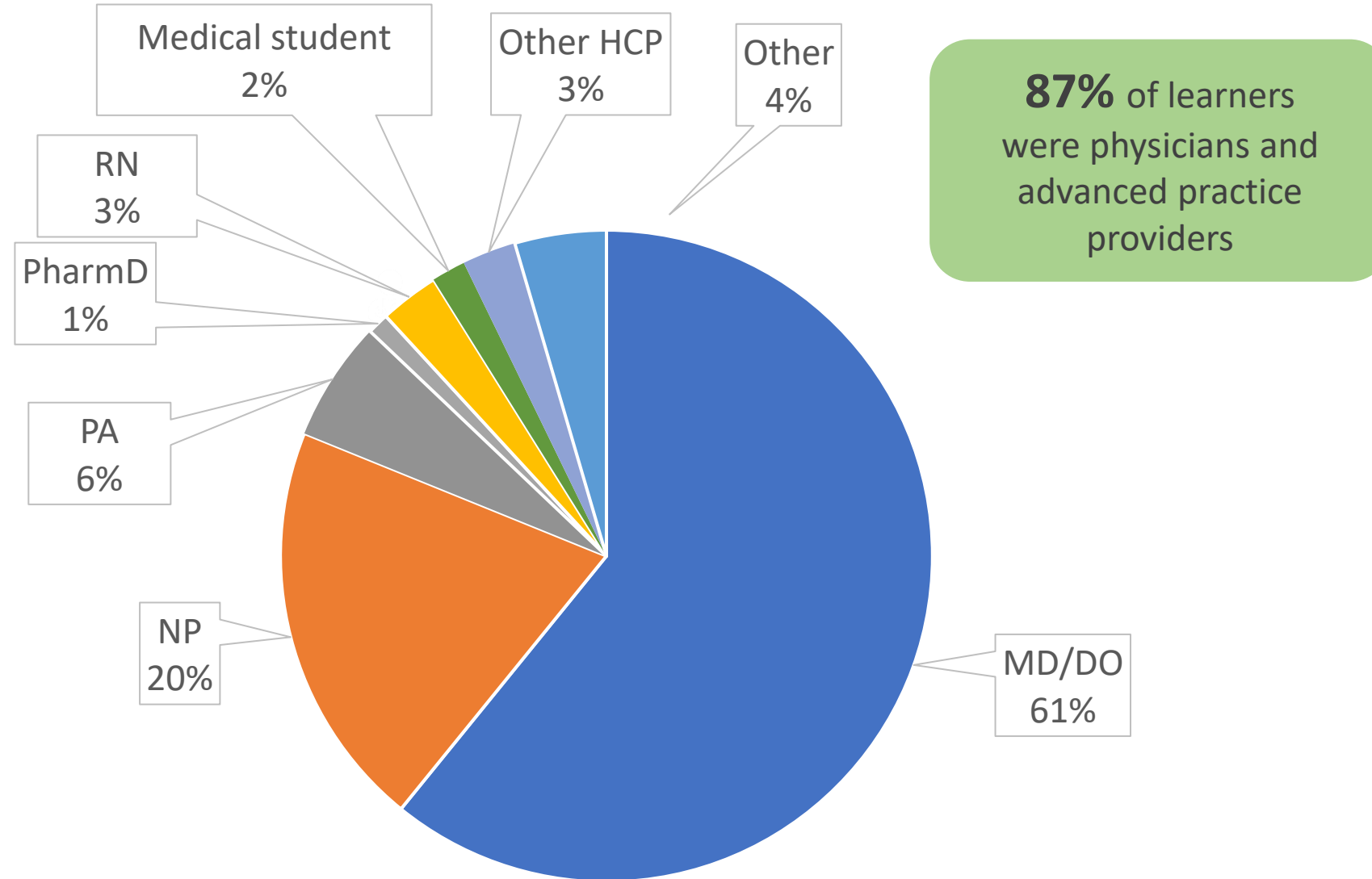
94%

N=341

Evaluation
respondents
intend to make
changes to practice
as a result of the
activity

Level (1) Outcomes: Participation (Degree)

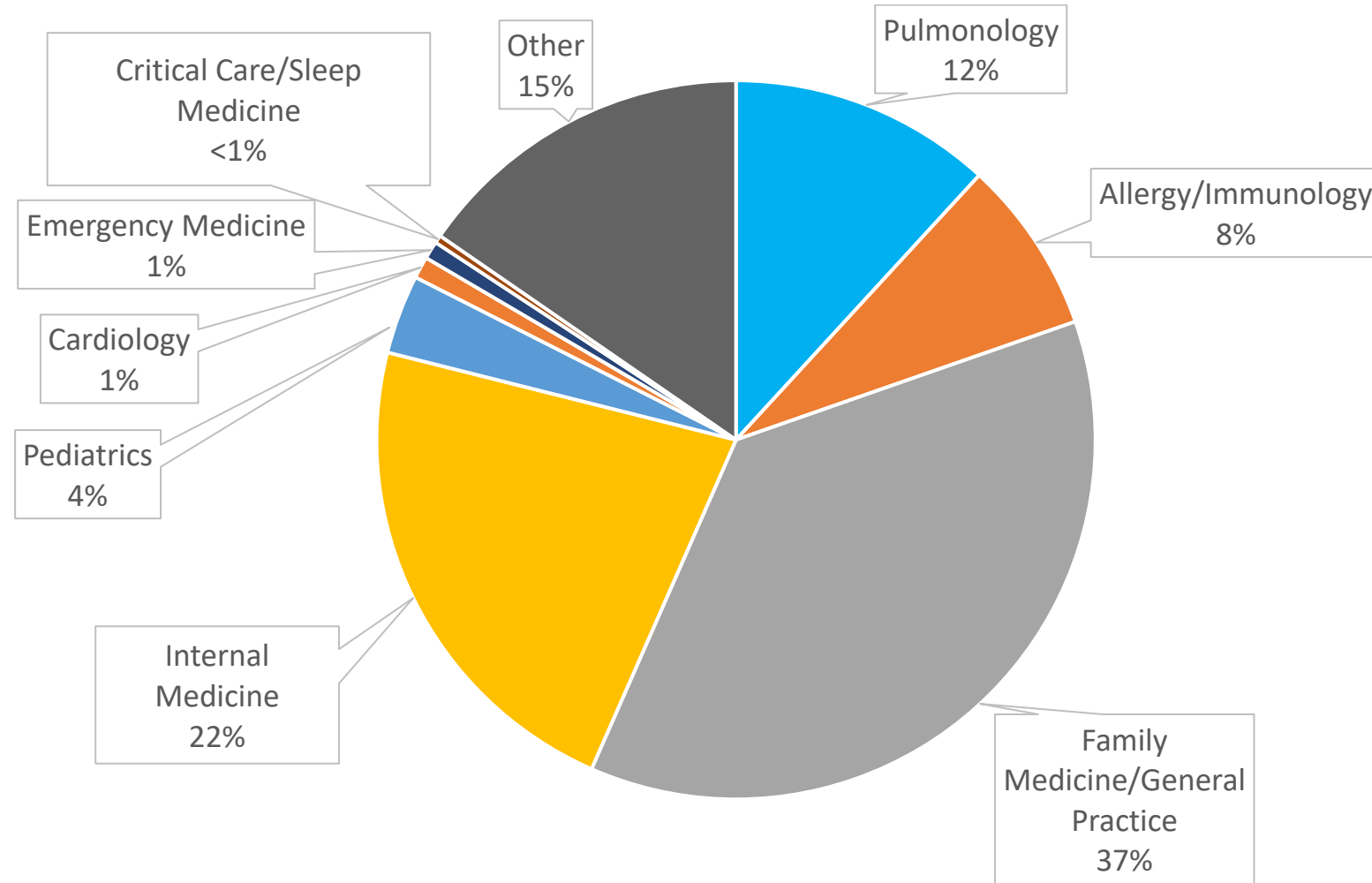
Final Outcomes Summary – Online Outcomes



Degree	Total
MD/DO	684
NP	228
PA	67
RN	33
PharmD	12
Medical student	19
Other health care provider	30
Other (administration, consumer, industry, not reported)	51
Total Learners	1124

Level (1) Outcomes: Participation (Specialty)

Final Outcomes Summary – Online Outcomes

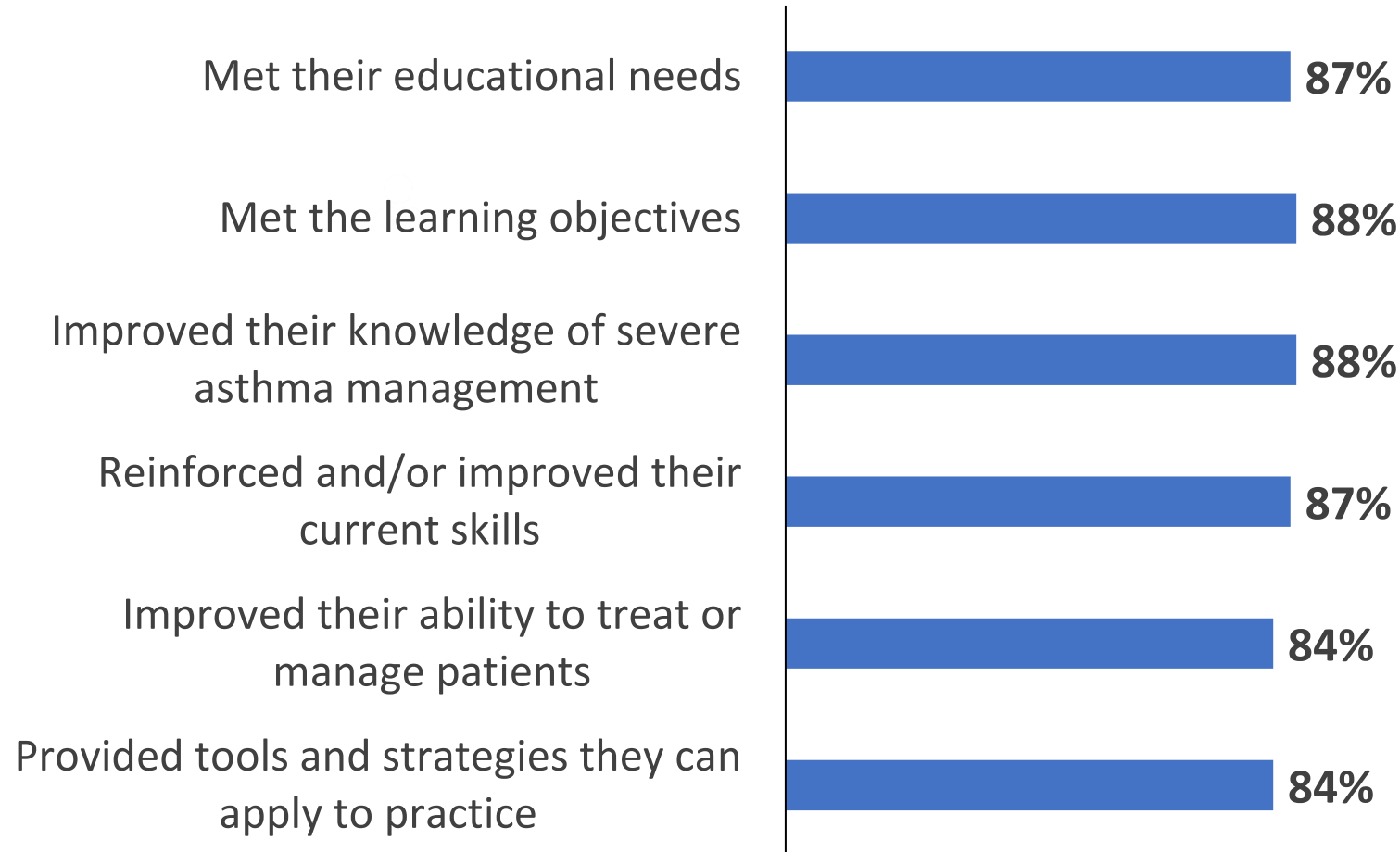


Specialty	Total
Pulmonology	133
Allergy/Immunology	88
Family Medicine / General Practice	415
Internal Medicine	251
Pediatrics	40
Cardiology	11
Emergency Medicine	9
Critical Care / Sleep Medicine	4
Other (radiology, otolaryngology, anesthesiology, not reported)	173
Total Learners	1124

