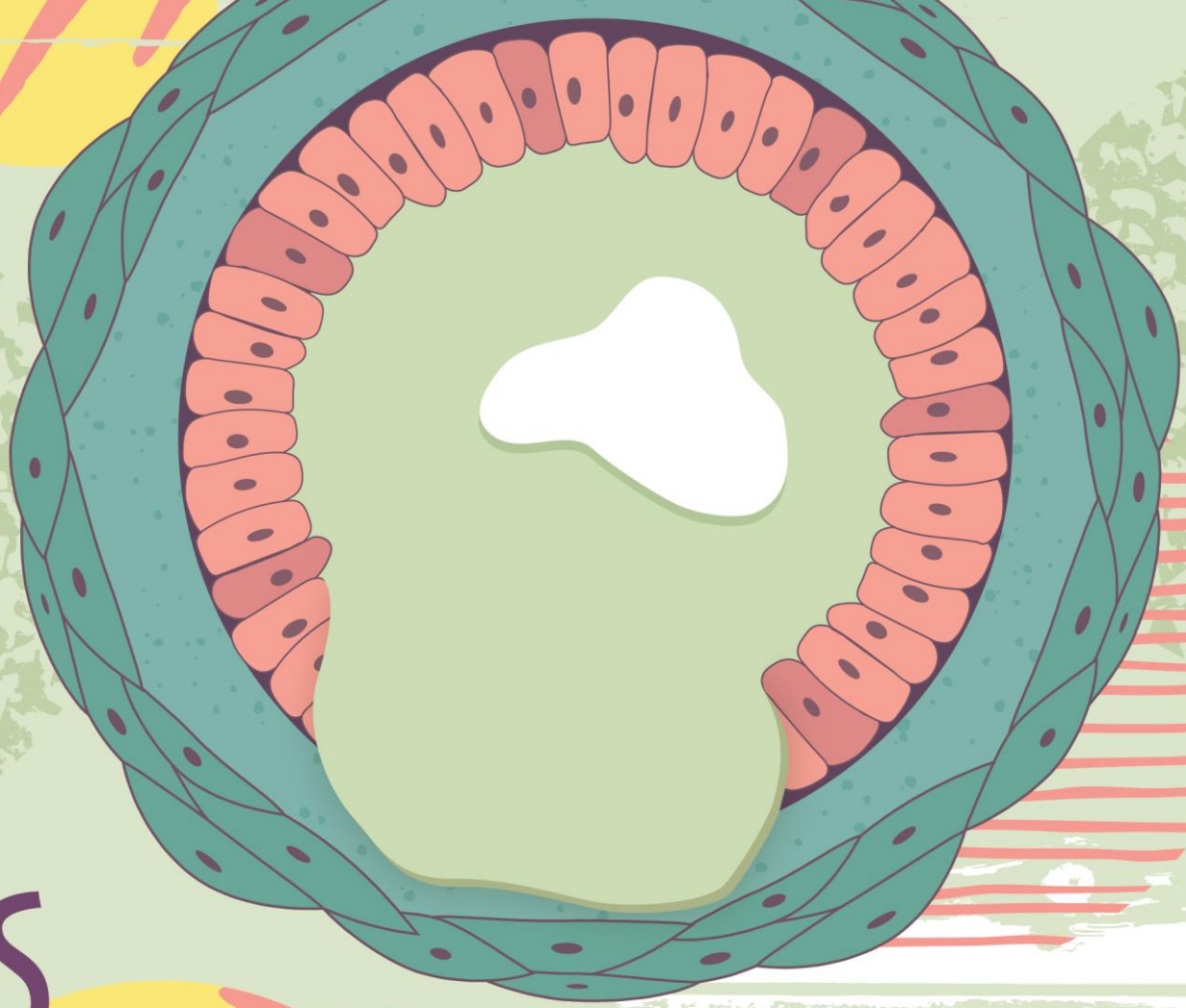

Keeping Pace with Bronchiectasis

Early Diagnosis, Management, and Emerging Treatments

Final Outcomes Summary
Live Symposium and Online Enduring Outcomes (11/29/23-11/29/24)
Grant ID: 77669413

Table of Contents

Final Outcomes Summary – Live Symposium and Online Enduring

Executive Summary

Final Outcomes Summary – Live Symposium and Online Enduring

Charles Daley, MD
Chief, Division of Mycobacterial and Respiratory Infections
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University of Colorado School of Medicine, and
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Division of Pulmonary, Critical Care & Sleep Medicine
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Denver, Colorado

Pamela J. McShane, MD
Professor of Medicine
Division of Pulmonology & Critical Care
University of Texas Health East Science Center
Tyler, Texas

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 Medscape. The program focuses on the complexities of non-cystic fibrosis bronchiectasis, best practices for evaluation, and current and emerging treatments. Special features include whiteboard animations to illustrate inflammatory processes, the role of neutrophils, and airway clearance; 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

1. Review bronchiectasis burden, etiologies, and risk factors.
2. Apply best practices for early diagnosis of bronchiectasis.
3. Identify the role of neutrophilic inflammation in patients with bronchiectasis.
4. Select best options for management of bronchiectasis.

Target Audience & Accreditation

Target Audience:
Live symposium: Pulmonologists (attendees of CHEST)
Enduring activity: Primary care physicians, pulmonologists, radiologists and APPs in those specialties

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

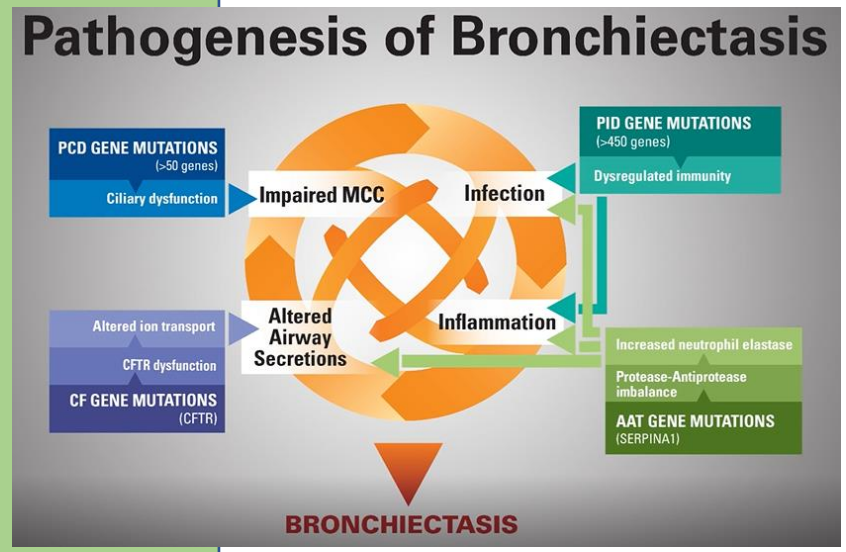
Live activity: October 8, 2023
Hawai'i Convention Center, 1801 Kalakaua Ave, Honolulu, HI 96815
Enduring activity:
November 29, 2023 – November 29, 2024
https://www.medscape.org/viewarticle/998342

Program Features

Final Outcomes Summary – Live Symposium and Online Enduring

National Jewish Health

Animations



Roundtable Q&A

87% of evaluation respondents reported the animations increased their understanding of bronchiectasis pathophysiology and treatment. (N= 2551)

Case scenarios with interactive polling

Patient case scenario

Patient: 69-year-old female

Chief Complaint: "I've had a productive cough for years"

- HPI: 69 year-old, life-long nonsmoking woman with a cough for the past 20 years.
  - Her cough is productive of yellow sputum
  - At times, the sputum is blood-tinged
  - She has developed progressive shortness of breath with exertion.
  - She has stopped going to public places because her cough embarrasses her
  - She denies any weight loss, fevers, chills or night sweats.

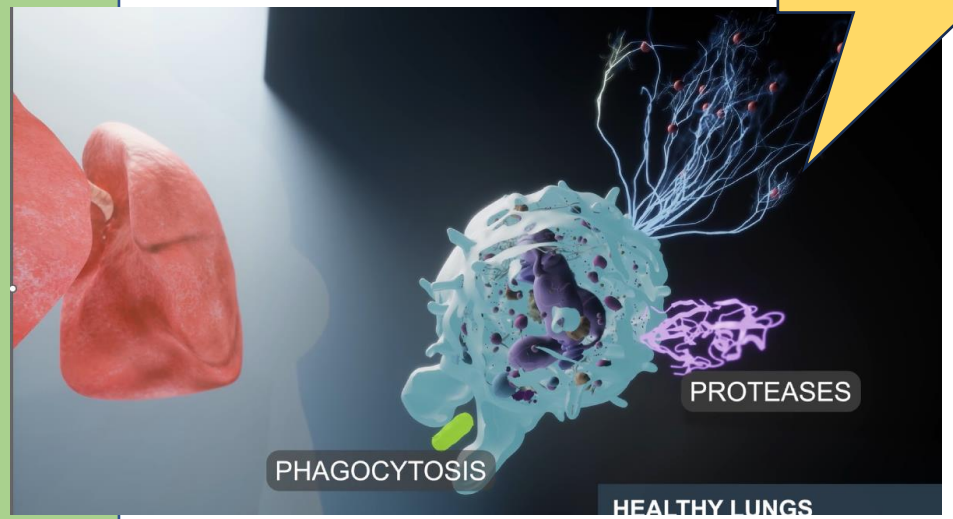
National Jewish Health
Breathing Science is Life.

Audience Engagement via the Array® Platform (Live Symposium)

Patient Case Question 1

What evaluation should be considered next?

a) CTA chest scan
b) Sputum induction for culture
c) Lung biopsy
d) Exhaled NO testing



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

https://bit.ly/bronch

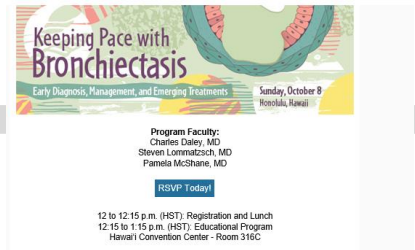
National Jewish Health
Breathing Science is Life.

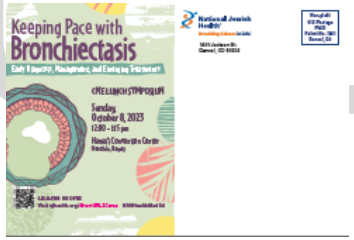
Audience Generation

Final Outcomes Summary – Live Symposium and Online Enduring

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 National Jewish Health database and Medscape Database





Brochure mailed to CHEST registrants

Dedicated landing page on National Jewish Health website & Medscape Page

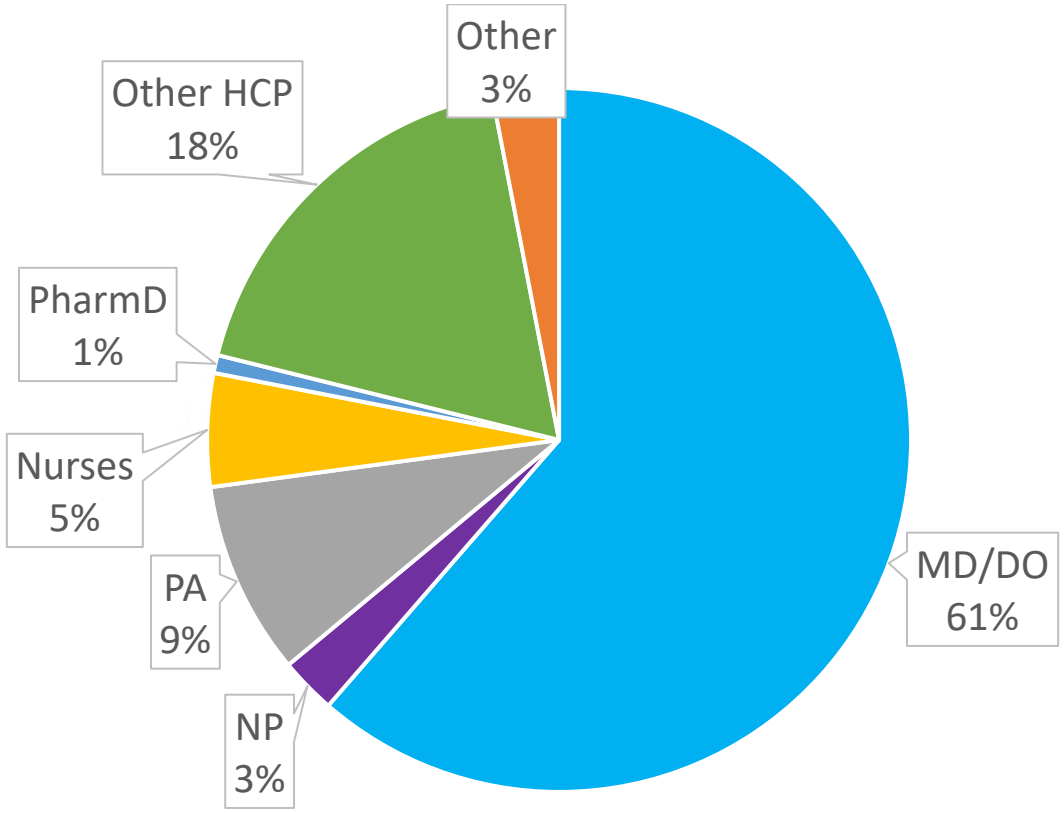
Digital and print ads on CHEST website and Welcome Back Edition magazine

Featured Industry Event Listing on CHESTDailyNews.org

Social media ads and posts

Overall Program Impact

Final Outcomes Summary – Live Symposium and Online Enduring



MD/DO=1712
NP=72
PA=248
Nurses=145
PharmD=23
Medical Student=45
Other HCP=504
Other=85

Total=2834 Completers
(Live and Online Activities)

"Excellent presentation, nice to see the advances being made in this horrific condition!"
-Online Enduring Learner

74% of live learners (N=348) were in the target audience *(pulmonologists)*
84% of physician learners in the online enduring program (N=6191) were in the target audience* *(pulmonologists, radiologists, and primary care)*

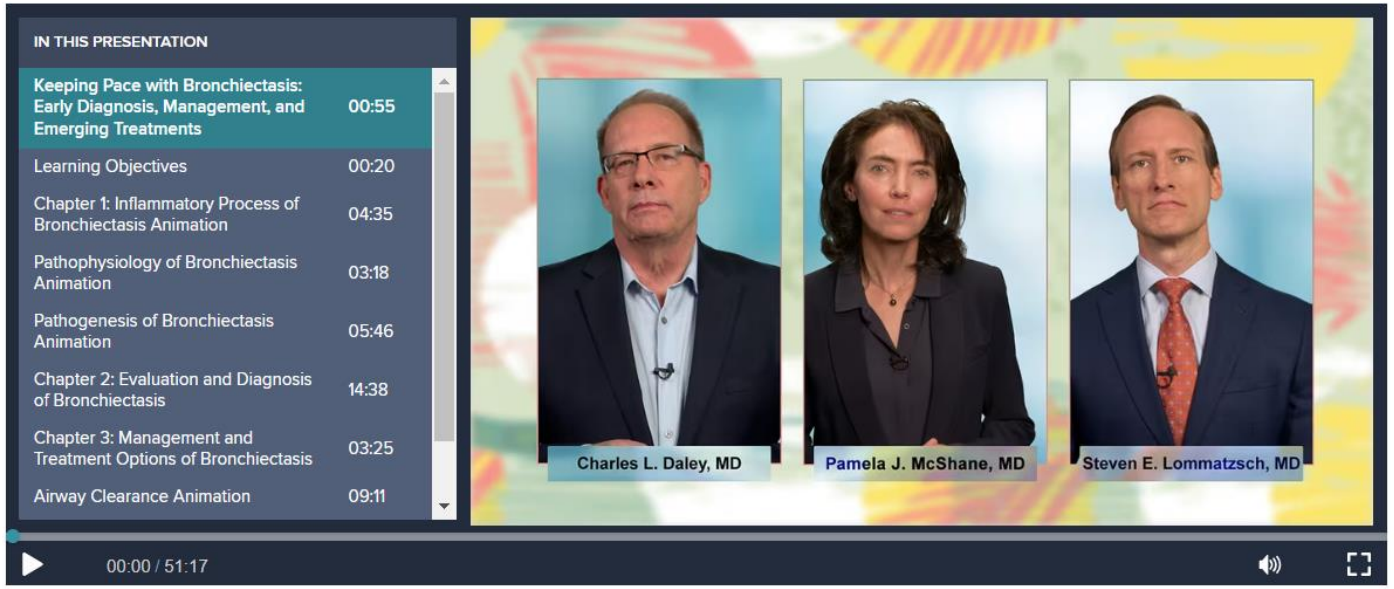
**Medscape only providers a breakdown of physician learners*

	Learner Guarantee	Learner Actuals
Online Enduring	3,000	9,723
Live Symposium	150	348
Total	**3,150**	**10,071**

Online Enduring Program

Final Outcomes Summary – Online Enduring

This CME activity was developed to be distributed on Medscape.org. This program is a multimedia, online, enduring activity with video lecture, narrated whiteboard animations, and Q&A led by expert pulmonologists.