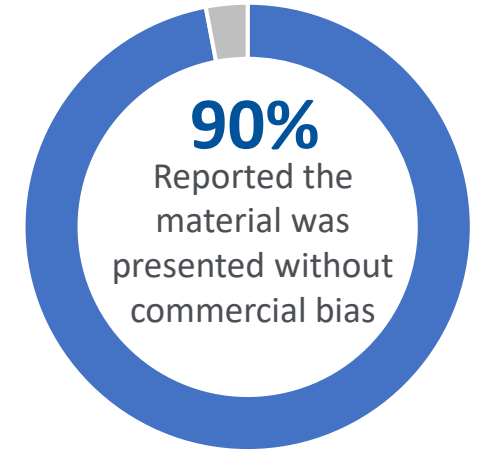
Level (2) Outcomes: Satisfaction

Final Outcomes Summary – Online Outcomes

Evaluation respondents reported the activity:



N= 406

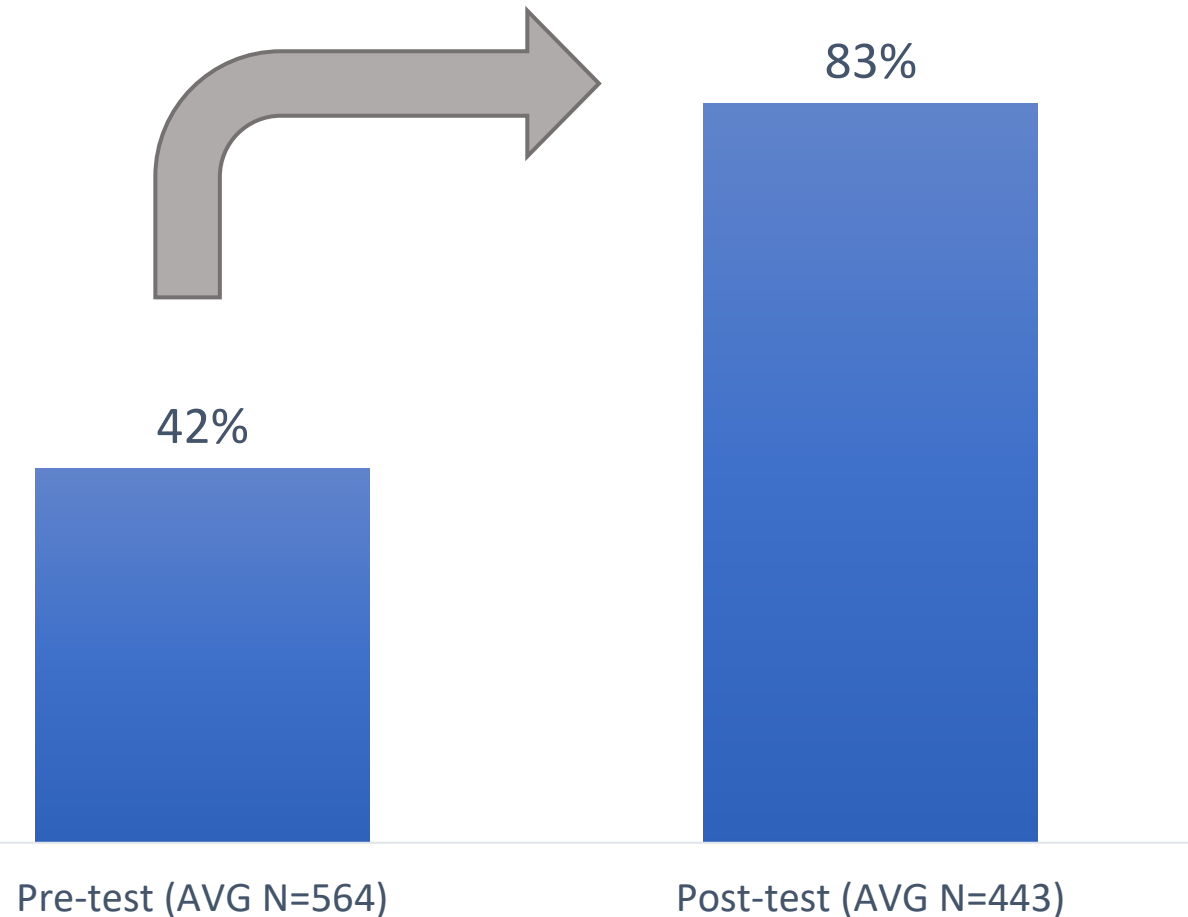


N=406

Level (3&4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Online Outcomes

Overall Knowledge Gain across Learning Objectives



98% Overall Relative Knowledge Gain



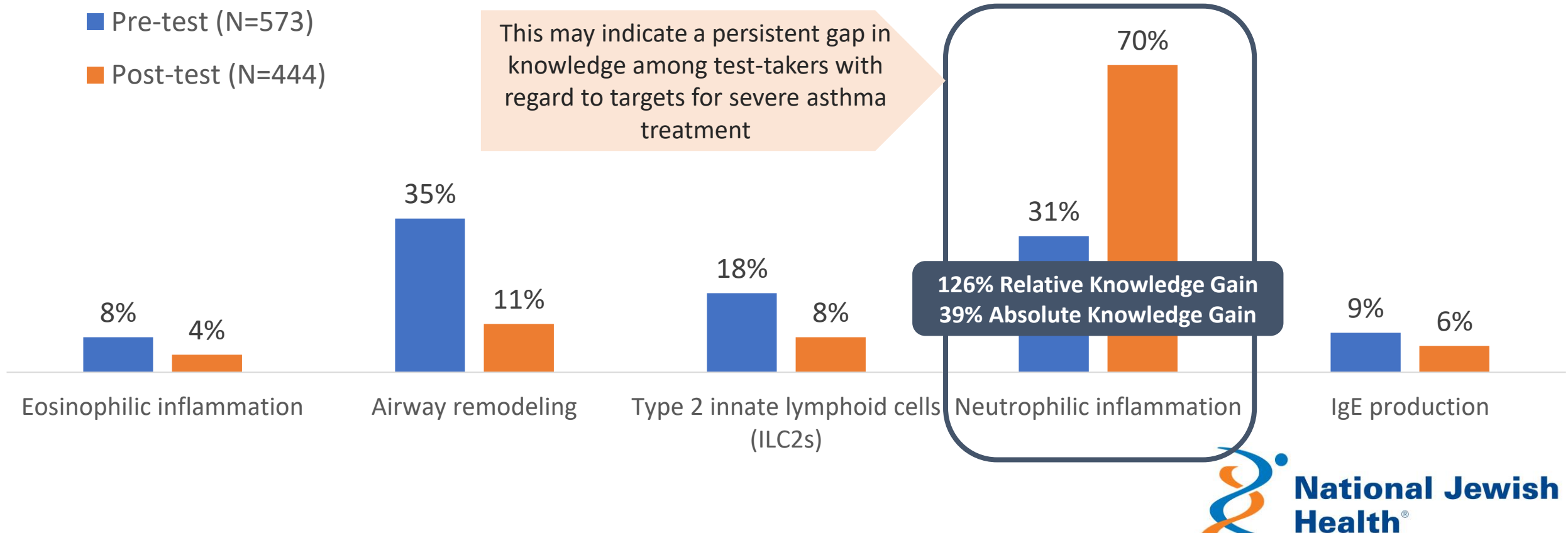
41% Overall Absolute Knowledge Gain

Level (3&4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Online Outcomes

Learning Objective: Explain the mechanisms of action of biologic therapies for severe asthma and key features of severe asthma that are targets for treatment.

Question 1: Which of the following is NOT a target of biologic therapies for severe asthma?

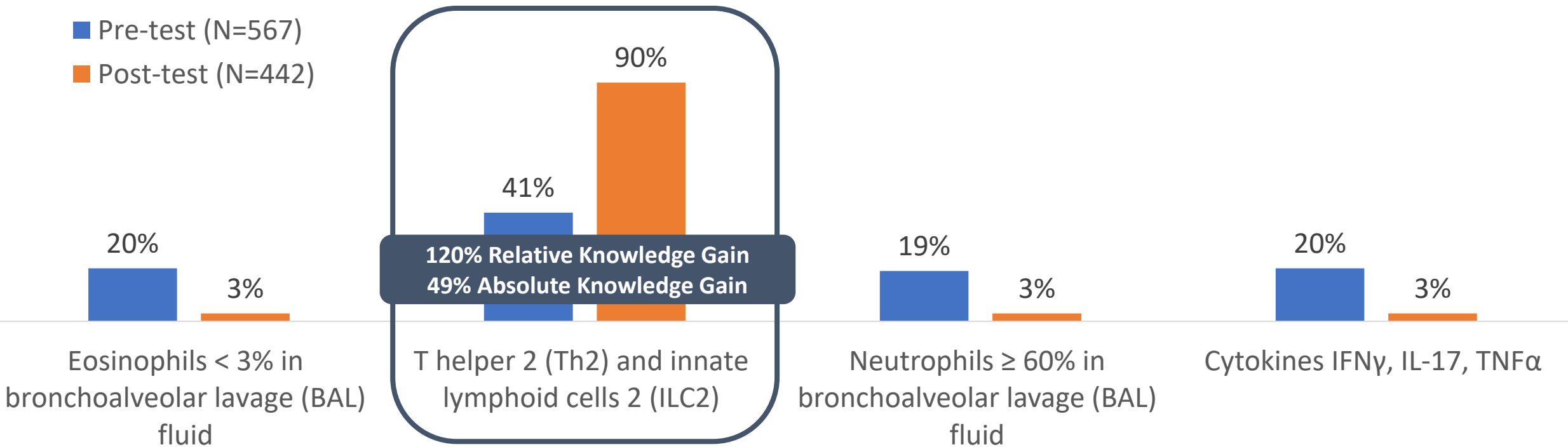


Level (3&4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Online Outcomes

Learning Objective: Describe the role of the respiratory epithelium in asthma and the relationship to T2 and non-T2 airway inflammation.