National Jewish Health

This activity is provided by National Jewish Health.

EARN CREDIT >

Download Slides

3

Launched 11/29/23

https://www.medscape.org/viewarticle/998342

Learner Definitions: Online Enduring Program

Final Outcomes Summary – Online Enduring

National Jewish Health

Platform	Learner Definition	Learner Guarantees	Learner Actuals	Test-taker Definition	Test-taker Guarantees	Test-taker Actuals	Certificate Earner/ Completer Definition	Certificate Earner/ Completer Actuals
Medscape (data from 11/30/2023 - 08/31/2024)	**Progressed past front-matter (unique)**	**3,000 physicians**	**6,191 physicians**	**Completed at least one question of the pre-test**	**400 physicians**	**1,879 physicians**	**Completed post-test and evaluation and claimed credit on Medscape platform**	**1,437 physicians**
TOTAL			**9,723 Total Learners**			**3,108 Total test-takers**		**2,486 Total Certificates/ Completers**

More than doubled physician **learner guarantees** and exceeded physician **test-taker guarantees by 1,479**!

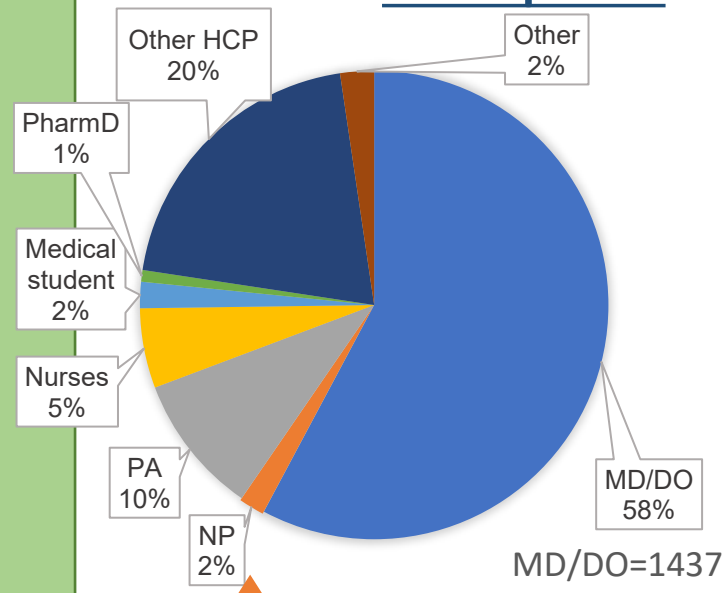
Of **6,191** physician learners, **84%** are from the target audience of primary care physicians, radiologists and pulmonologists!

Quantitative Educational Impact Summary

Final Outcomes Summary – Online Enduring

National Jewish Health

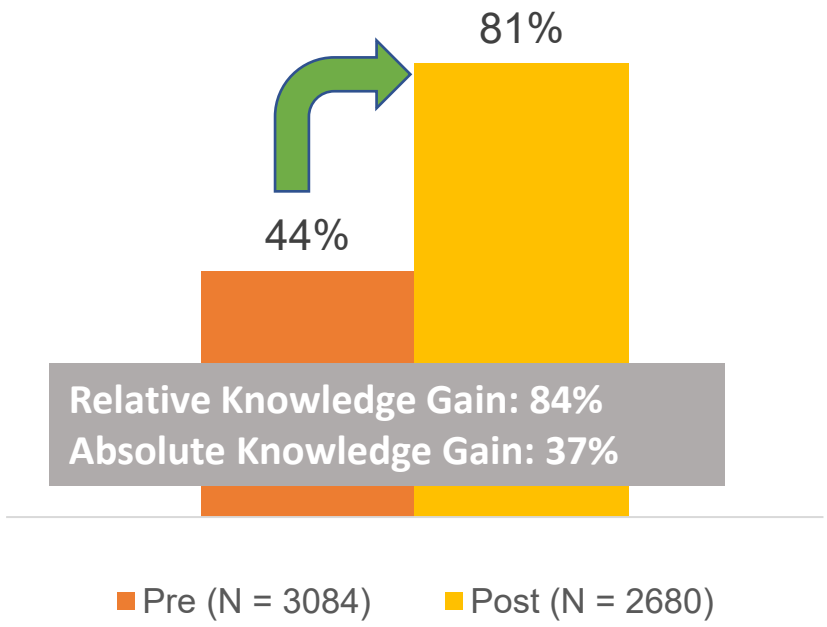
Participation



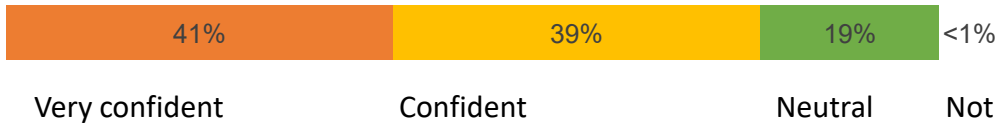
685,776 Potential patient visits impacted

MD/DO=1437
NP=44
PA=241
Nurse=137
Medical student=45
PharmD=20
Other HCP=504
Other=58
Total=2486 Completers

Learning Gain Across Objectives

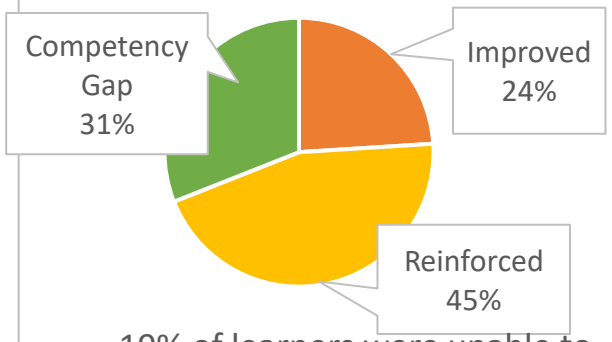


Confidence @ Post-Test

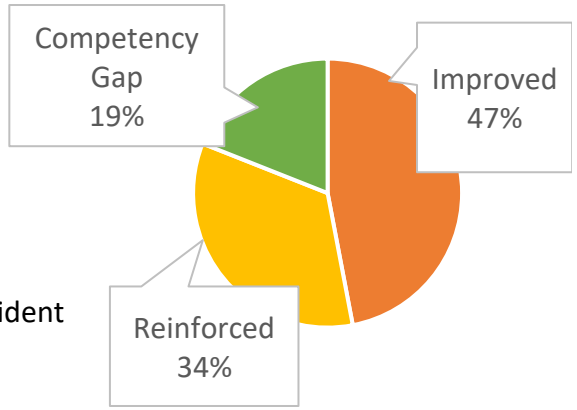


Persistent Learning Gaps/Needs

31% of learners of learners were unable to identify risk factors and etiologies for bronchiectasis at post-test



19% of learners were unable to select the best option for for management of bronchiectasis.



Qualitative Educational Impact Summary

Final Outcomes Summary – Online Enduring

National Jewish Health®

Patient Impact

2500

Evaluation respondents

Who see

14,287

Bronchiectasis Patients Weekly

Which translates to

685,776

Patient Visits Potentially Impacted Annually*

**Refers to total patient visits, not unique patients.*

Educational Impact

Knowledge and Competence Change by Learning Objective (N=2680)

✓ **53%** relative knowledge gain seen from learners in reviewing bronchiectasis burden, etiologies, and risk factors.

✓ **64%** relative knowledge gain seen from learners in applying best practices for early diagnosis of bronchiectasis.

✓ **96%** relative knowledge gain seen from learners in identifying the role of neutrophilic inflammation in patients with bronchiectasis.

✓ **138%** relative knowledge gain seen from learners in selecting best options for management of bronchiectasis.

Practice Change

92%

Reported intent to change their practice [N=2157]

85%

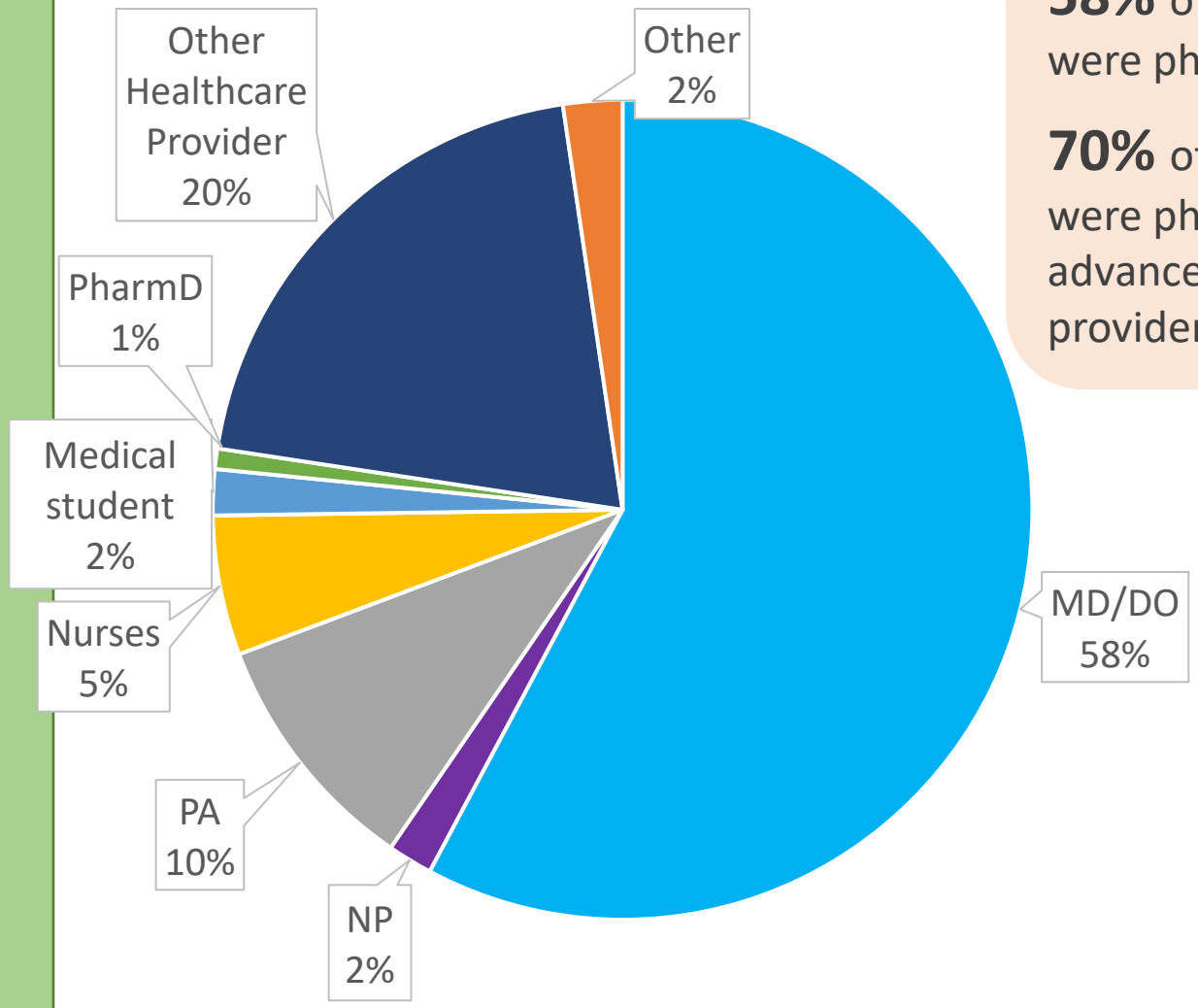
Reported the activity improved their ability to treat or manage their patients [N=2500]

90%

Indicated the activity addressed strategies for overcoming barriers to optimal patient care [N=2500]

Level (1) Outcomes: Participation (Degree)

Final Outcomes Summary – Online Enduring



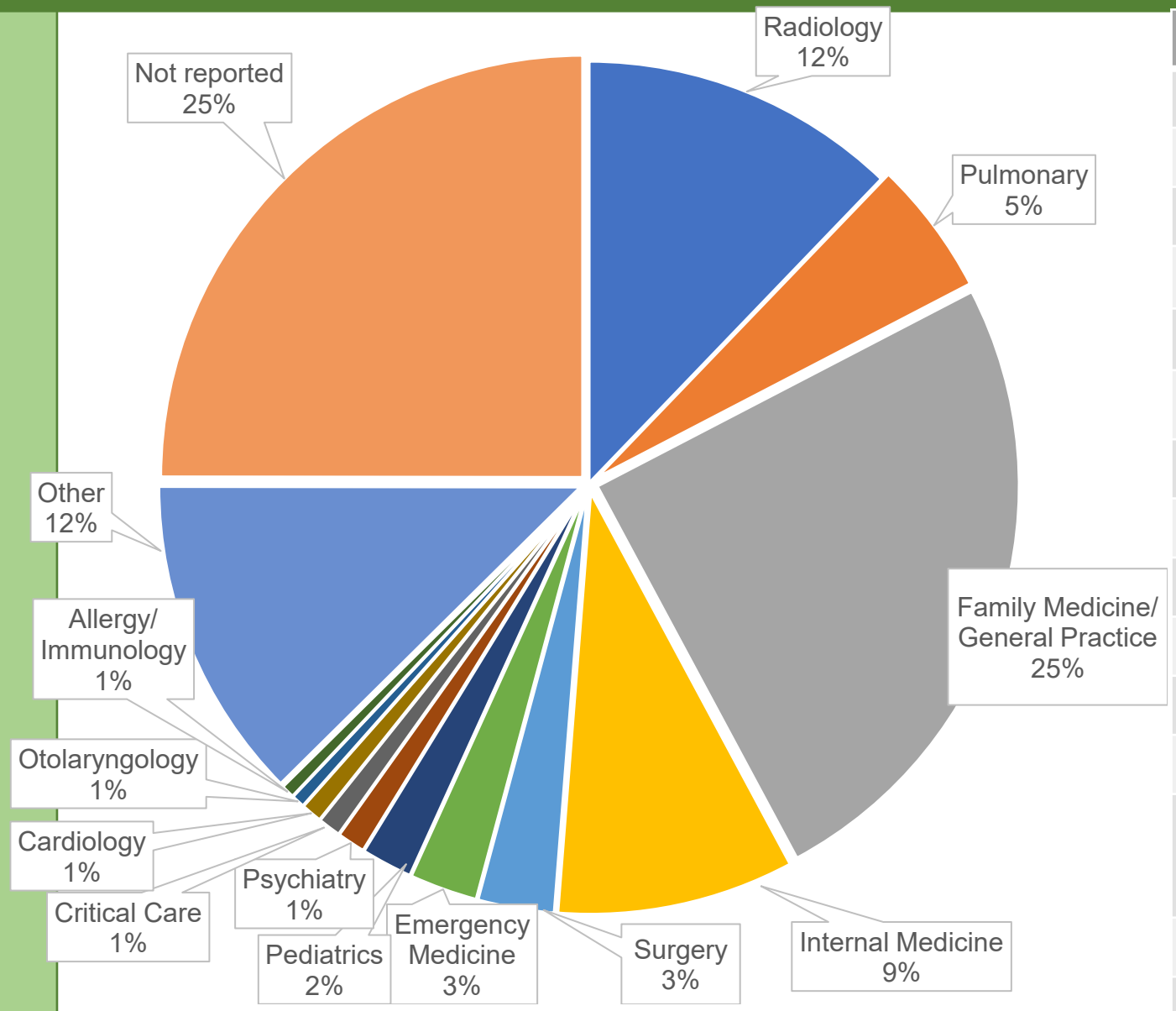
58% of completers were physicians

70% of completers were physicians and advanced practice providers

Degree	Total
MD/DO	1437
NP	44
PA	241
Nurses	137
Medical Student	45
PharmD	20
Other Healthcare Provider	504
Other	58
Total Completers	**2486**