Question 2: Type 2 inflammation can be characterized by:

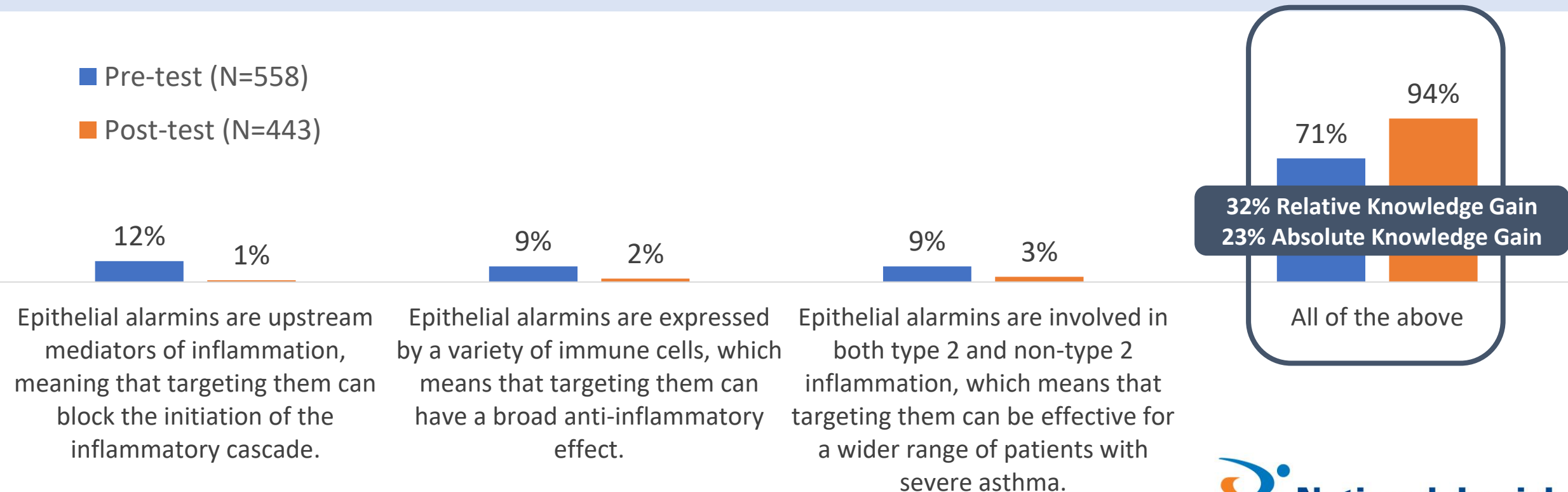


Level (3&4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Online Outcomes

Learning Objective: Evaluate the emerging data for new and emerging therapies that target the epithelial alarmins.

Question 3: Which of the following is a key advantage of targeting the epithelial alarmins for the treatment of severe asthma?

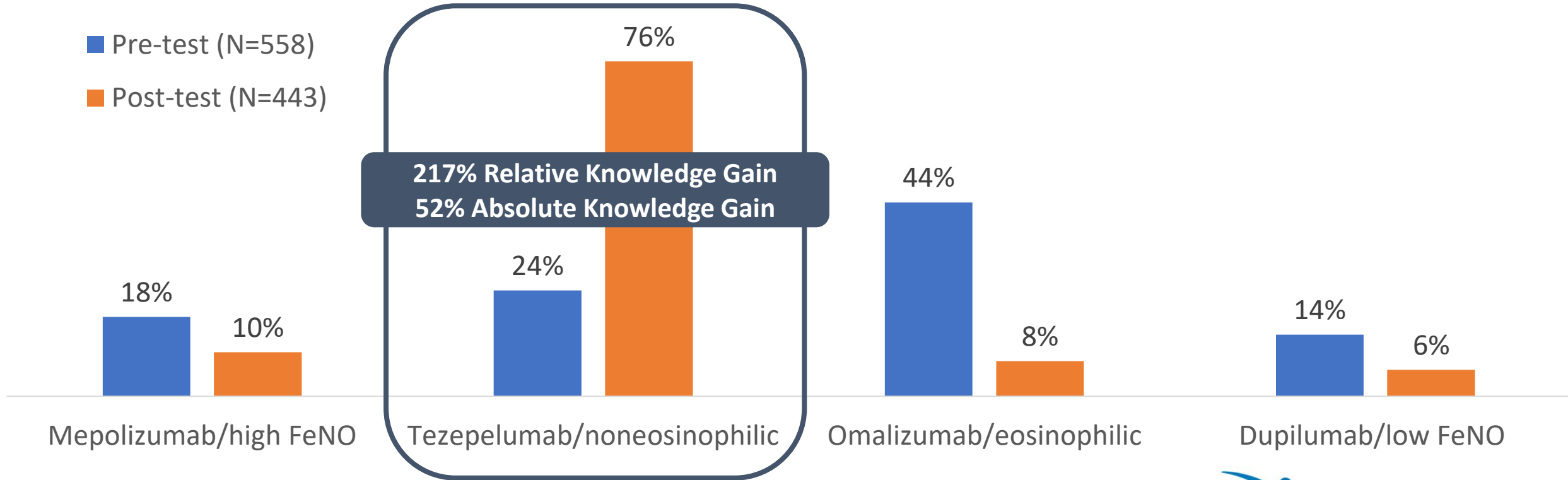


Level (3&4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Online Outcomes

Learning Objective: Connect clinical characteristics and phenotypes to the targeted treatment.

Question 4: Which of the following treatment options consistently matches to clinical response with the corresponding phenotype?

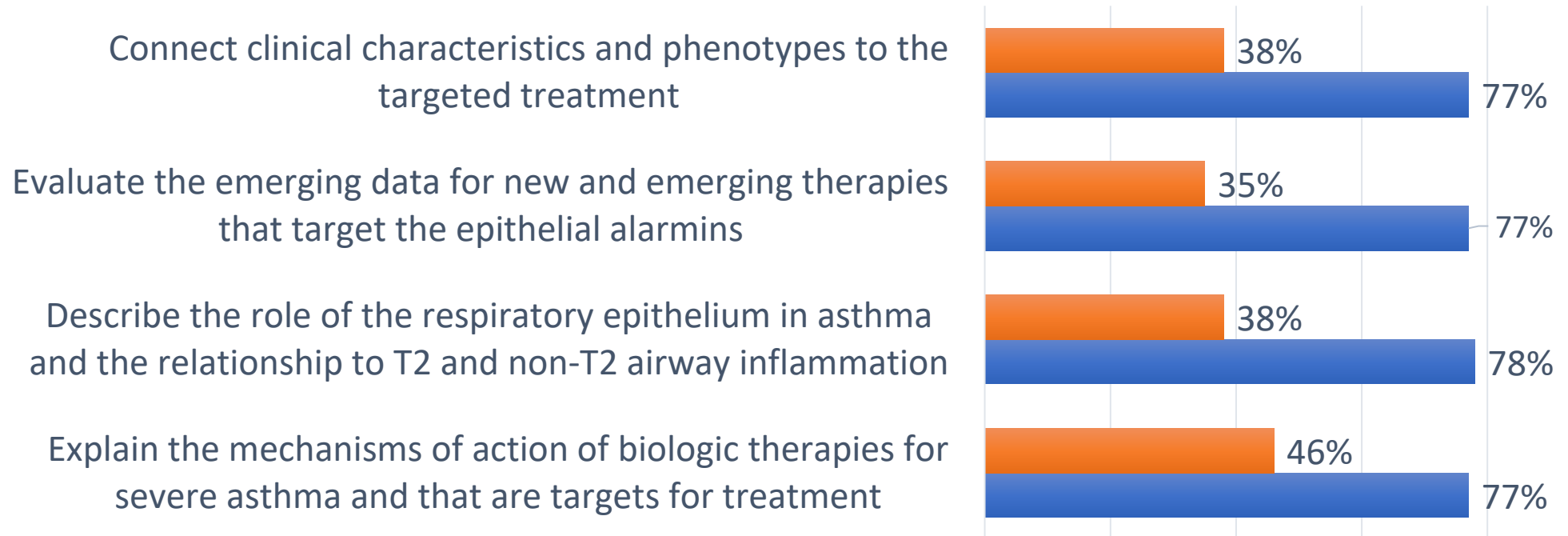


Level (4) Outcomes: Competence

Final Outcomes Summary – Online Outcomes

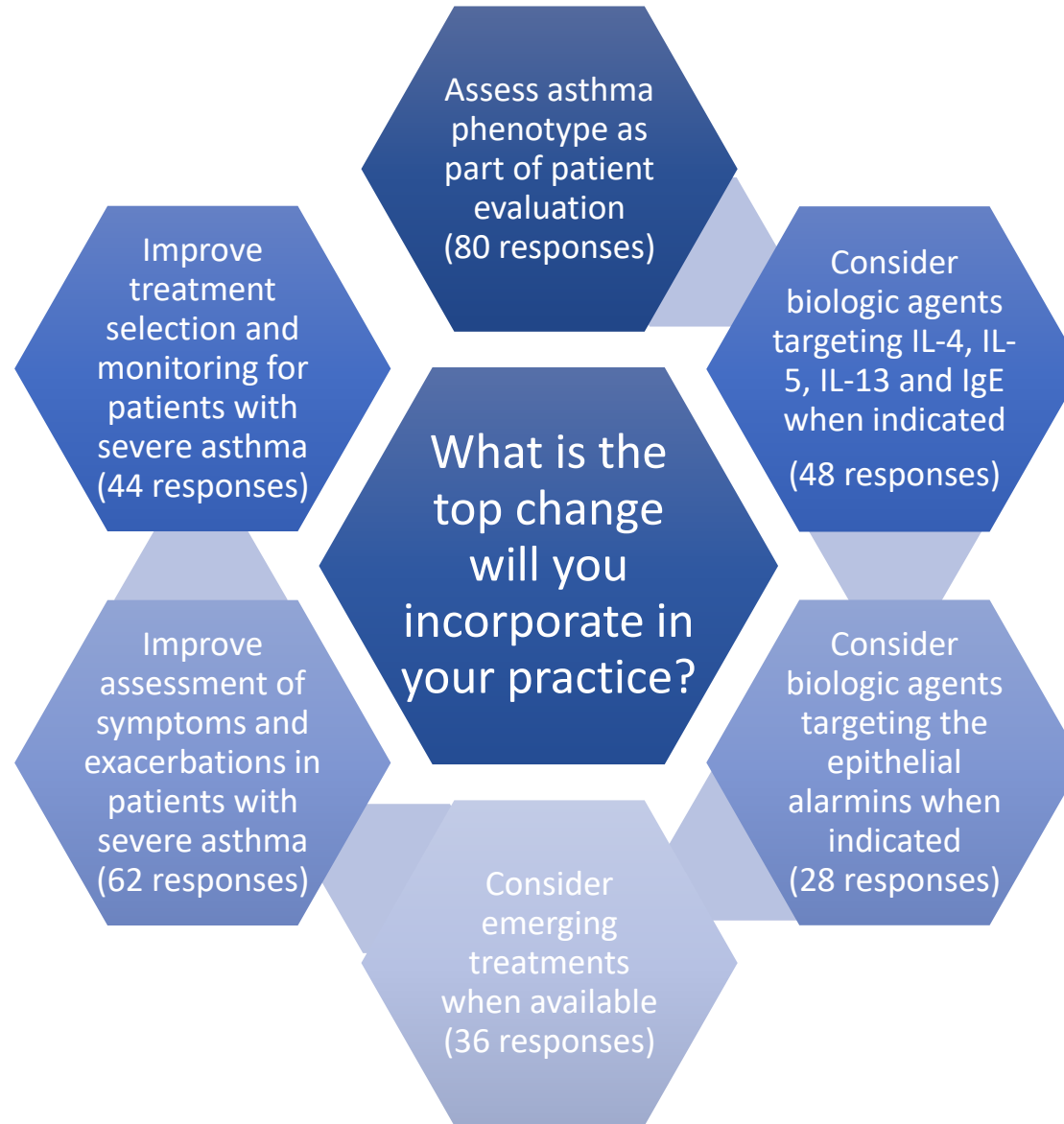
**Evaluation respondents reported their confidence as it relates to the learning objectives before and after the activity
(Very confident – confident)**