Level (1) Outcomes: Participation (Specialty)

Final Outcomes Summary – Online Enduring



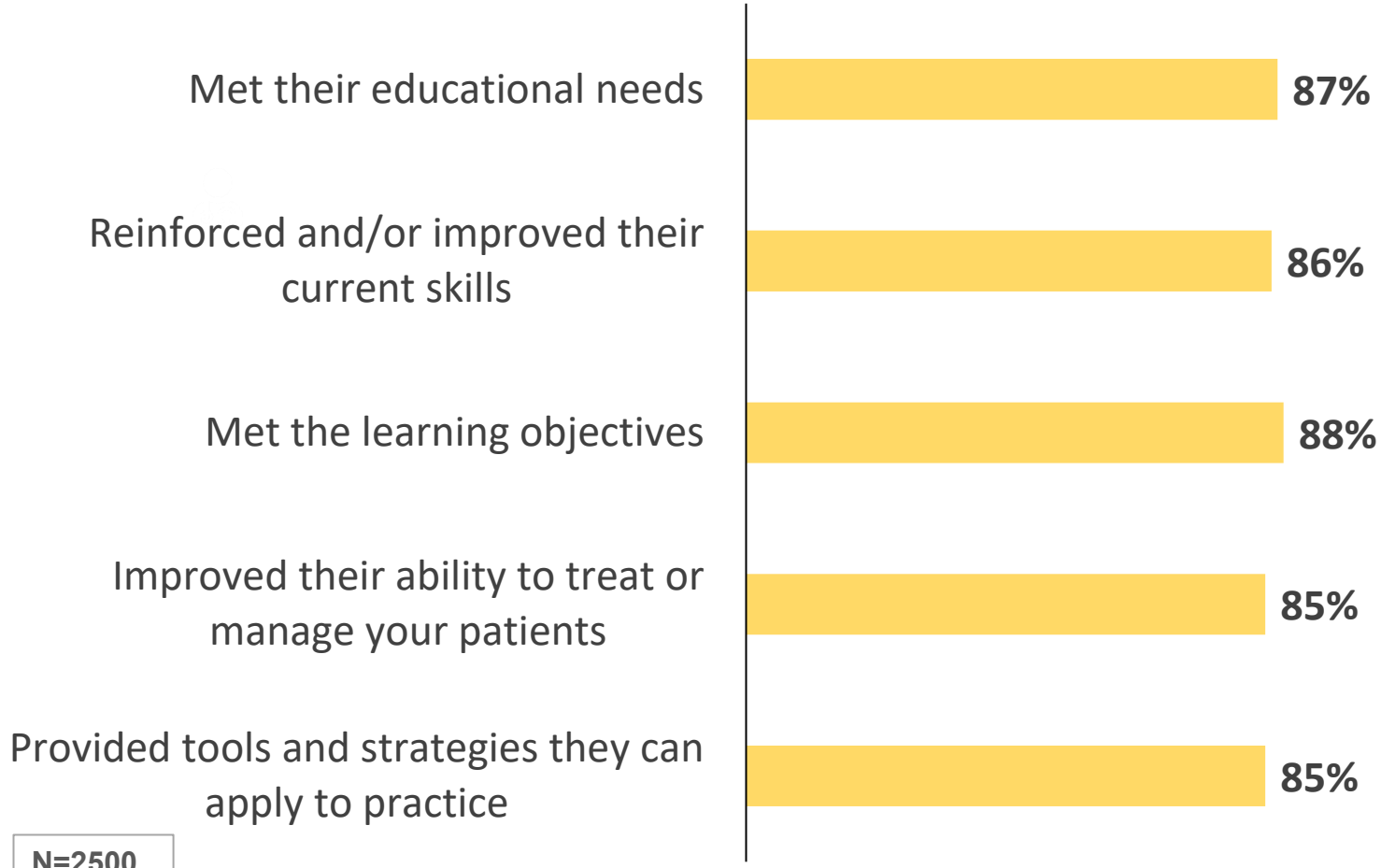
Degree	Total
Radiology	303
Pulmonary	129
Family/General Medicine	616
Internal Medicine	226
Surgery	73
Emergency Medicine	65
Pediatrics	49
Psychiatry/Mental Health	27
Critical Care	22
Cardiology	20
Otolaryngology	13
Allergy/Immunology	13
Other *(Gastroenterology, Nephrology, Neurology, Infectious Disease, Oncology, Sleep Medicine)*	309
Not reported	621
Total Completers	**2486**

Level (2) Outcomes: Satisfaction

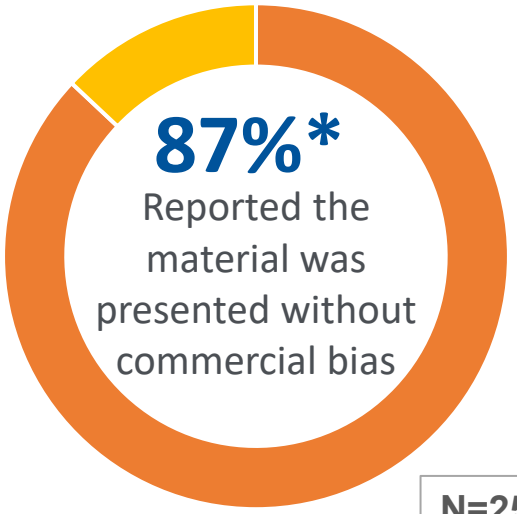
Final Outcomes Summary – Online Enduring

National Jewish Health

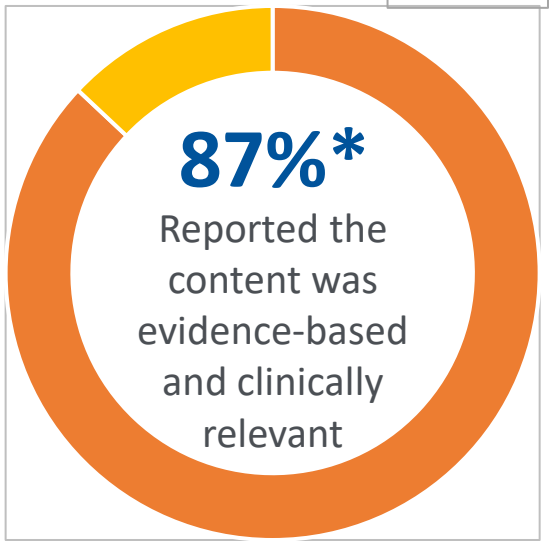
Evaluation Respondents reported they "Strongly Agree" or "Agree" that the activity:



N=2500



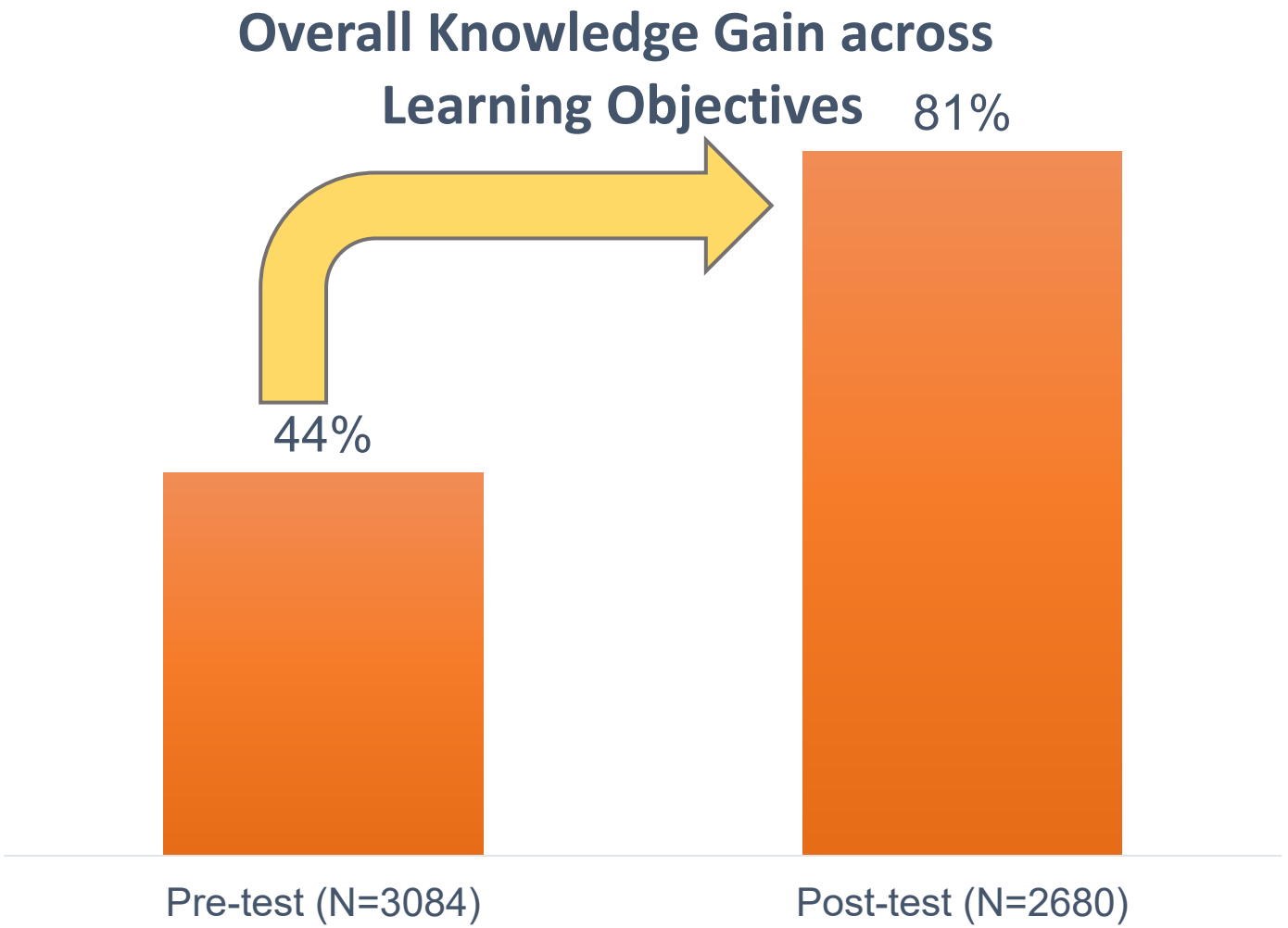
N=2500



**An additional 12% reported they were neutral.*

Level (3 & 4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Online Enduring



84% Overall Relative Knowledge Gain

37% Overall Absolute Knowledge Gain

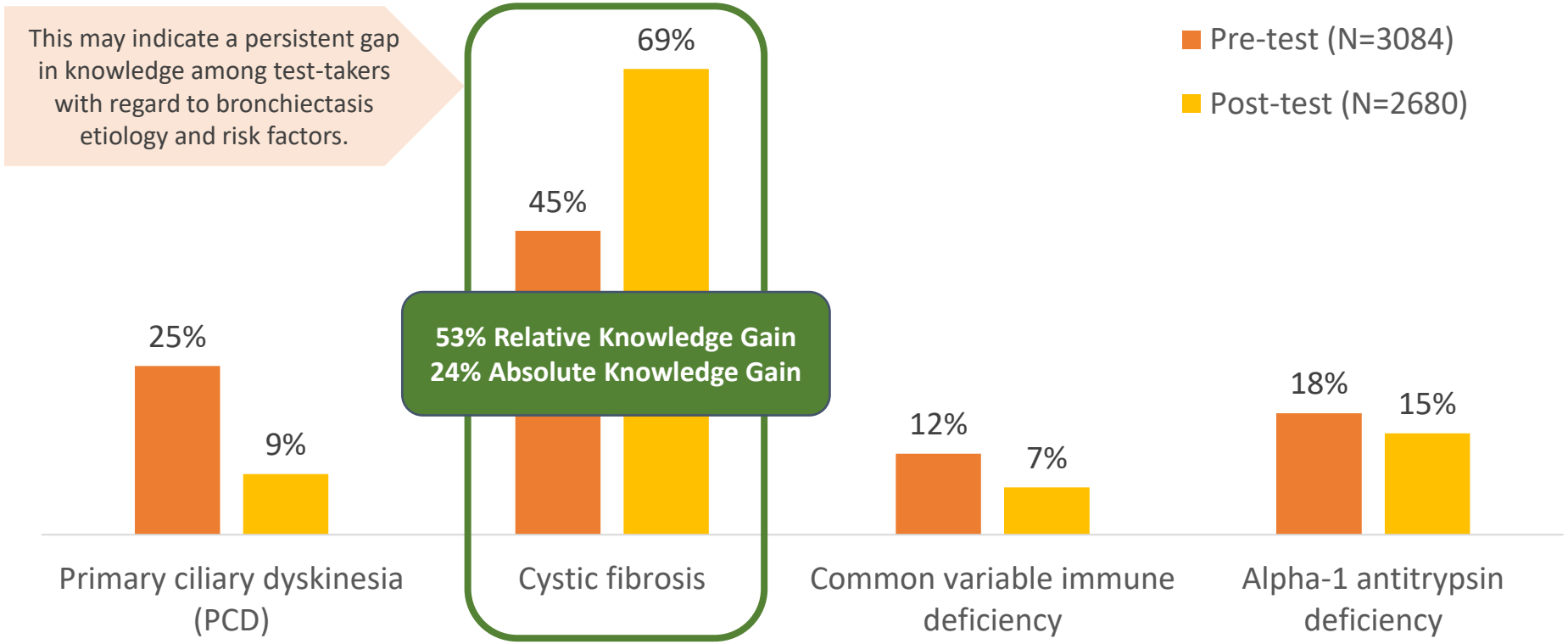
Level (3 & 4) Outcomes: Knowledge & Competence

National Jewish Health

Final Outcomes Summary – Online Enduring

Learning Objective: *Review bronchiectasis burden, etiologies, and risk factors.*

Question 1: Which of the following typically leads to an upper lobe predominant bronchiectasis disorder?



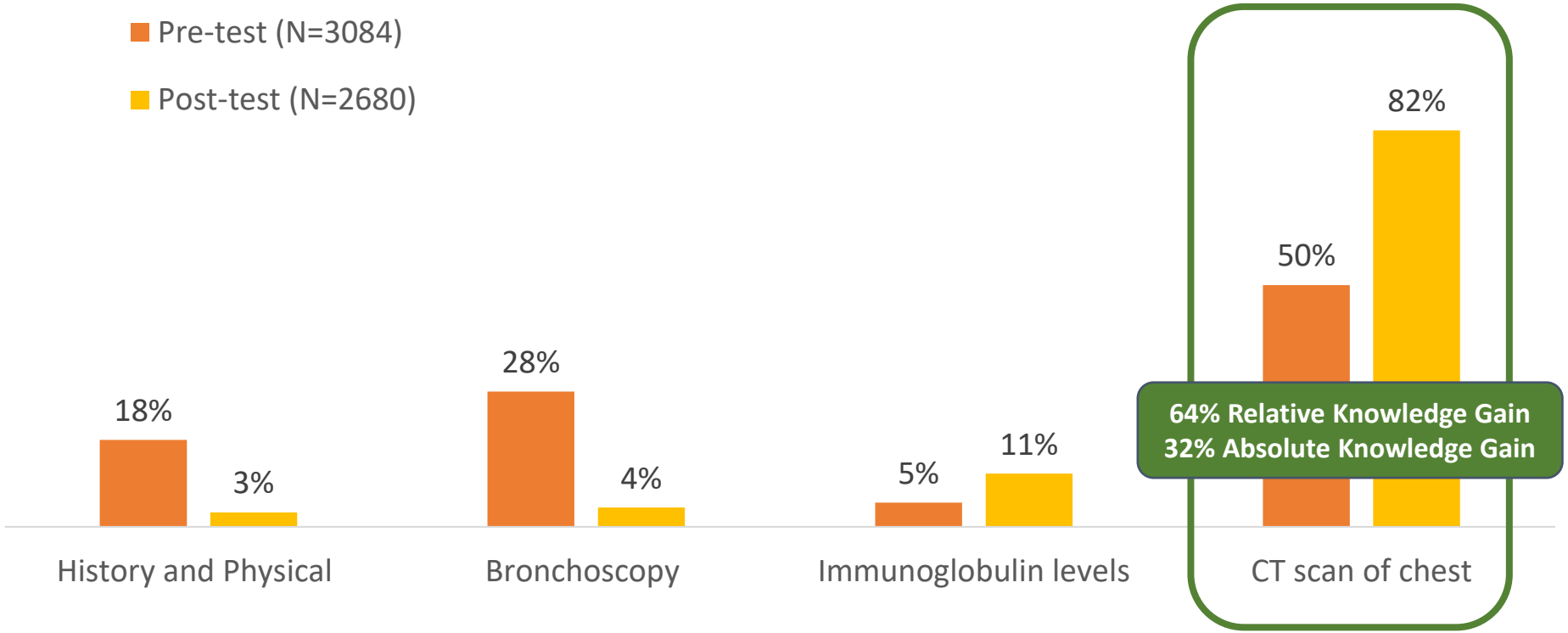
Level (3 & 4) Outcomes: Knowledge & Competence

National Jewish Health

Final Outcomes Summary – Online Enduring

Learning Objective: *Apply best practices for early diagnosis of bronchiectasis.*

Question 2: What is the best way to make a diagnosis of bronchiectasis?



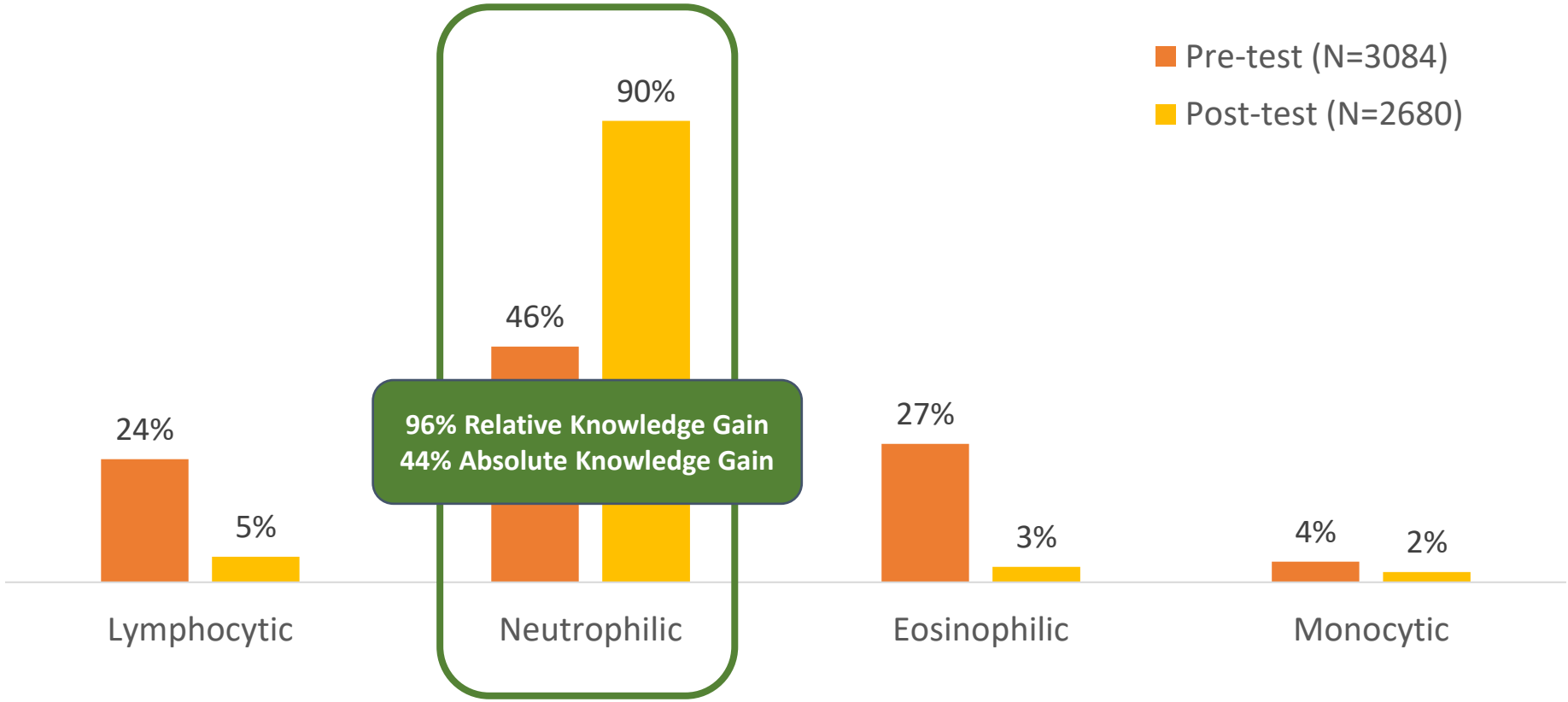
Level (3 & 4) Outcomes: Knowledge & Competence

National Jewish Health

Final Outcomes Summary – Online Enduring

Learning Objective: *Identify the role of neutrophilic inflammation in patients with bronchiectasis.*

Question 3: A 68-year-old woman is having frequent exacerbations of her bronchiectasis. The most likely form of inflammation associated with these exacerbations is:



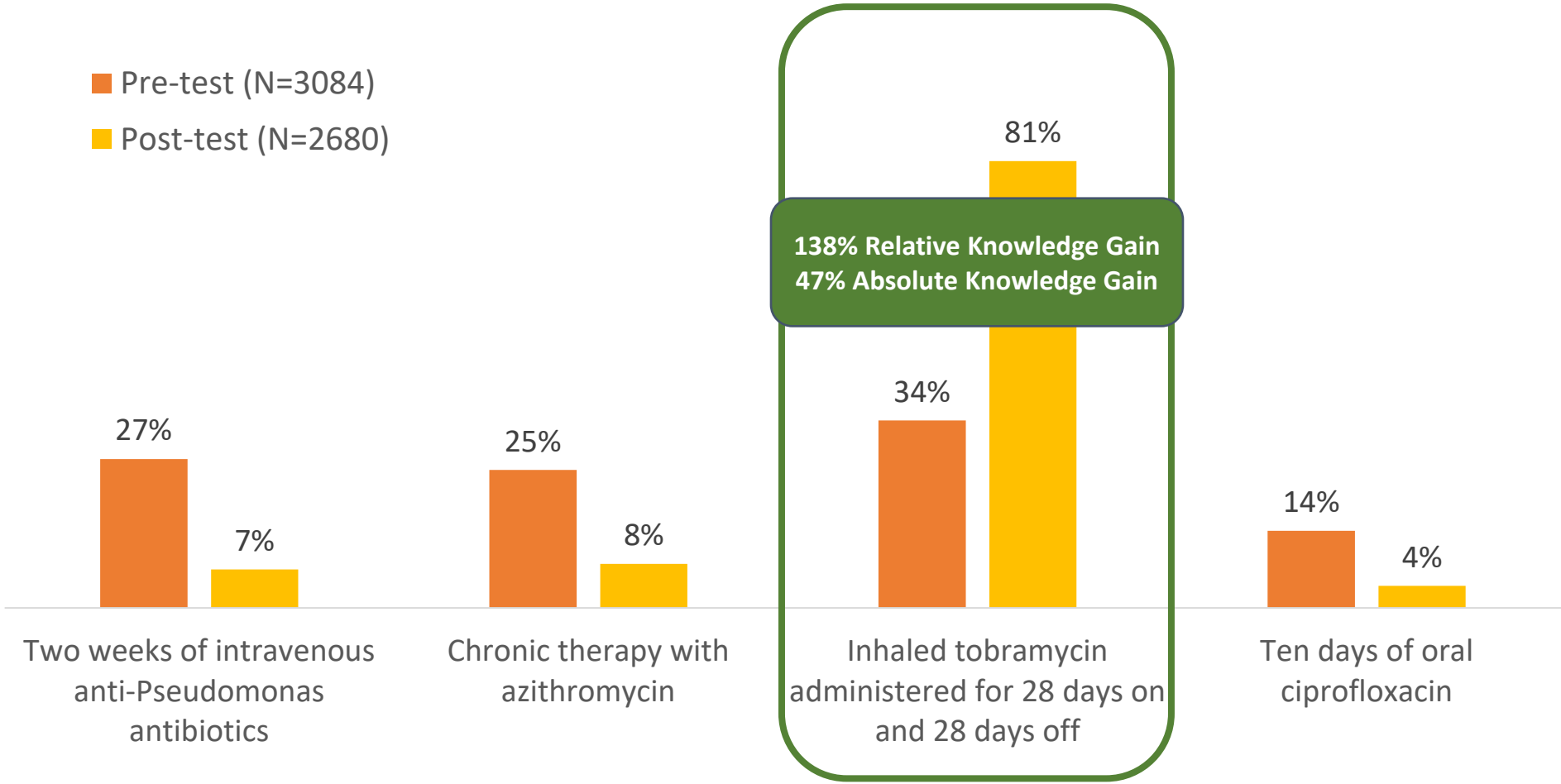
Level (3 & 4) Outcomes: Knowledge & Competence

National Jewish Health

Final Outcomes Summary – Online Enduring

Learning Objective: *Select best options for management of bronchiectasis*

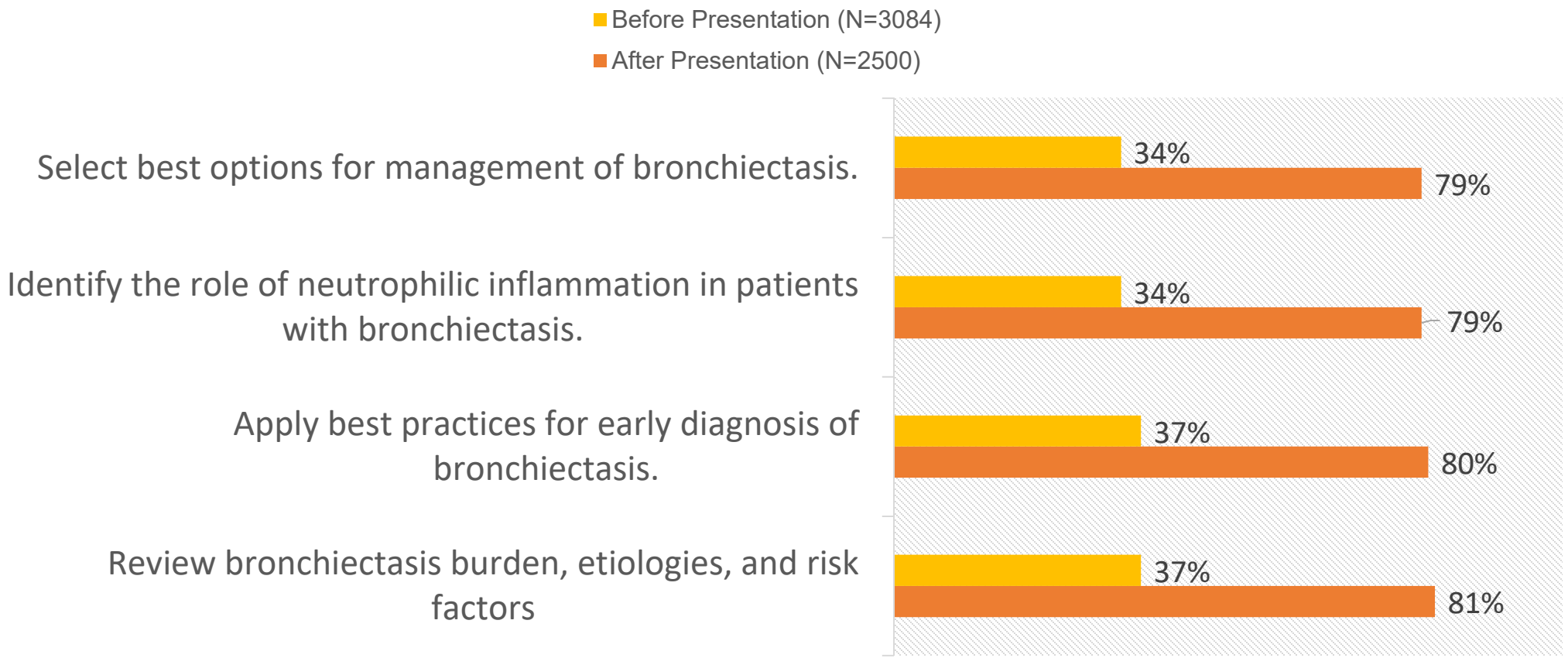
Question 4: For frequent exacerbators with chronic *Pseudomonas* infection, which of the following interventions is currently recommended?



Level (4) Outcomes: Competence

Final Outcomes Summary – Online Enduring

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



Level (4) Outcomes: Competence

Final Outcomes Summary – Online Enduring

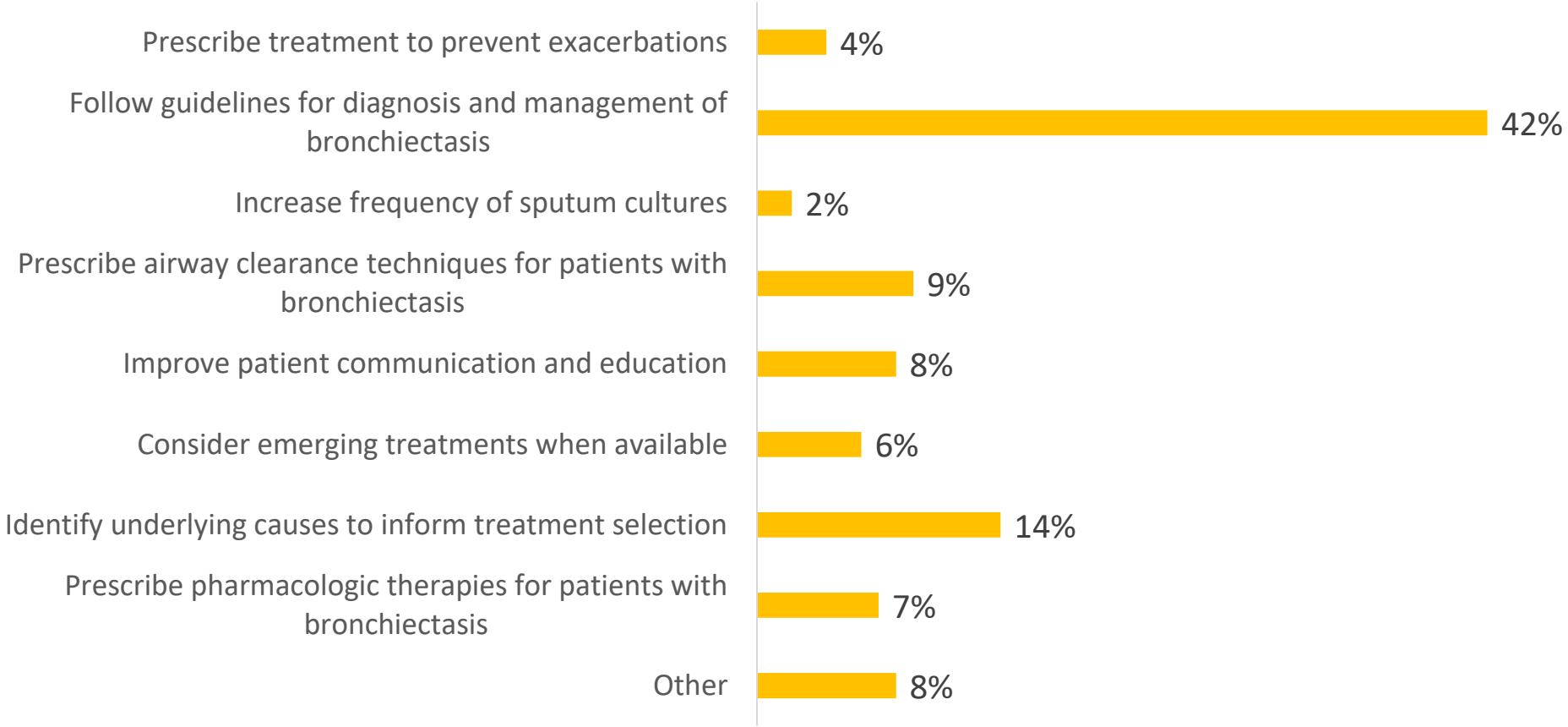
National Jewish Health

Top changes evaluation respondents intend to make in practice after participating in this activity:

92%

N=2157

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



N=2139

Evaluation Survey Results

Final Outcomes Summary – Online Enduring

National Jewish Health

Top 5 Key Takeaways

Airway Clearance is Vital

- Reinforce the use of hypertonic saline for airway clearance.
- Use of hypertonic saline, airway clearance devices and azithromycin.