■ Before Presentation (AVG N=589) ■ After Presentation (N=405)



Level (4) Outcomes: Competence

Final Outcomes Summary –Online Outcomes



N=298

94%

N=341

Evaluation respondents intend to make changes in practice as a result of the activity

Evaluation Survey Results

Final Outcomes Summary – Online Outcomes



Key Takeaways

- Communication with patients.
- The importance of combining the patient's clinical phenotype with their biomarkers in an effort to determine what would be the best biologic to start.
- The monoclonal antibody therapies have opened up new methods to bring asthma patients hope for improvements in their respiratory status.
- Identifying phenotype and the role it plays in proper management.
- There are many medications available for asthma beyond just bronchodilators and steroids.
- How much has changed over the last 40 years and how much better we can handle more severe cases, especially those with chronic steroid dependency.
- The current pipeline of emerging treatment for severe asthma.



Barriers the Activity will Help to Address

- Timely diagnosis as well as identifying asthma phenotype
- Cost of treatment
- Education
- Access to care
- Patient compliance and communication
- Considering biologics as part of the treatment regimen
- Better treatment for specific types of asthma patients

Future Topics

- Use of biologics and their adverse effects
- Safe asthma control in pregnancy
- Long term management of asthma
- The role of bronchoscopy in severe asthma
- Pediatric asthma management
- Exacerbated asthma management

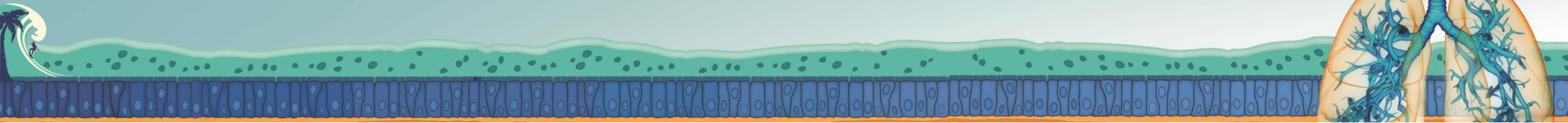
81%

of evaluation respondents indicated the activity addressed strategies for overcoming barriers to optimal patient care

N=404



National Jewish Health®



CHEST 2023 Annual Meeting | CME Lunch Symposium

October 8, 2023

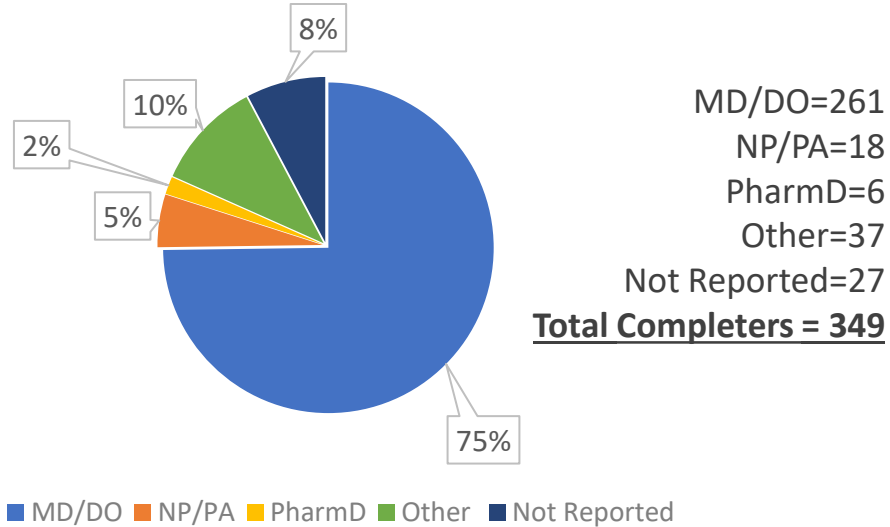
Honolulu, Hawaii



Educational Impact Summary

Outcomes Summary – Live Program

Participation

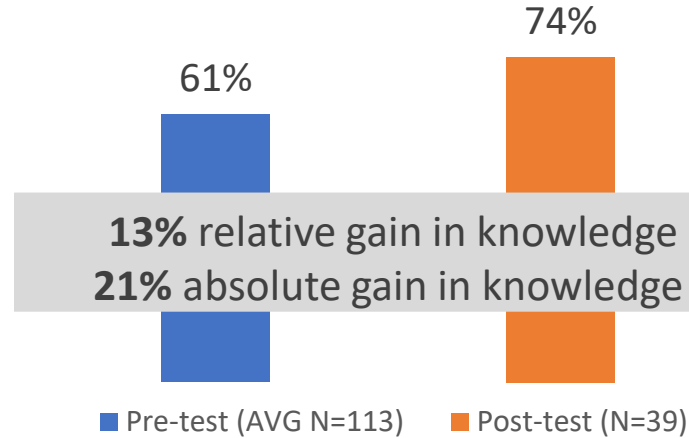


Reached
over 2.5
times the
live learner
guarantee

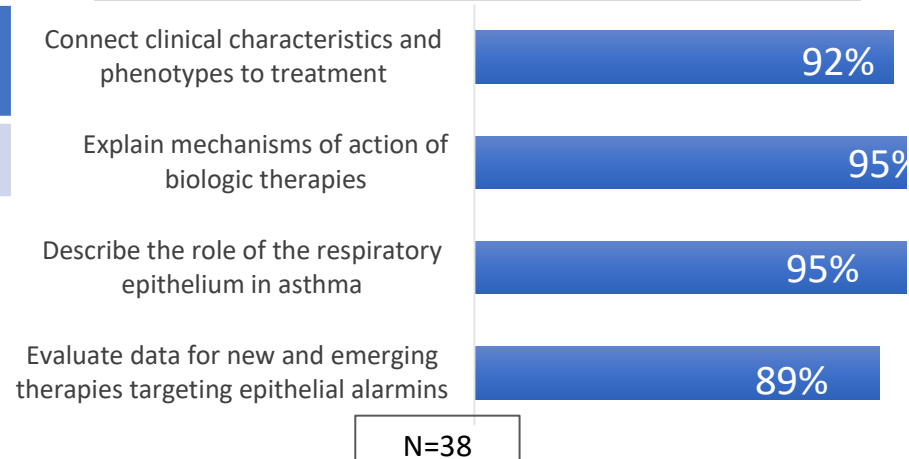
Learner Guarantee	Learner Actual
130	349

Potential Impact To
19,448
Patient Visits This Year

Learning Gain Across Objectives



Post-Activity Confidence Across Objectives



Evaluation

Met their educational needs
(100%)



Reinforced or improved
current skills **(100%)**



Improved ability to treat
patients **(95%)**

N=37

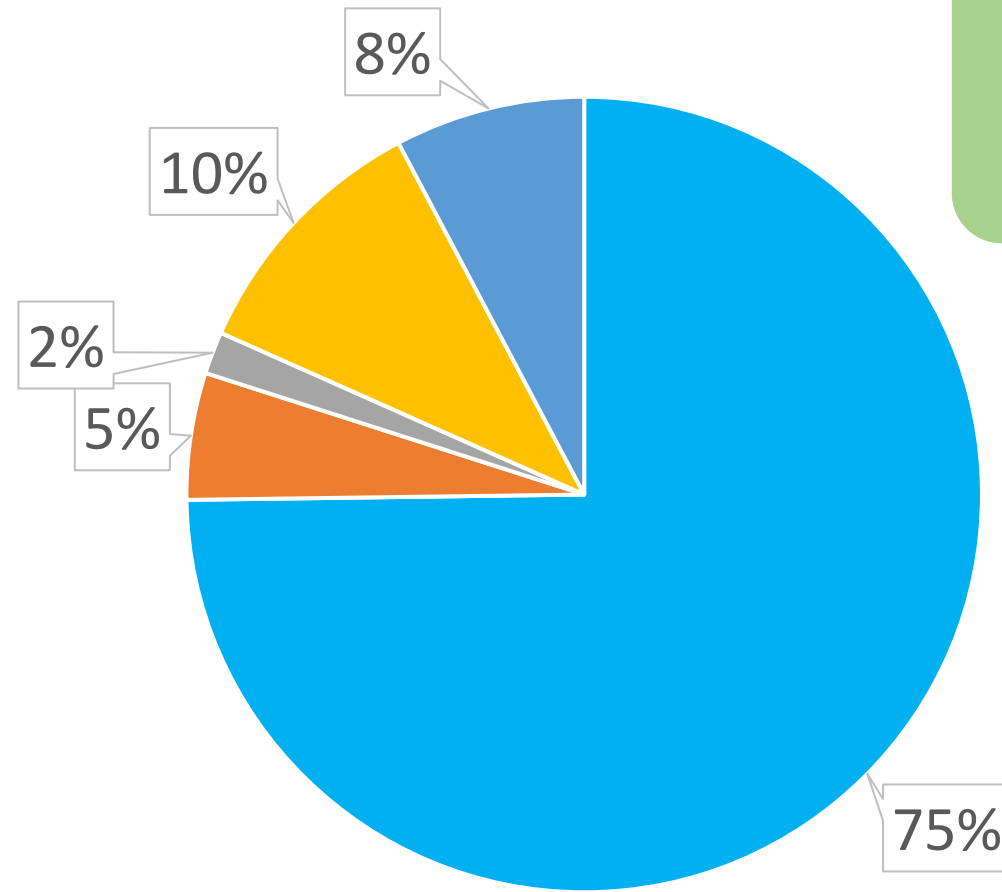
89%

N=36

Evaluation
respondents
intend to make
changes to practice
as a result of the
activity

Level (1) Outcomes: Participation (Degree)