Early Diagnosis is Critical

- The necessity of CT Scans for visual inspection of upper lobe abnormalities
- Early and targeted intervention can improve QoL and decrease mortality
- Importance of identifying underlying causes to inform treatment selection

Multidisciplinary Approach

- Enhanced collaboration with pulmonary
- As a pathologist, I need to maintain good communication with my clinicians
- Involvement of radiology is important

Emerging Treatments

- Ensure new emerging treatments are offered to patients
- Treatment options for bronchiectasis are expanding. It is a topic to follow.

Increased Awareness

- Better understanding of identifying bronchiectasis exacerbations
- Better understanding of etiology
- Look for bronchiectasis - this disease is underdiagnosed

Evaluation Survey Results

Final Outcomes Summary – Online Enduring

National Jewish Health

What topics related to NCFBE would you like to learn more about in future activities?

Emerging Therapies and Treatments

- Exploration of new treatment options like anti-neutrophilic elastase agents and their potential impact.
- Development of additional pharmacologic agents targeting the pathophysiology of bronchiectasis, such as novel anti-inflammatory drugs or advanced inhaled therapies

Advanced Diagnostic Techniques

- Innovations in diagnostic tools, including the role of advanced imaging (e.g., high-resolution CT) and genetic testing in identifying bronchiectasis and its subtypes.
- Improvement in non-invasive biomarkers for tracking disease progression and treatment response.

Understanding and Managing Exacerbations

- Comprehensive guidelines for preventing and managing bronchiectatic exacerbations, with a focus on airway clearance, antibiotic protocols, and preventive care.
- New protocols for early detection of exacerbations and strategies to reduce their frequency and impact.

Personalized Treatment and Management Approaches

•Tailoring treatments based on individual risk factors, disease etiology, and co-morbidities to optimize long-term outcomes.

"Excellent activity, appreciated the visuals and animations."

- Online learner

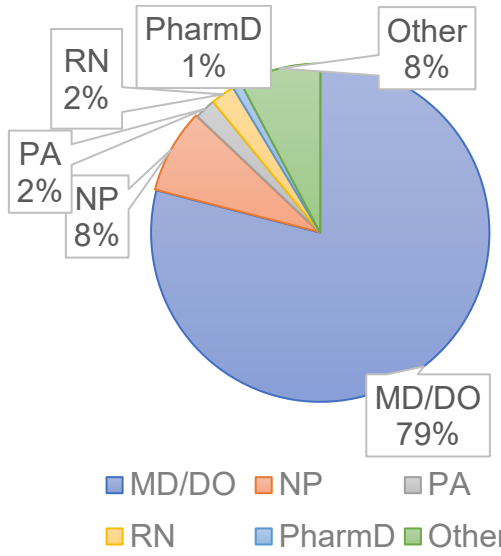
CHEST 2023 Annual Meeting | CME Lunch Symposium
Sunday, October 8, 2023 | Honolulu, Hawaii

Quantitative Educational Impact Summary

Final Outcomes Summary – Live Symposium

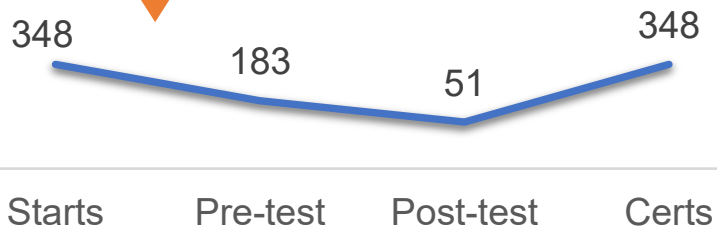
National Jewish Health

Participation

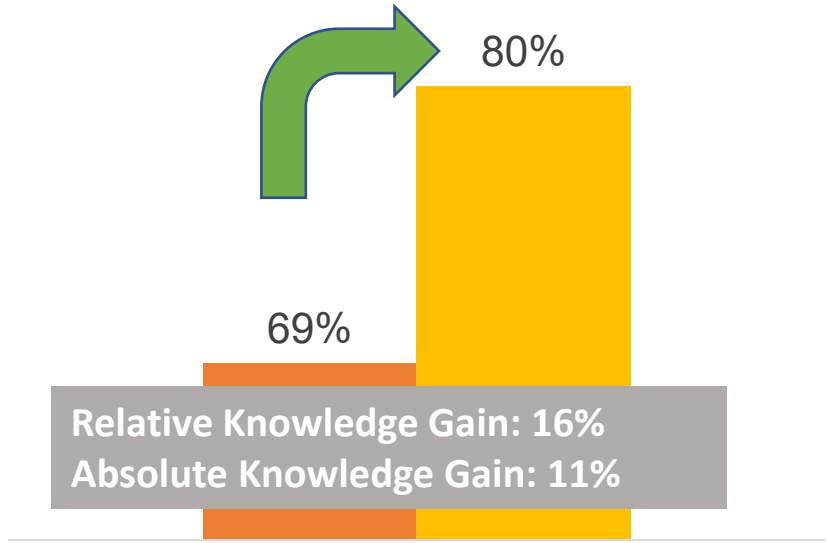


14,688
Potential patient visits impacted

MD/DO=275
NP=28
PA=7
RN=8
PharmD=3
Other=27
Total=348

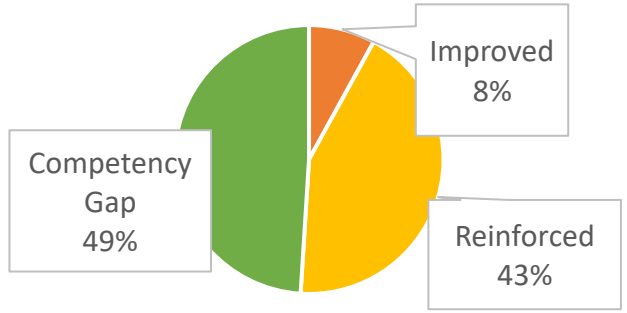


Learning Gain Across Objectives

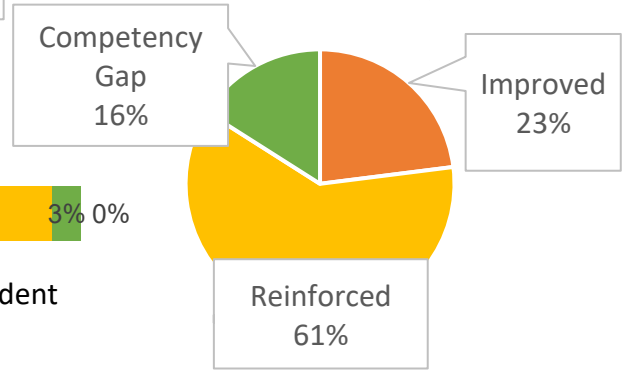


Persistent Learning Gaps/Needs

49% of learners were unable to identify risk factors and etiologies for bronchiectasis at post-test



16% of learners were unable to select the best option for managing patients with bronchiectasis at post-test



Confidence @ Post-Test

Qualitative Educational Impact Summary

Final Outcomes Summary – Live Symposium

National Jewish Health

Patient Impact

51

Evaluation respondents

Who see

306

Bronchiectasis Patients Weekly

Which translates to

14,688

Patient Visits Potentially Impacted Annually

Educational Impact

Knowledge and Competence Change by Learning Objective (N=51)

- **19%** relative knowledge gain seen from learners in reviewing bronchiectasis burden, etiologies, and risk factors.
- **14%** relative knowledge gain seen from learners in applying best practices for early diagnosis of bronchiectasis.
- **2%** relative knowledge gain seen from learners in identifying the role of neutrophilic inflammation in patients with bronchiectasis. There was a high knowledge baseline assessed pre-test score.
- **38%** relative knowledge gain seen from learners in selecting best options for management of bronchiectasis.

Practice Change

92%

Reported intent to change their practice [N=51]

98%

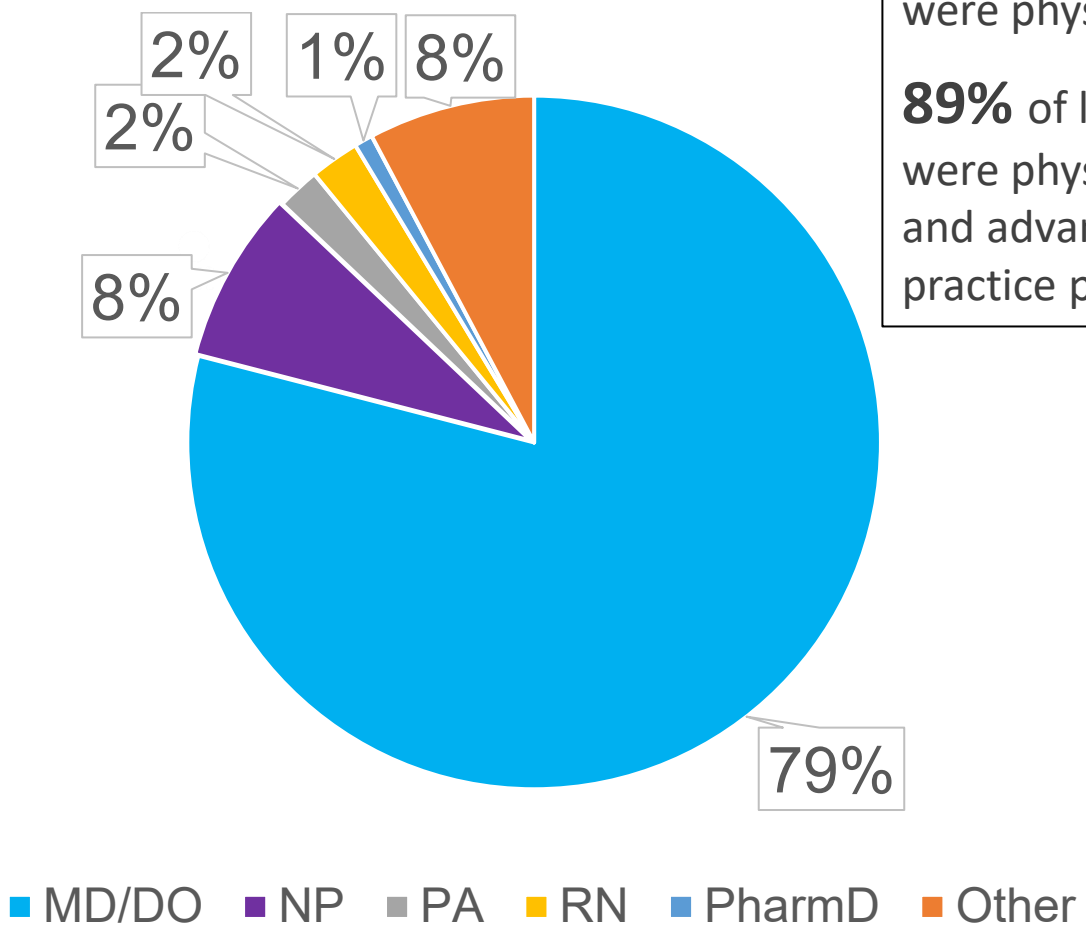
Reported the activity improved their ability to treat or manage their patients [N=51]

80%

Indicated the activity addressed strategies for overcoming barriers to optimal patient care [N=51]

Level (1) Outcomes: Participation (Degree)

Final Outcomes Summary – Live Symposium



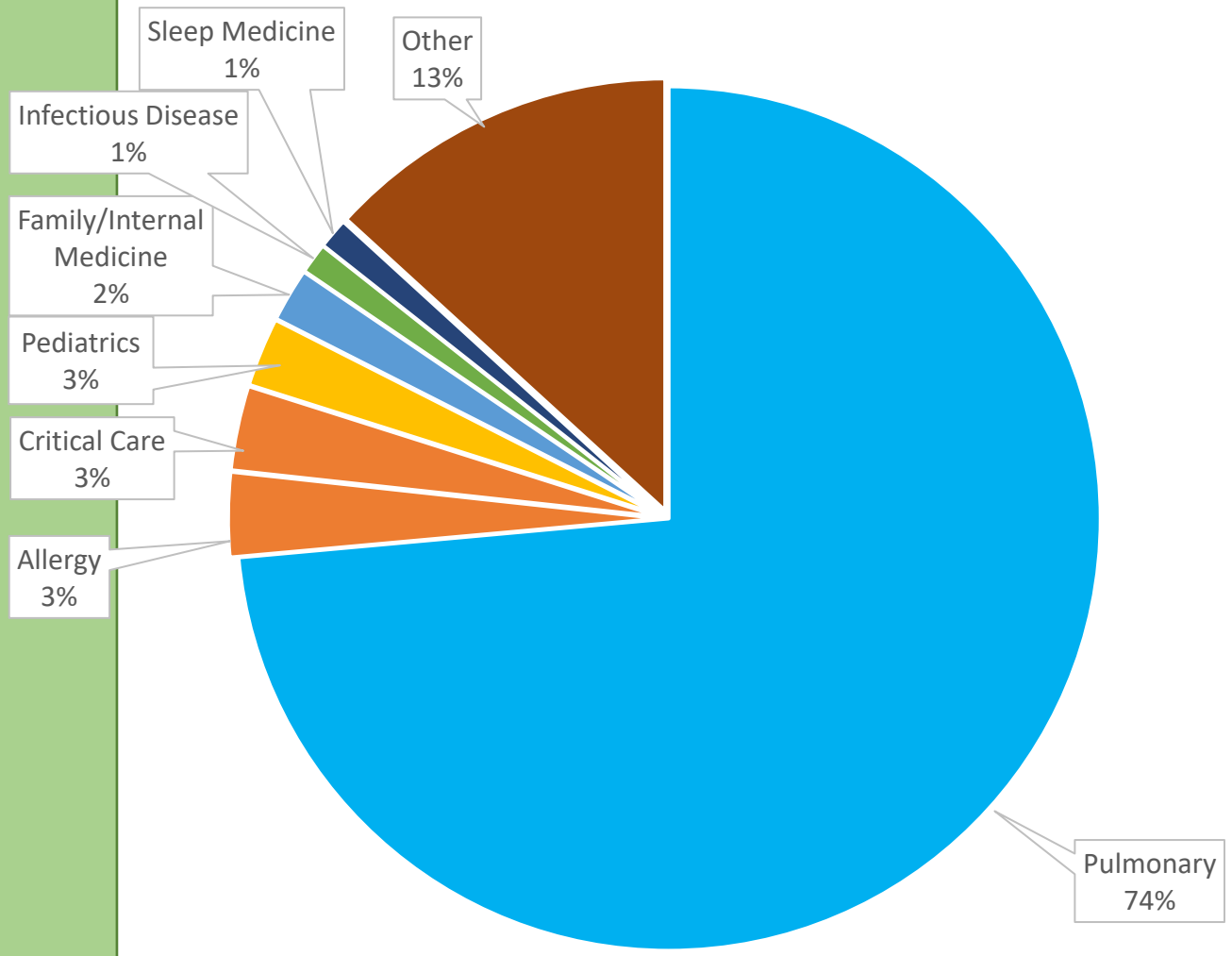
79% of learners were physicians

89% of learners were physicians and advanced practice providers

Degree	Total
MD/DO	275
NP	28
PA	7
RN	8
PharmD	3
Other	27
Total Learners	**348**

Level (1) Outcomes: Participation (Specialty)