Outcomes Summary – Live Program



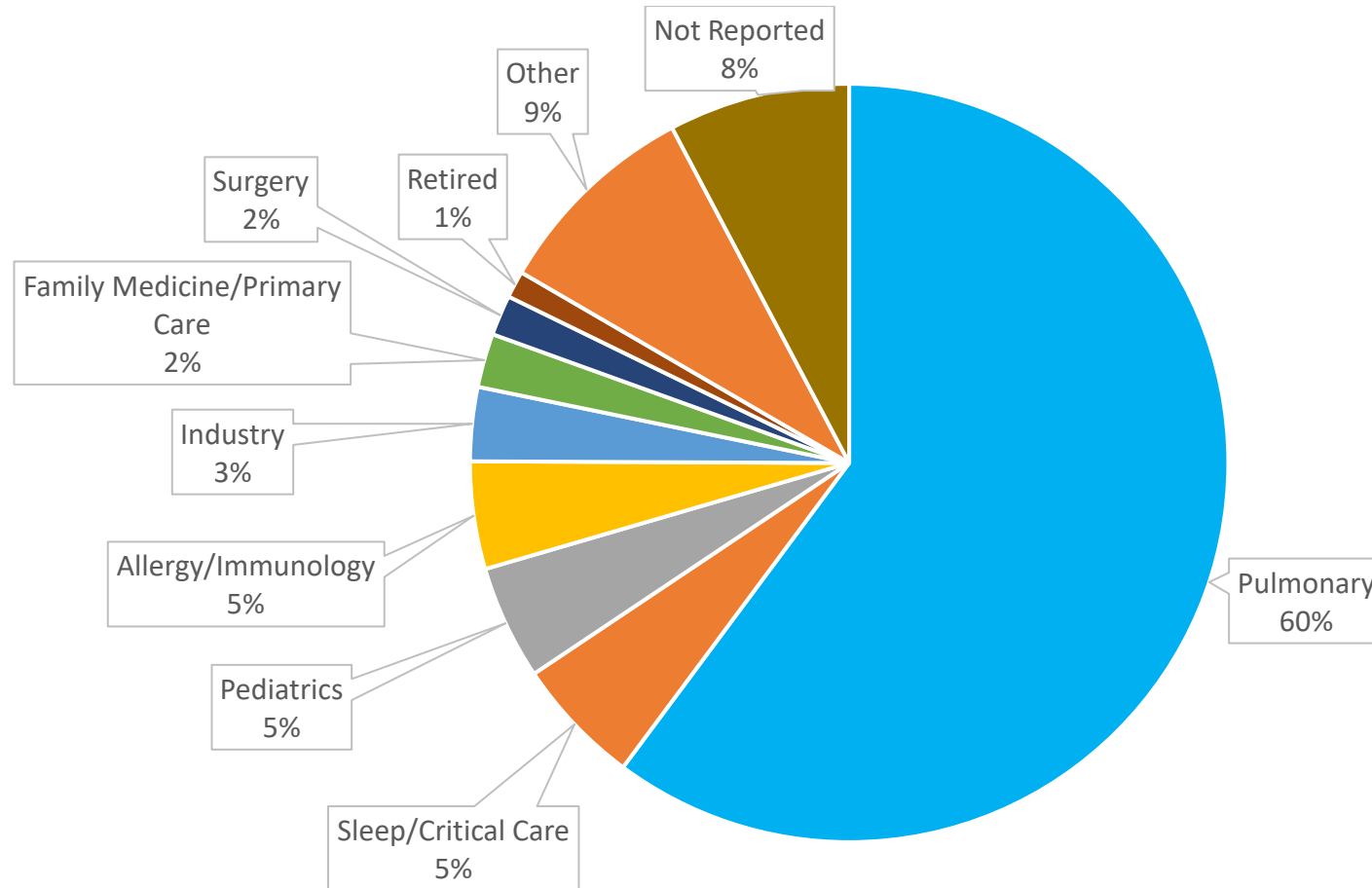
80% of learners were physicians and advanced practice providers

■ MD/DO ■ NP/PA ■ PharmD ■ Other HCP ■ Not Reported

Degree	Total
MD/DO	261
APP	18
PharmD	6
Other	37
Not Reported	27
Total Learners	349

Level (1) Outcomes: Participation (Specialty)

Outcomes Summary – Live Program



Specialty	Total
Pulmonary	210
Sleep/Critical Care	19
Pediatrics	17
Allergy/Immunology	16
Family Medicine/Primary Care	8
Surgery	6
Retired	4
Other	31
Industry	11
Not Reported	27
Total Learners	349

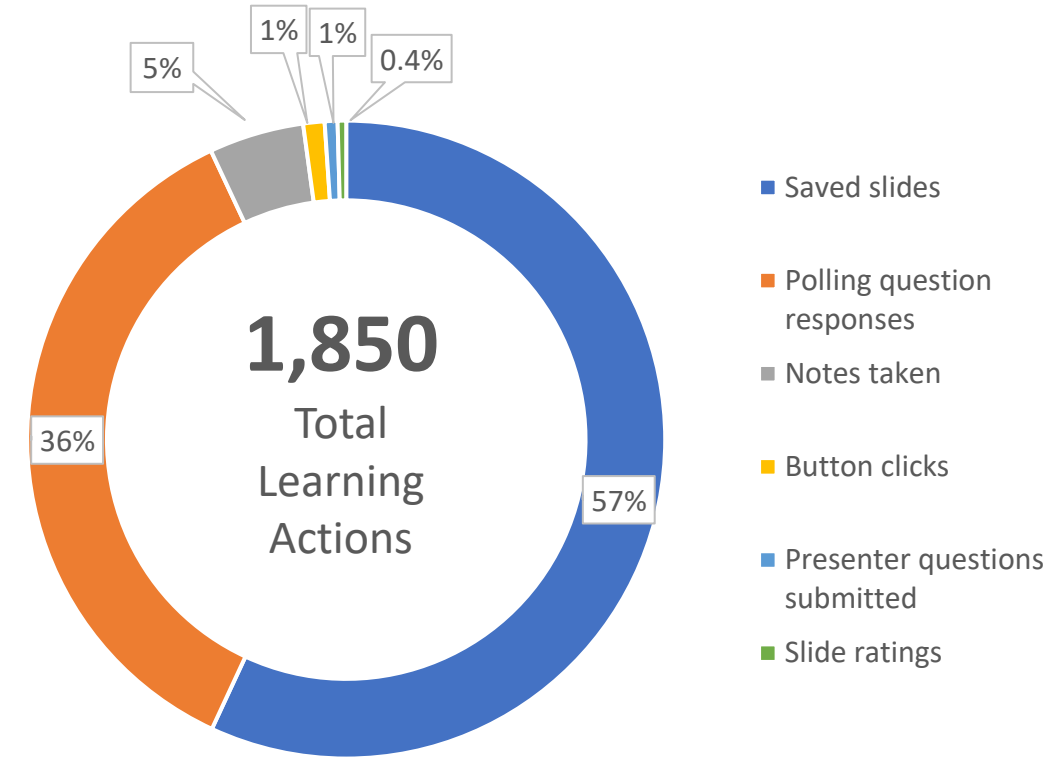
Audience Engagement: Array® Platform

Outcomes Summary – Live Program

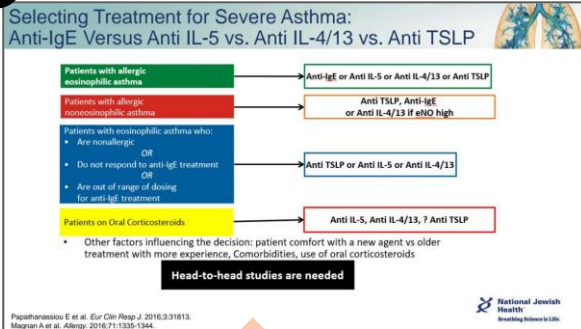
212
learners
logged into
platform

88%
engaged
(saved content,
responded to
polling)

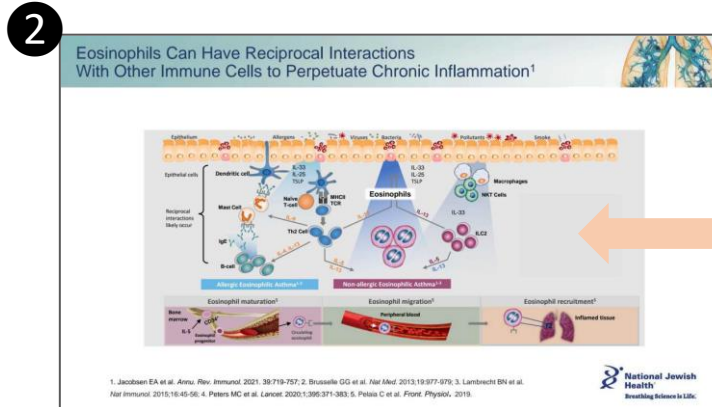
13%
highly engaged
(also asked
questions or
took notes)



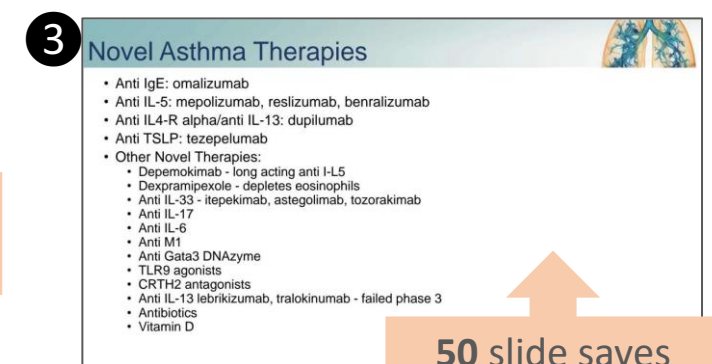
Top 3 most engaging slides



62 slide saves
4 notes taken
1 question asked



46 slide saves
10 notes taken

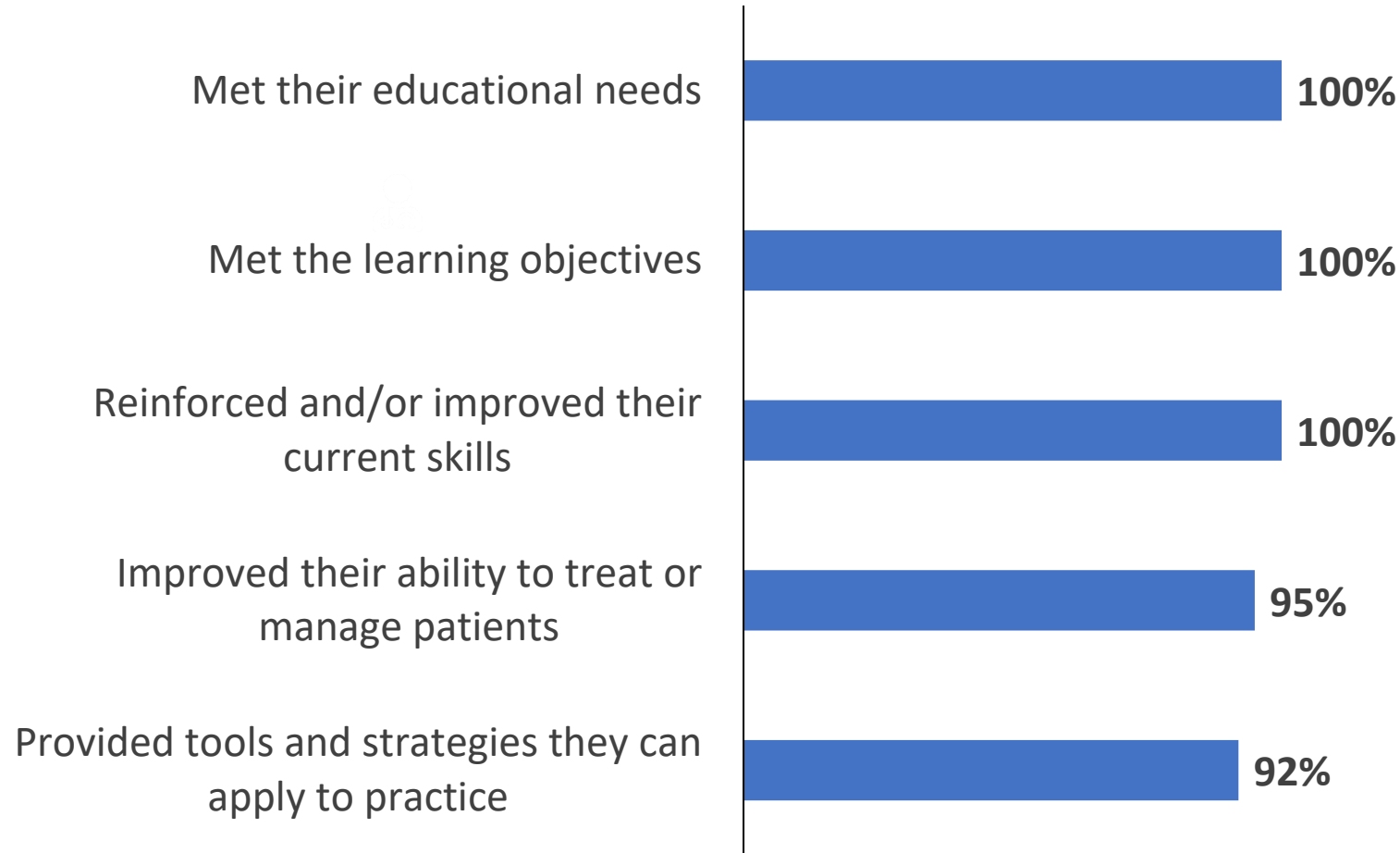


50 slide saves
4 notes taken

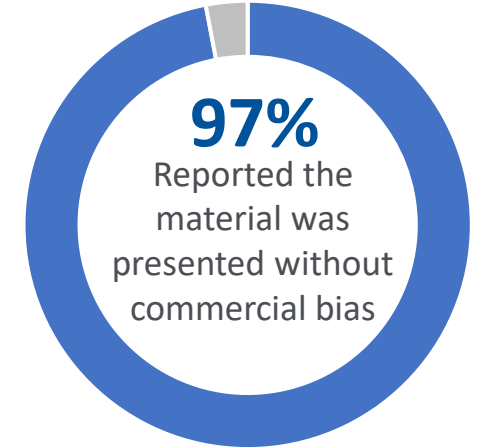
Level (2) Outcomes: Satisfaction

Outcomes Summary – Live Program

Evaluation respondents reported the activity:



N=38

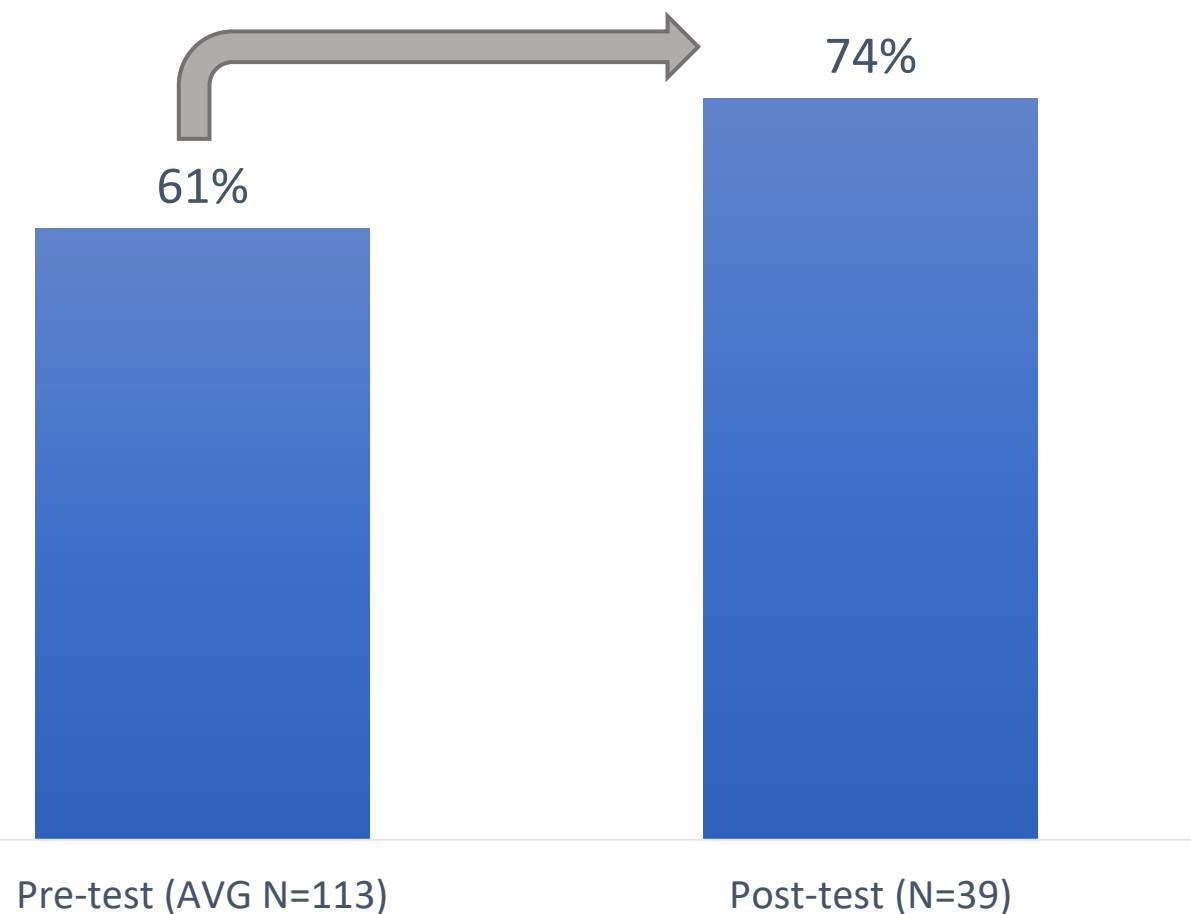


N=38

Level (3&4) Outcomes: Knowledge & Competence

Outcomes Summary – Live Program

Overall Knowledge Gain across Learning Objectives



21% Overall Relative Knowledge Gain



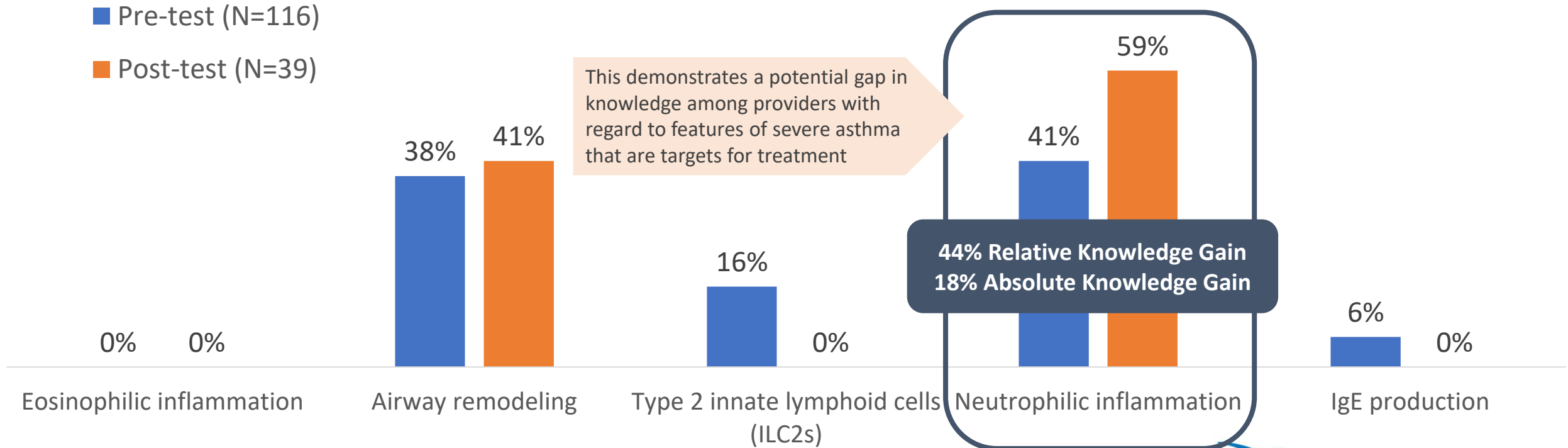
13% Overall Absolute Knowledge Gain

Level (3&4) Outcomes: Knowledge & Competence

Outcomes Summary – Live Program

Learning Objective: Explain the mechanisms of action of biologic therapies for severe asthma and key features of severe asthma that are targets for treatment.

Question 1: Which of the following is NOT a target of biologic therapies for severe asthma?

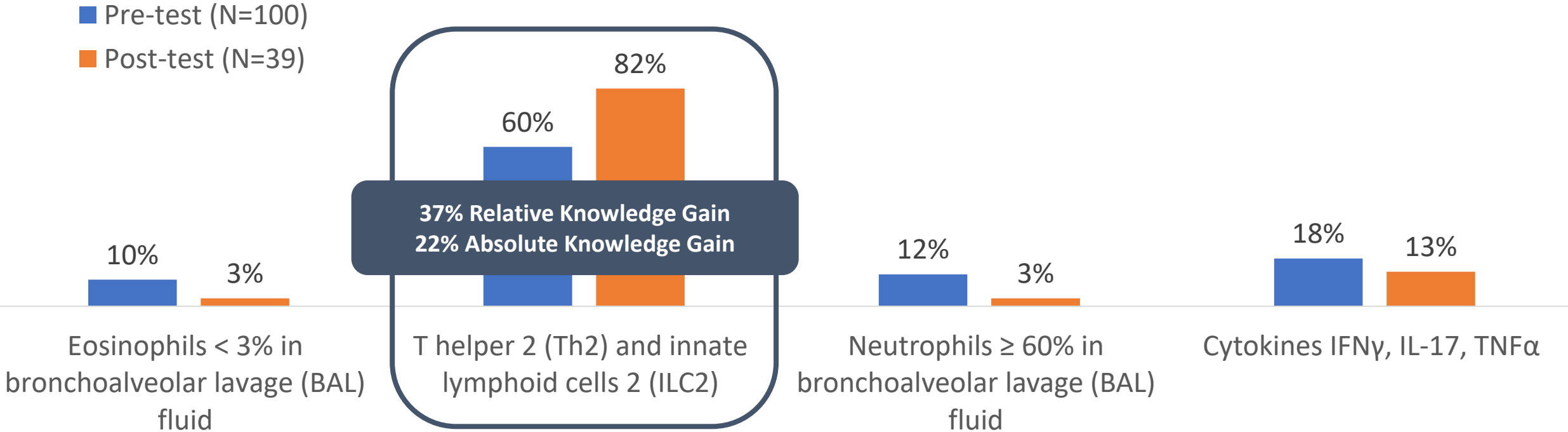


Level (3&4) Outcomes: Knowledge & Competence

Outcomes Summary – Live Program

Learning Objective: Describe the role of the respiratory epithelium in asthma and the relationship to T2 and non-T2 airway inflammation.