Final Outcomes Summary – Live Symposium



Degree	Total
Pulmonary	256
Allergy	11
Critical Care	11
Pediatrics	9
Family/Internal Medicine	7
Infectious Disease	4
Sleep Medicine	4
Other	46
Total Learners	**348**

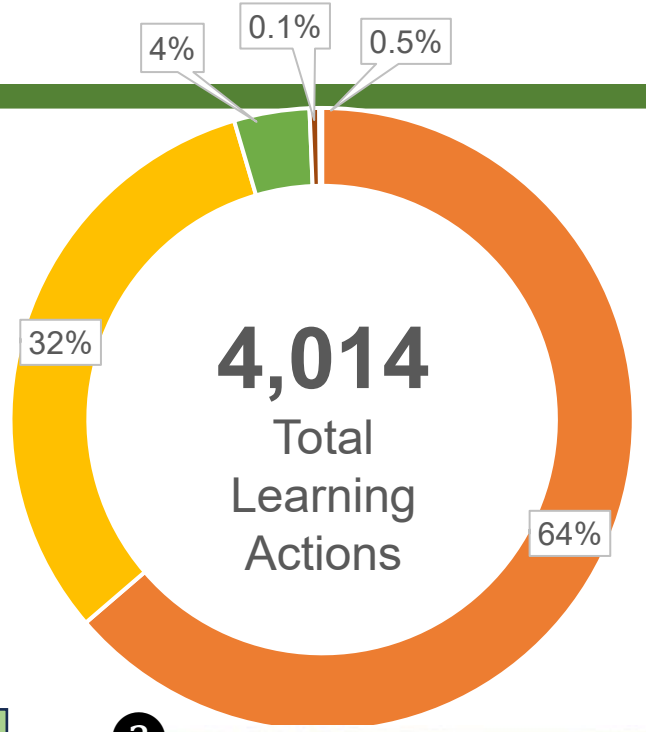
Audience Engagement: Array® Platform

Final Outcomes Summary – Live Symposium

250 learners logged into platform

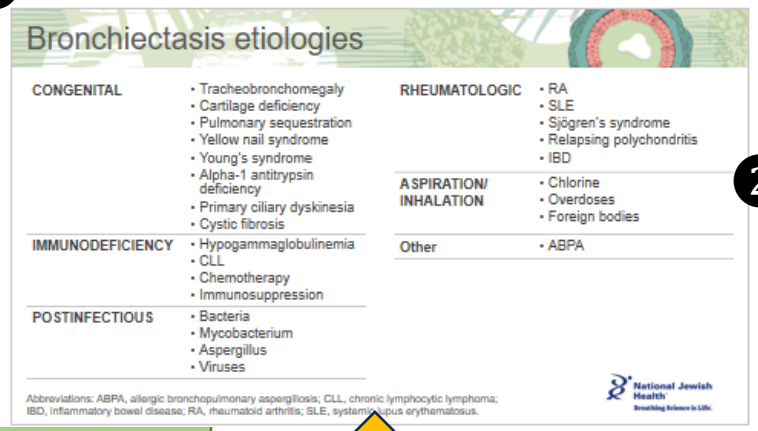
89% **engaged** (saved content, responded to polling)

14% **highly engaged** (asked questions or took notes)



Top 3 most engaging slides

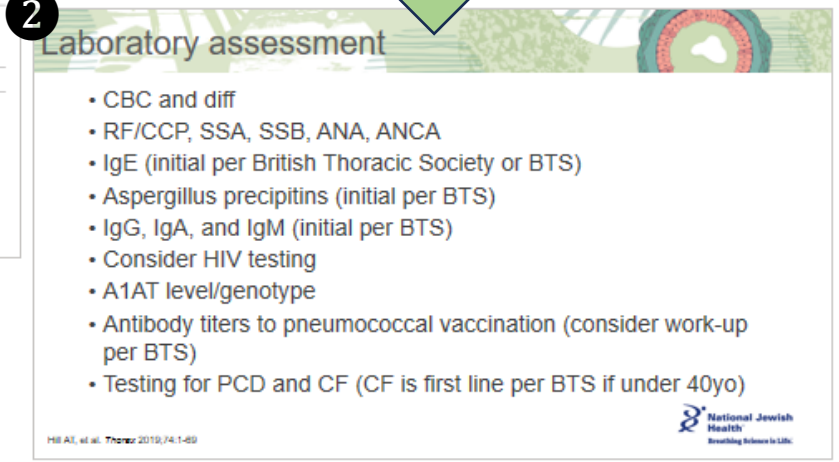
1



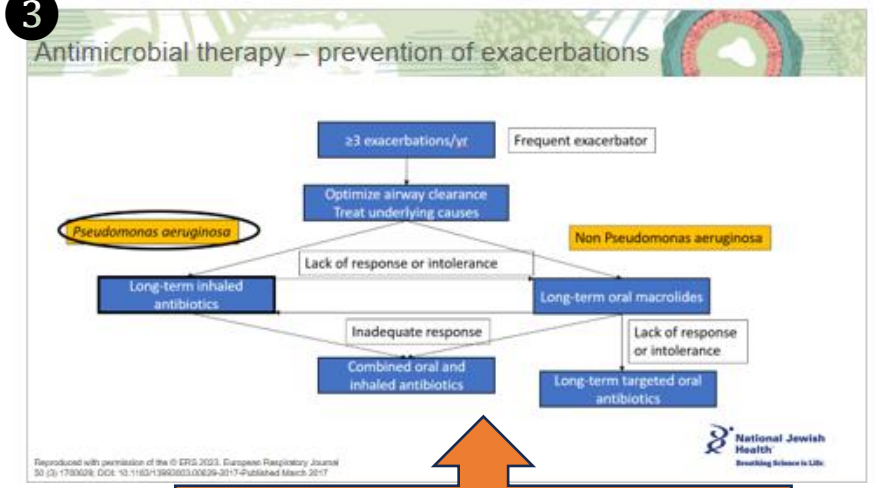
63 slide saves
5 notes taken

65 slide saves
2 notes taken

2



3



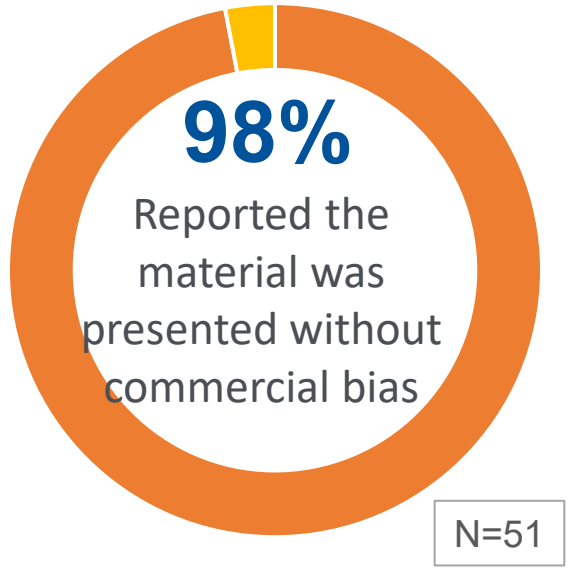
60 slide saves
2 notes taken
1 question asked

Level (2) Outcomes: Satisfaction

Final Outcomes Summary – Live Symposium

National Jewish Health

Evaluation Respondents reported they "Strongly Agree" or "Agree" that the activity:

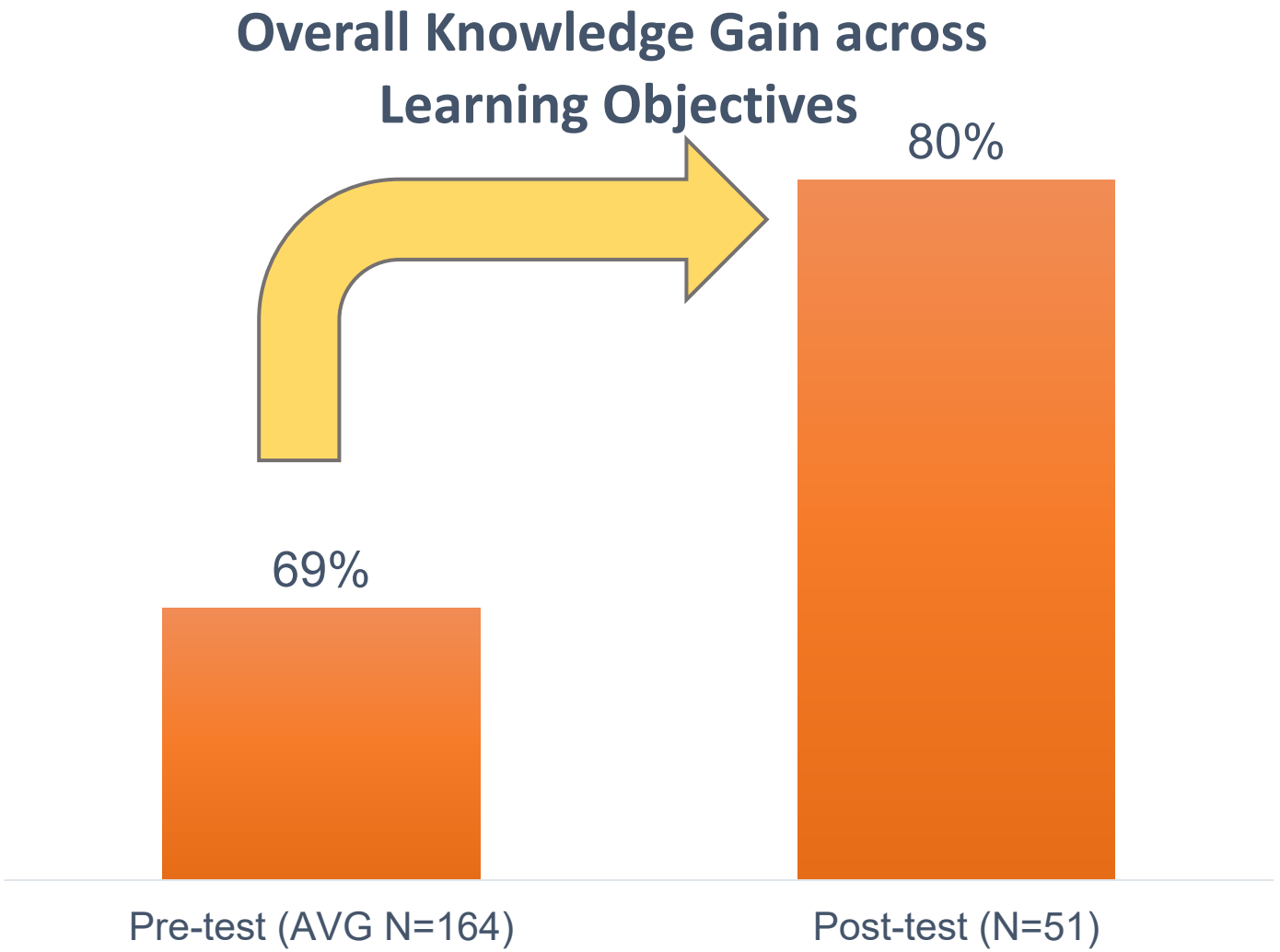


N=51

Level (3 & 4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Live Symposium

National Jewish Health



16% Overall Relative Knowledge Gain

11% Overall Absolute Knowledge Gain

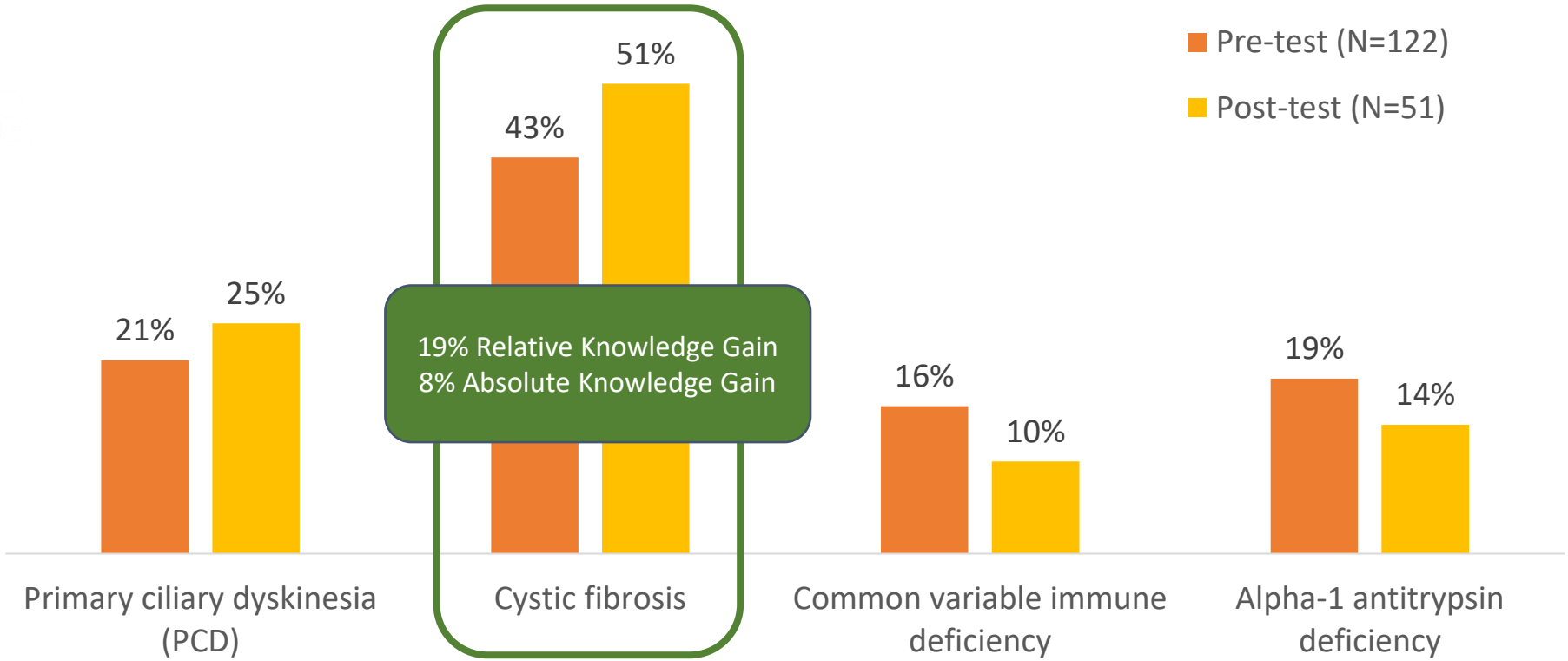
Level (3 & 4) Outcomes: Knowledge & Competence

National Jewish Health

Final Outcomes Summary – Live Symposium

Learning Objective: *Review bronchiectasis burden, etiologies, and risk factors.*

Question 1: Which of the following typically leads to an upper lobe predominant bronchiectasis disorder?