Question 2: Type 2 inflammation can be characterized by:

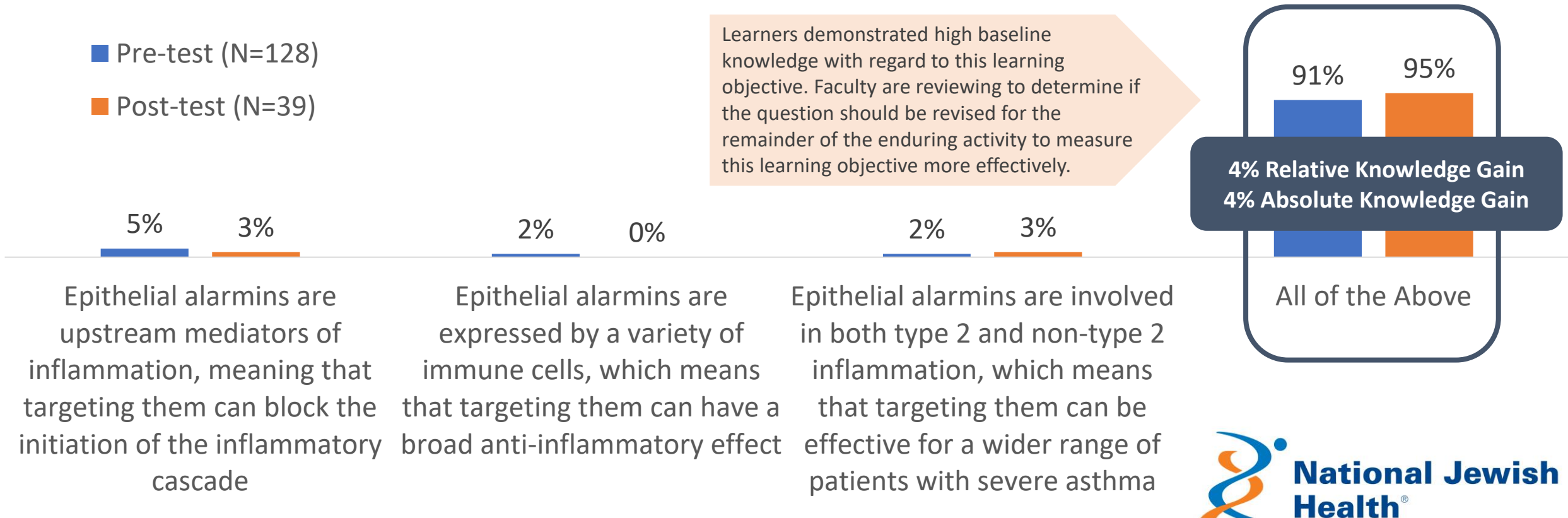


Level (3&4) Outcomes: Knowledge & Competence

Outcomes Summary – Live Program

Learning Objective: Evaluate the emerging data for new and emerging therapies that target the epithelial alarmins.

Question 3: Which of the following is a key advantage of targeting the epithelial alarmins for the treatment of severe asthma?

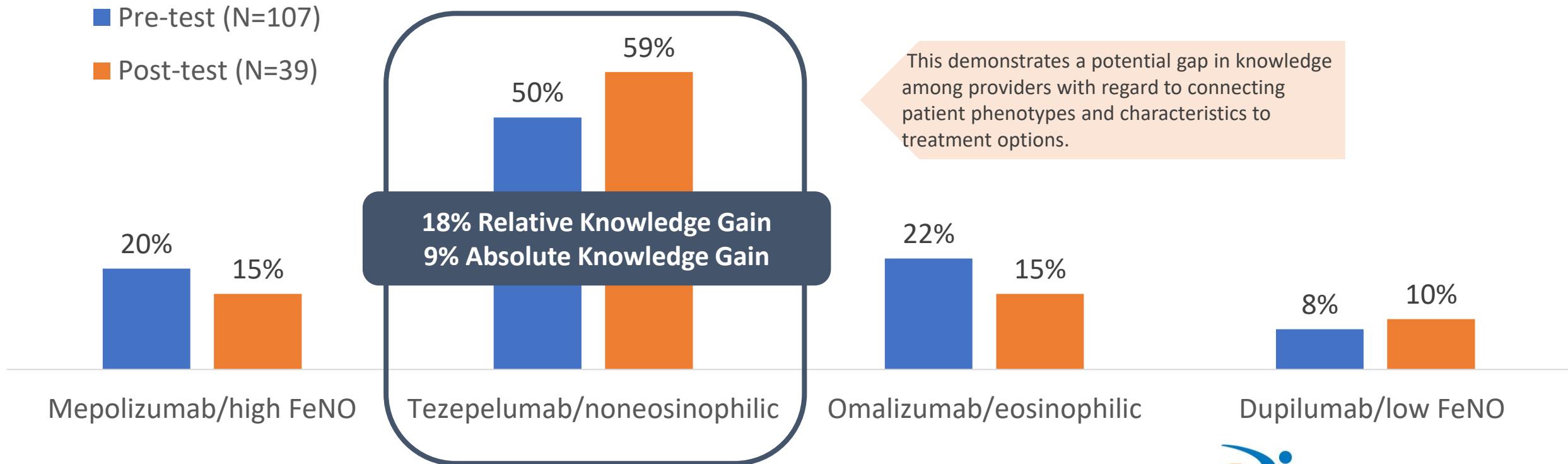


Level (3&4) Outcomes: Knowledge & Competence

Outcomes Summary – Live Program

Learning Objective: Connect clinical characteristics and phenotypes to the targeted treatment.

Question 4: Which of the following treatment options consistently matches to clinical response with the corresponding phenotype?

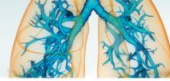


Level (3&4) Outcomes: Interactive Polling

Outcomes Summary – Live Program

Case 1 Polling Question: Which therapy would you choose for this patient?

Patient Case 1



Patient: Dave 27-year-old man

Asthma History:

Early childhood symptoms worsened to age 21
2020 visited ER 4xs, admitted 2xs for flare ups

Current medication:

- High dose ICS/LABA
- SABA
- Intranasal corticosteroids daily
- OCS bursts 4Xs last year
- **FEV₁**: 70%

Bronchodilator reversibility: 14%

Biomarkers of Type 2 Inflammation

- IgE(UI/mL): 225
- Blood EOS (cells/ μ L): 330
- FeNO(ppb): 36

Past Medical History:

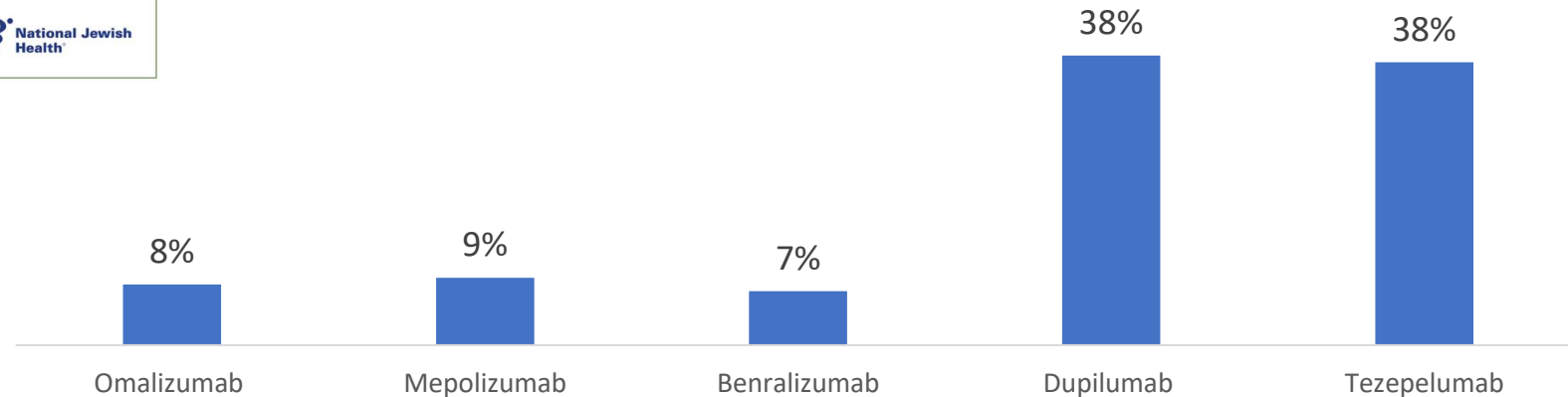
- Non-smoker
- Good inhaler adherence

Additional Test Results:

- Negative serological ABPA testing



Note: Faculty intentionally crafted this question so that all answer choices could be considered correct, and discussed the potential benefits of each option after audience polling.



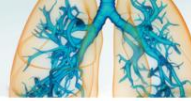
N=112

Level (3&4) Outcomes: Interactive Polling

Outcomes Summary – Live Program

Case 2 Polling Question: Which therapy would you choose for this patient?

Patient Case 2



Patient: Sarah 36-year-old woman

Asthma History:

- Moderate to severe since childhood
- 2 exacerbations in 6 months

Current medication:

- High dose ICS/LABA
- SABA PRN
- LTRA ongoing at 8 months
- Intranasal corticosteroids daily

FEV₁: 60%

Bronchodilator reversibility: 20%

Biomarkers of Type 2 Inflammation

- IgE(UI/mL): 130
- Blood EOS (cells/ μ L): 185
- FeNO(ppb): 17

Past Medical History:

- Sinus symptoms with non-purulent nasal discharge and fullness.

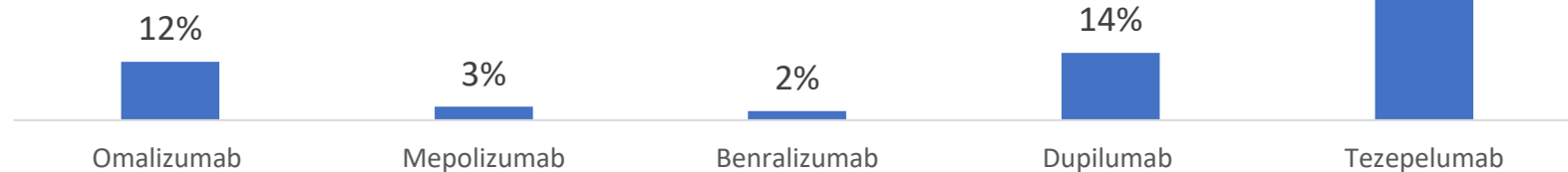
Additional Test Results:

- Skin prick testing
+ragweed, + grass pollens



Note: Faculty intentionally crafted this question so that all answer choices could be considered correct, and discussed the potential benefits of each option after audience polling.

Providers demonstrated increasing confidence in choosing new biologic options for patients with severe asthma.

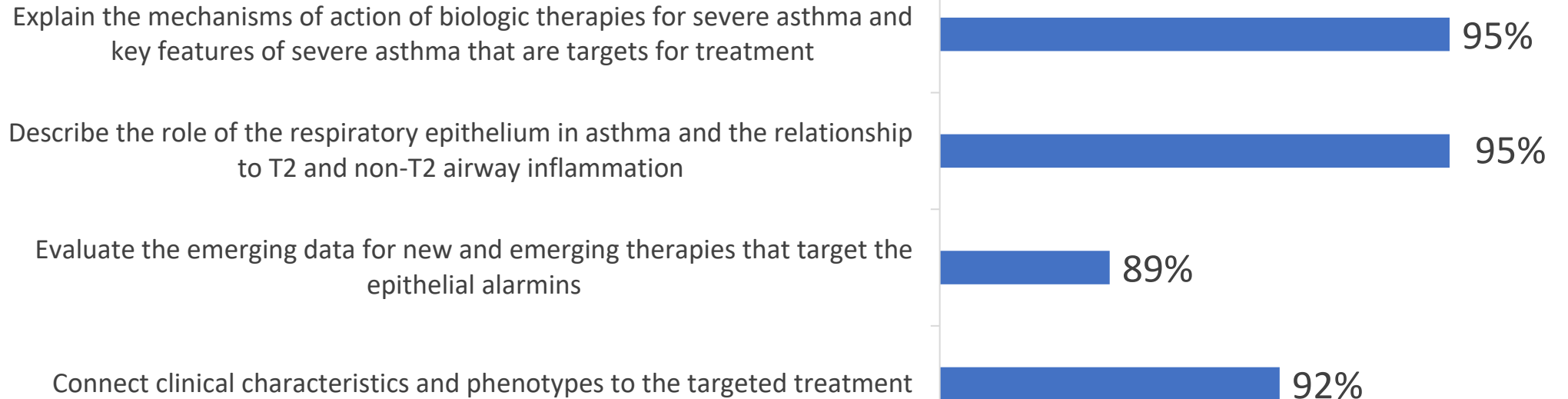


N=105

Level (4) Outcomes: Competence

Outcomes Summary – Live Program

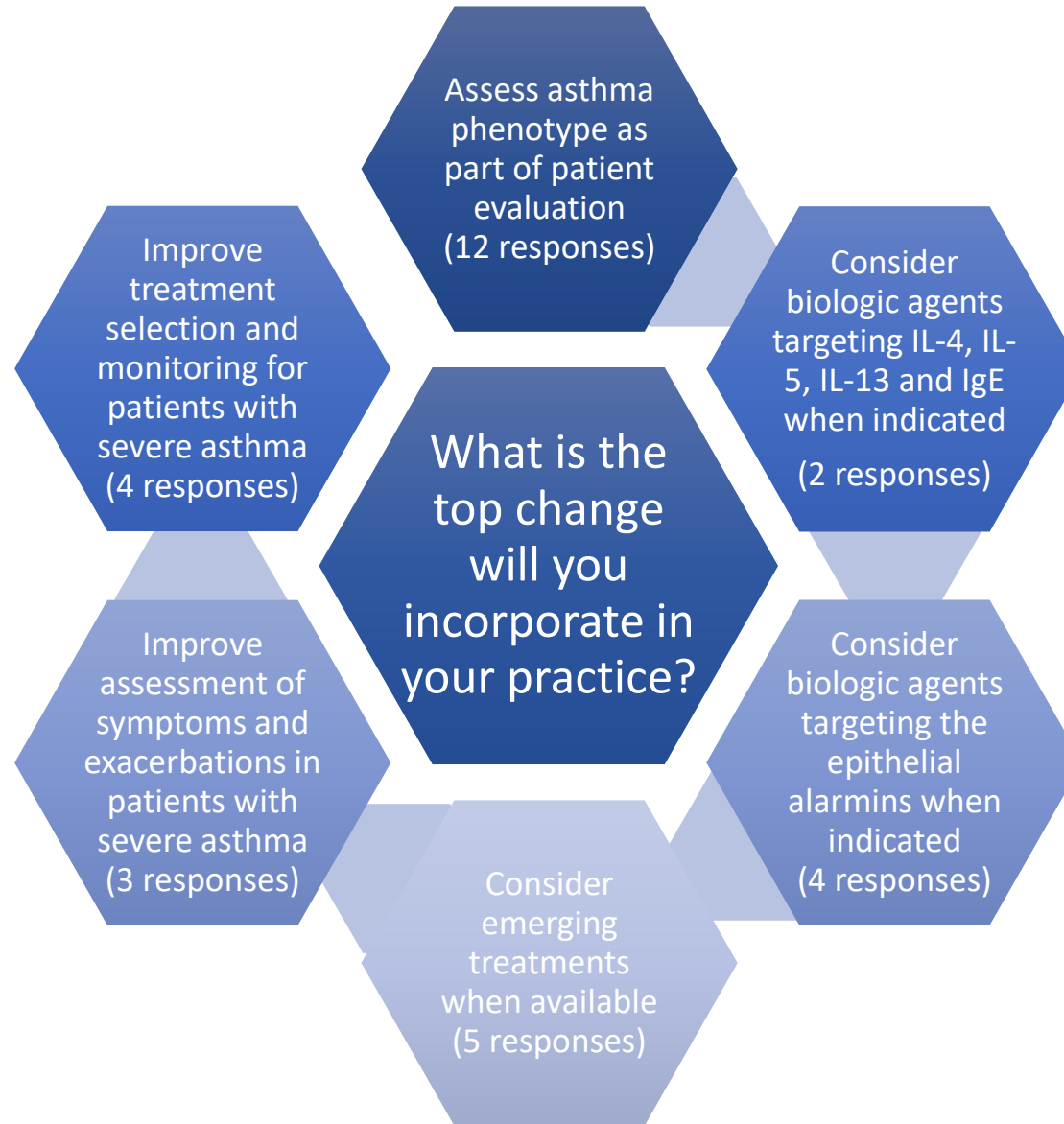
**Evaluation respondents reported their confidence as it relates to the learning objectives after the activity
(Very confident – confident)**



N=38

Level (4) Outcomes: Competence

Outcomes Summary – Live Program



N=30

89%

N=36

Evaluation respondents intend to make changes in practice as a result of the activity

Evaluation Survey Results

Outcomes Summary – Live Program



Key Takeaways

- Biologics aren't scary
- Biologics paired with the correct inhaler and proper technique is the key to controlling exacerbations
- Confirmed what I am doing in practice is best practice
- Multiple agents exist that can be potentially helpful based on phenotype of patient
- New treatments offer help to those that were poorly controlled
- Practice evidence based medication
- Severe asthma phenotyping
- Treatment of T2 low asthma
- Better understanding of phenotypes of asthma



Barriers the Activity will Help to Address

- Asthma phenotype and addressing exacerbation
- Cost
- Education
- Need for additional therapy above ICS
- Prescribing biologics
- Reasons to push through pre-authorization

Future Topics

- Choosing biologics
- Combination of biologics
- New targets and medications
- Longer term use of biologics
- How to navigate adverse events of biologics
- Mucus plugging as a difficult-to-treat clinical problem

Level (5) Outcomes: Performance

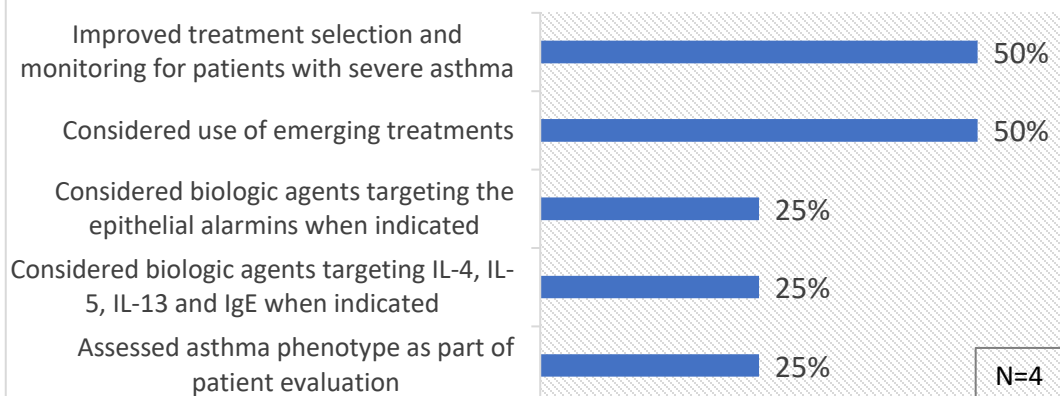
Outcomes Summary – Live Program

45-Day Follow-up Survey

100% of follow-up survey respondents stated they have made changes in practice based on what they learned in the activity.

[N=4]

What changes have you incorporated into practice as a result of this activity?



Note: Respondents could report more than one change made in practice.

75%

Respondents reported the activity provided new ideas or information they have used in practice

25%

Respondents reported the activity reinforced ideas or information they had previously learned about severe asthma

100%

Respondents reported their patients have benefited from the information learned in the activity

N=4

Level (5) Outcomes: Performance

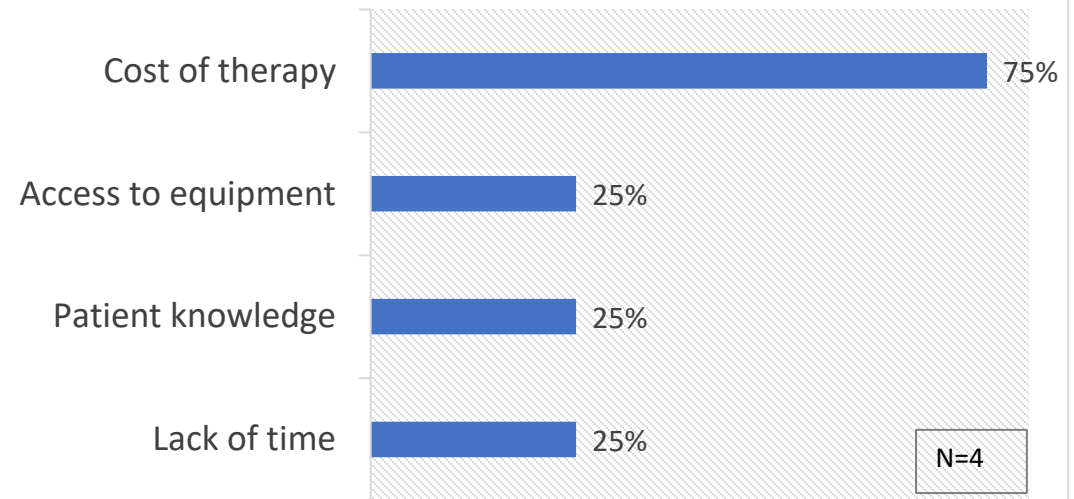
Outcomes Summary – Live Program

100%

N=4

The activity provided information, education, tools, or resources to address barriers encountered in practice.

What barriers have you encountered in practice that may impact optimal patient care?



Note: Respondents could report more than one barrier encountered in practice.

Accreditation Details

Outcomes Summary – Live and Online Program

National Jewish Health is accredited with Commendation by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The NJH Office of Professional Education produced and accredited this program and adhered to the updated ACCME guidelines.

National Jewish Health designates the live and enduring activities for a maximum of 1.0 *AMA PRA Category 1 Credit*™.