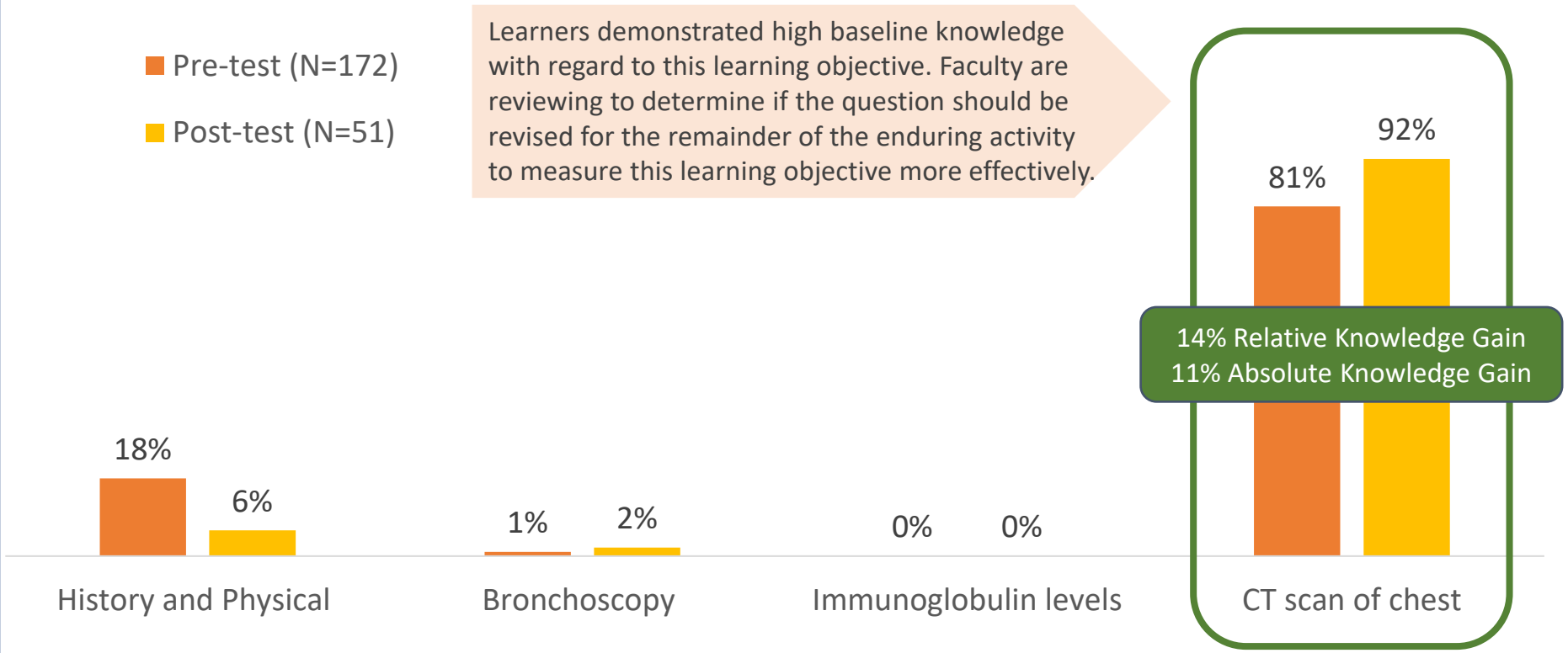


Level (3 & 4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Live Symposium

Learning Objective: *Apply best practices for early diagnosis of bronchiectasis.*

Question 2: What is the best way to make a diagnosis of bronchiectasis?



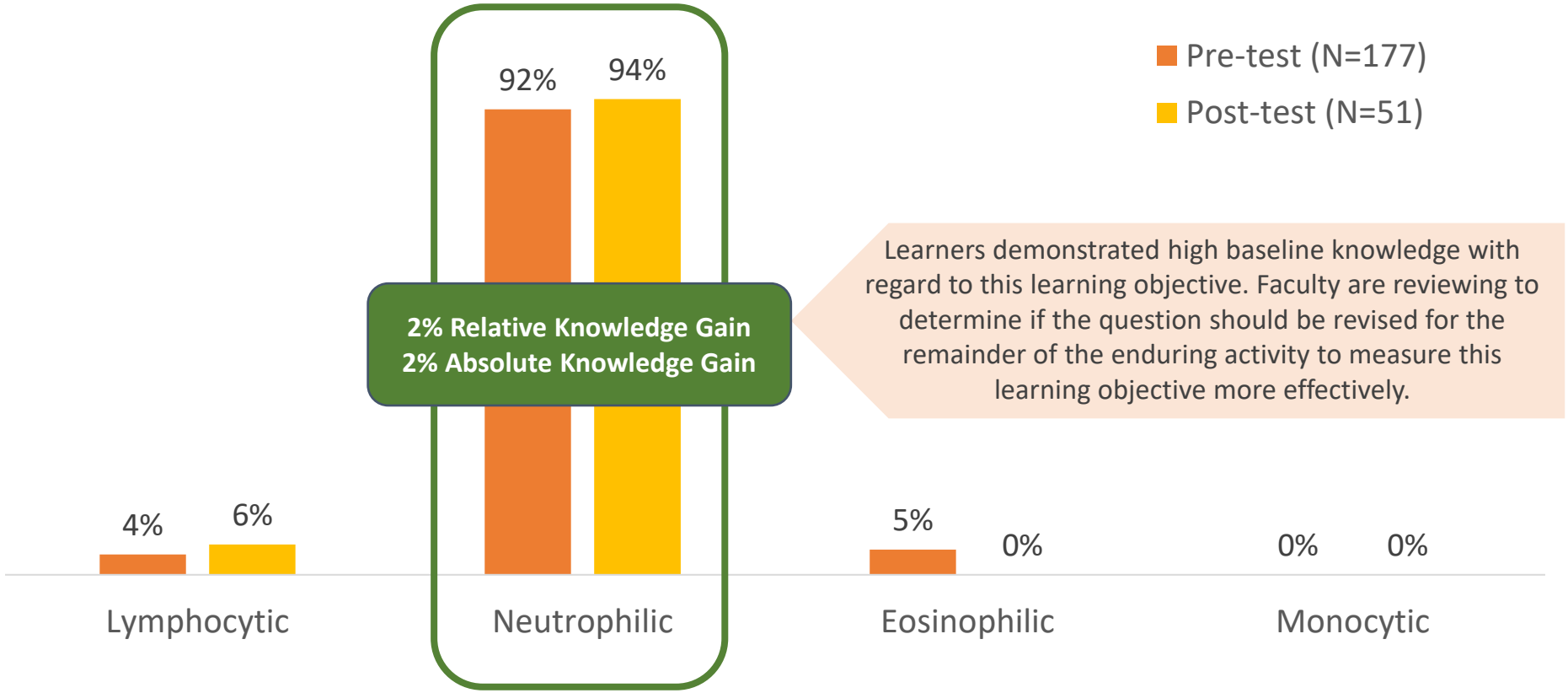
Level (3 & 4) Outcomes: Knowledge & Competence

National Jewish Health

Final Outcomes Summary – Live Symposium

Learning Objective: *Identify the role of neutrophilic inflammation in patients with bronchiectasis.*

Question 3: A 68-year-old woman is having frequent exacerbations of her bronchiectasis. The most likely form of inflammation associated with these exacerbations is:



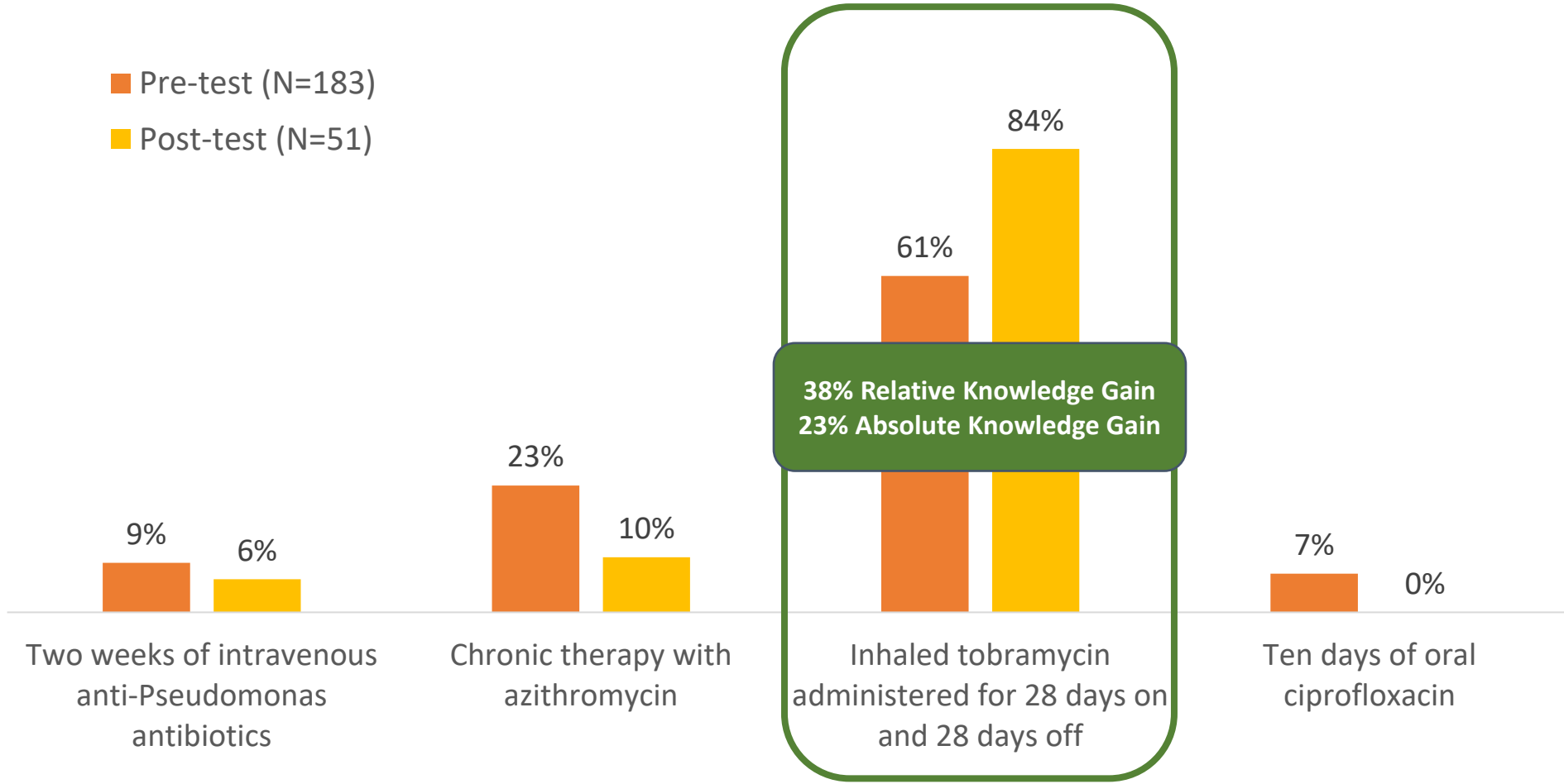
Level (3 & 4) Outcomes: Knowledge & Competence

Final Outcomes Summary – Live Symposium

National Jewish Health

Learning Objective: *Select best options for management of bronchiectasis*

Question 4: For frequent exacerbators with chronic *Pseudomonas* infection, which of the following interventions is currently recommended?

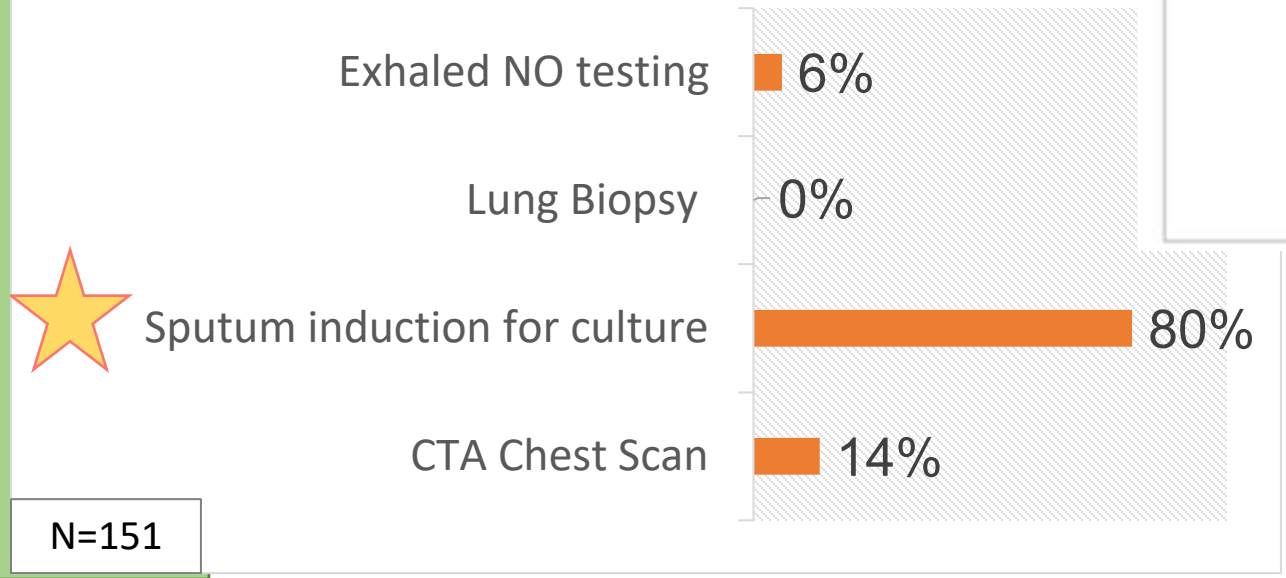


Level (3 & 4) Outcomes: Interactive Polling

Final Outcomes Summary – Live Symposium

What evaluation should be considered next?

Case-Based Question 1



N=151

Patient case evaluation

- The patient has been treated for GERD, chronic rhinosinusitis, and asthma with continued cough that is progressing in frequency and sputum production. A CT chest scan is obtained and demonstrates mild emphysema and bronchiectasis with mucus plugging and lower lobe predominance.
- Spirometry is done and reveals an FEV1 of 65% of predicted with an obstructive pattern.

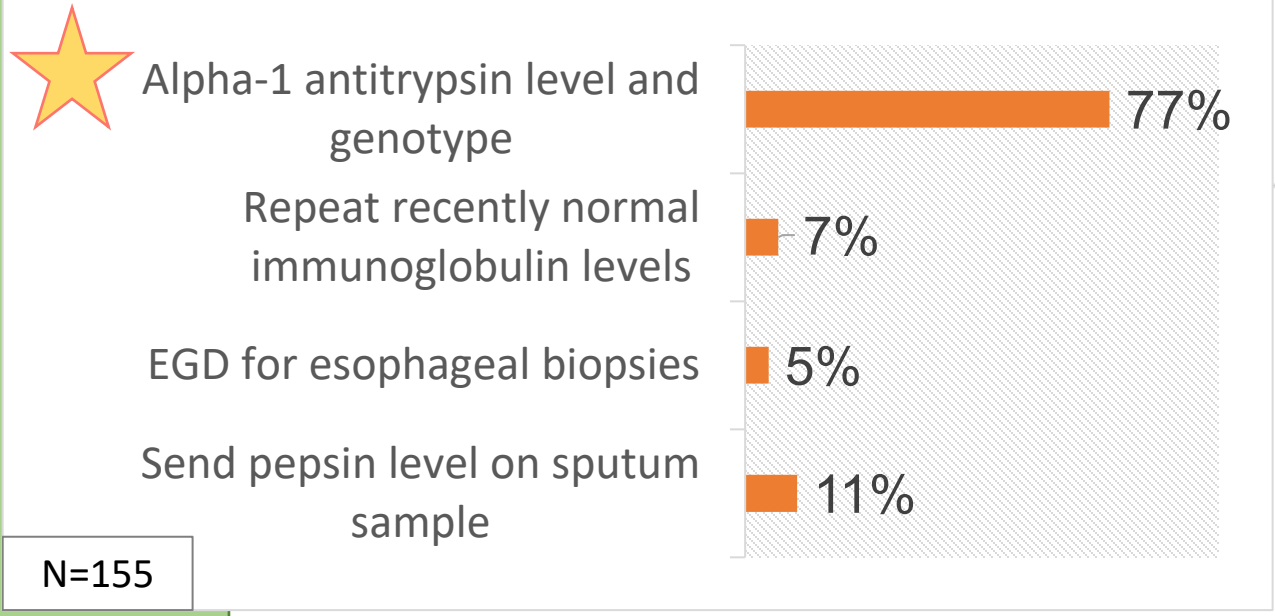
Level (3 & 4) Outcomes: Interactive Polling

Final Outcomes Summary – Live Symposium

National Jewish Health

What should be considered for further evaluation?

Case-Based Question 2



N=155

Patient case: next steps of evaluation

- Her autoimmune, immunodeficiency, ABPA and aspiration evaluation are unremarkable.
- Sputum cultures are obtained with each visit with a goal of 2-4 per year as surveillance.

Level (3 & 4) Outcomes: Interactive Polling

Final Outcomes Summary – Live Symposium

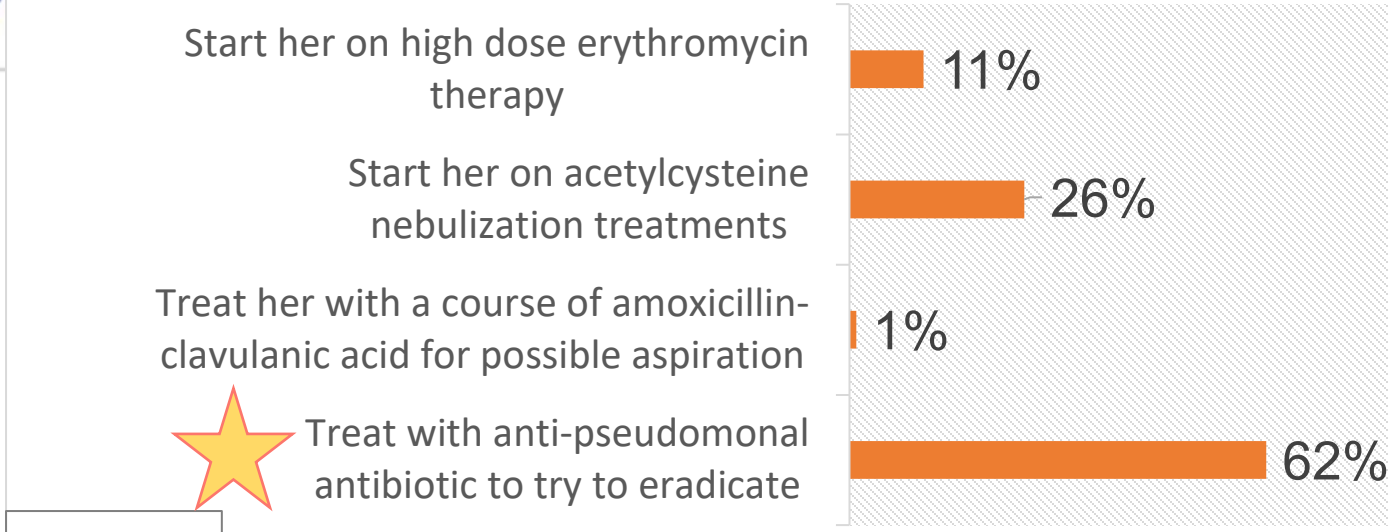
National Jewish Health

Patient case: treatment and sputum culture

- The patient is started on airway clearance with 7% hypertonic saline nebulization and oscillatory PEP airway clearance device
- The patient's sputum culture does not reveal any Acid Fast Bacilli (AFB) or mycobacterium on culture.
- She does isolate *Pseudomonas aeruginosa*, but she feels at her baseline in cough and mucus.

What should be done next for this patient?

Case-Based Question 3



N=157

Level (3 & 4) Outcomes: Interactive Polling

Final Outcomes Summary – Live Symposium

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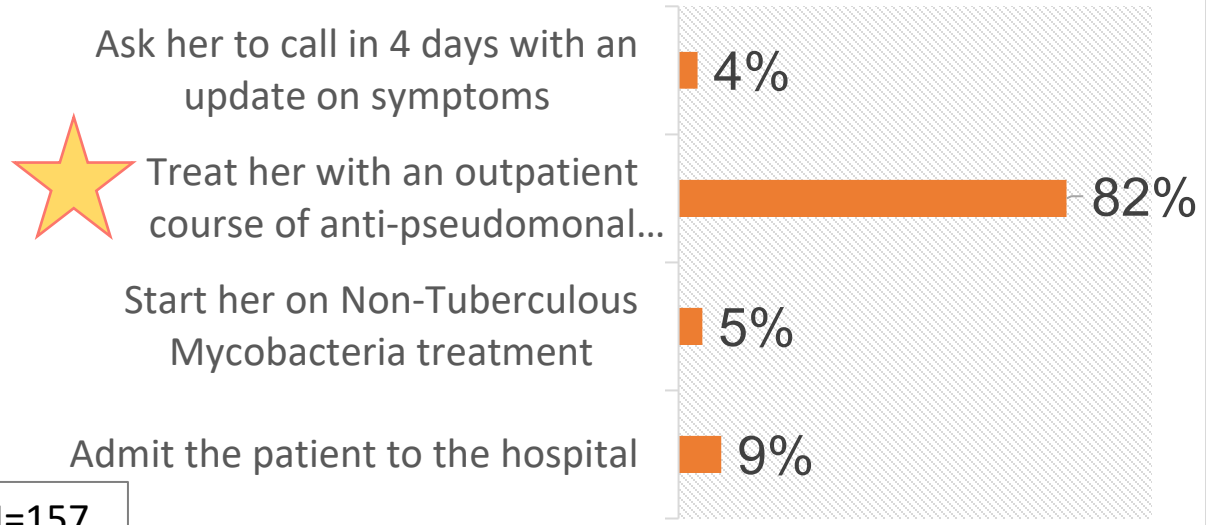
What interventions should be considered?

Case-Based Question 4



N=157

Patient case: acute symptoms

- The patient calls with increased cough, mucus and fatigue above her baseline over the past 3 days. She has no fever, but notices mild blood tinged sputum the past day.

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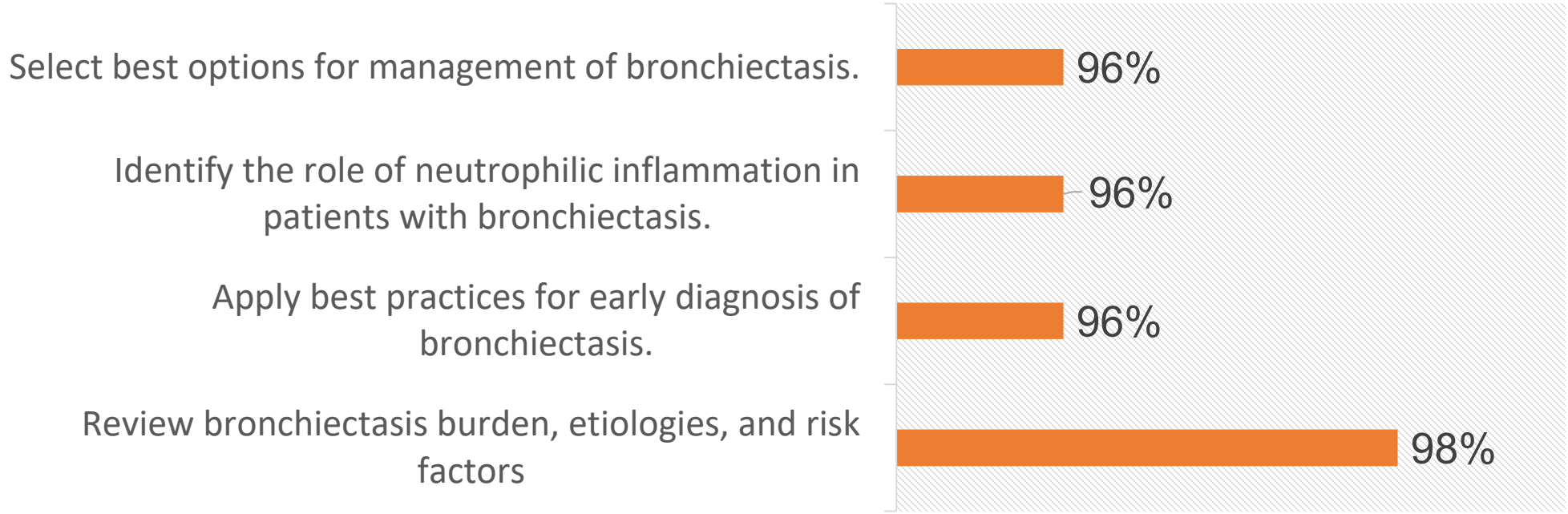
Level (4) Outcomes: Competence

Final Outcomes Summary – Live Symposium

National Jewish Health

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



N=51

Level (4) Outcomes: Competence

Final Outcomes Summary – Live Symposium

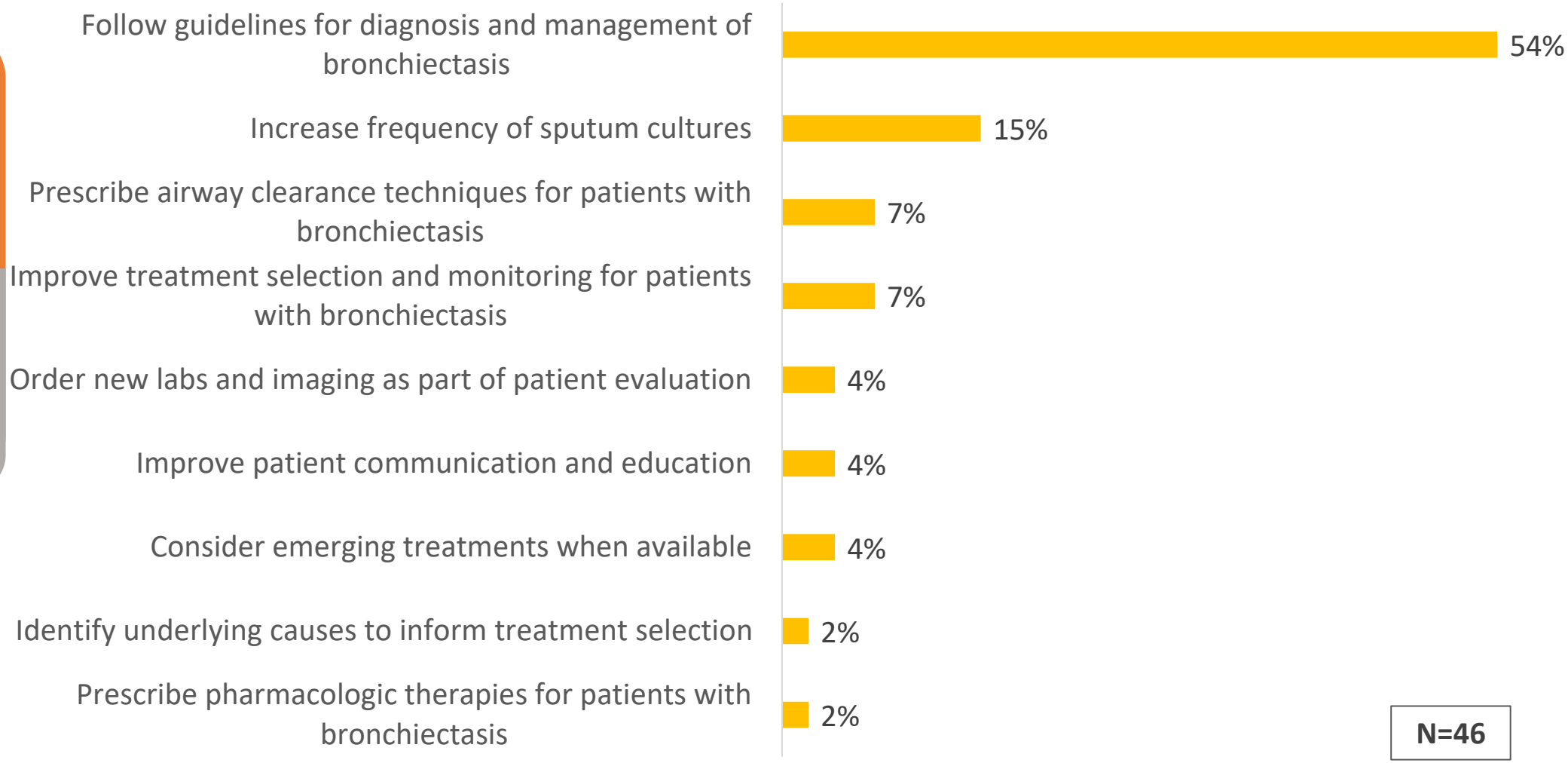
National Jewish Health

Top changes evaluation respondents intend to make in practice after participating in this activity:

92%

N=51

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



Level (5) Outcomes: Performance

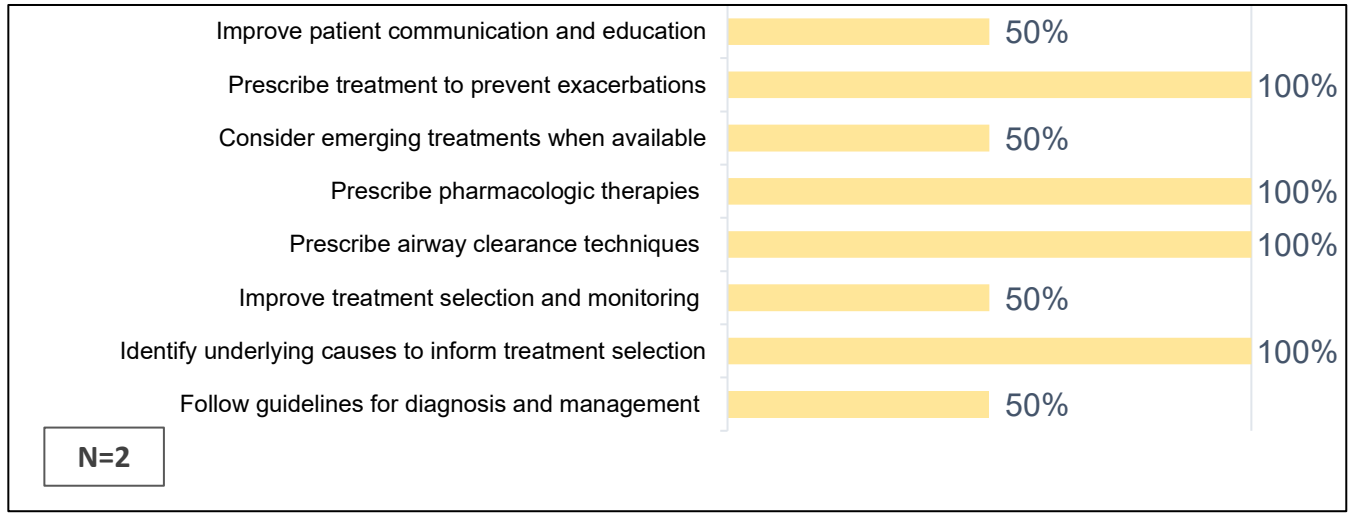
Final Outcomes Summary – Live Symposium

National Jewish Health

45-Day Follow-Up Survey

While the response rate to the follow-up survey was low with only two respondents, their responses indicate that participation in the activity has made a positive impact on their practice and their patients.

Follow-up survey respondents report making the following changes in practice as a result of what they learned in the activity:



Specific examples of changes made in practice:

- Be more aggressive in checking for etiologies of bronchiectasis.
- Be more aggressive in surveillance for colonization.

100% Reported their patients have benefited from the information they learned in the activity

100% Reported the activity provided information, tools and resources to address the barriers to optimal patient care they have faced since participating.

N=2

Evaluation Survey Results

Final Outcomes Summary – Live Symposium

National Jewish Health

Key Takeaways

- Early Recognition
- The inflammatory component of bronchiectasis
- Different thinking about neutrophilic response
- Prevent exacerbations
- Managing treatment based on the guidelines
- Management of non-CF bronchiectasis with *pseudomonas* colonized
- Secretion management
- Difficulties in management
- Importance of airway clearance therapy
- Current protocols and guidelines
- Treatment time needed
- Diagnosis of bronchiectasis
- Frequent sputum checks

Future Topics

- Evidence-based treatments
- Newer treatment modalities
- Post-viral contributions
- How to deal with colonization

"Excellent talks."
"Well organized and presented."

- Live symposium attendees

Evaluation Survey Results

Final Outcomes Summary – Live Symposium

National Jewish Health

What barriers will the education provided help to address?

- Scheduling and visit frequency
- Frequency of follow up and testing
- Confidence in managing patients
- Patient education on mucociliary clearance
- Work-up and imaging barriers
- Access to education
- Access to protocols
- Identification of bronchiectasis in all sectors/geographies/classes/ethnicities

80%

N=51

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

National Jewish Health

Accreditation Details

Final Outcomes Summary – Live Symposium and Online Enduring

National Jewish Health

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*™.