The Role of the RADIOLOGIST and the HEALTHCARE TEAM

in Diagnosis and Management of Bronchiectasis

Final Outcomes Report
Online Enduring
Data from 11/27/2024 – 11/27/2025
Grant ID: 89208453

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Executive Summary

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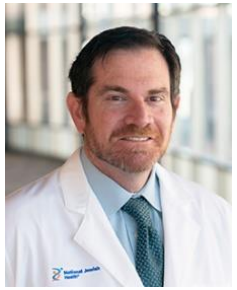

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Program Overview

Radiologists play a crucial role in the early diagnosis of NCFBE and should thoroughly understand the recommended HRCT imaging parameters and radiological signs of NCFBE. Additionally, they should be knowledgeable about the available treatments for NCFBE and actively participate as a member of the interdisciplinary team to provide optimal patient care. In this chapterized, video-based activity, expert faculty in radiology and pulmonology discuss an overview of NCFBE, radiologic features, appropriate diagnostic strategies for an early diagnosis, and the important role radiologists play on the interdisciplinary care team. The second component features a series of real-world clinical cases in which faculty review radiologic images to highlight abnormalities and discuss clinical implications. Learners also have access to a downloadable clinical reference aid with a glossary of radiologic terms used in NCFBE and examples of radiologic images for specific common abnormalities in NCFBE.

Learning Objectives

1. Understand the role of radiologic imaging, especially HRCT, in diagnosing NCFBE.
2. Recognize the radiologic features of NCFBE, including bronchial dilatation, lack of bronchial tapering, and thickening of the airways
3. Evaluate current and emerging treatment options for patients with NCFBE and the role of early diagnosis.
4. Develop an interdisciplinary approach for effectively communicating radiological findings to other healthcare team members to ensure an accurate and early diagnosis of NCFBE.

Activity Format and Dates

Enduring activity on Healio
Nov 27th, 2024 – Nov 27th, 2025
https://cm.healio.com/cme/pulmonology/20241125/the-role-of-the-radiologist-and-the-healthcare-team-in-diagnosis-and-management-of-bronchiectasis/overview
*Link is now unavailable due to program ending

Target Audience

Radiologists, pulmonologists and primary care physicians who care for patients with NCFBE and related diseases.

Accreditation

NJH is accredited with commendation by the Accreditation Council for Continuing Medical Education (ACCME). NJH designates this enduring material for a maximum of 1.5 *AMA PRA Category 1 Credits™*.

Outcomes Levels and Methodology

Moore's Levels 1-4

- Level 1 (Participation): Learner demographic data
- Level 2 (Satisfaction): Post-activity evaluation
- Level 3 (Knowledge): Pre- and post-test comparison
- Level 4 (Competence): Pre- and post-test comparison, post-activity evaluation

Program Features

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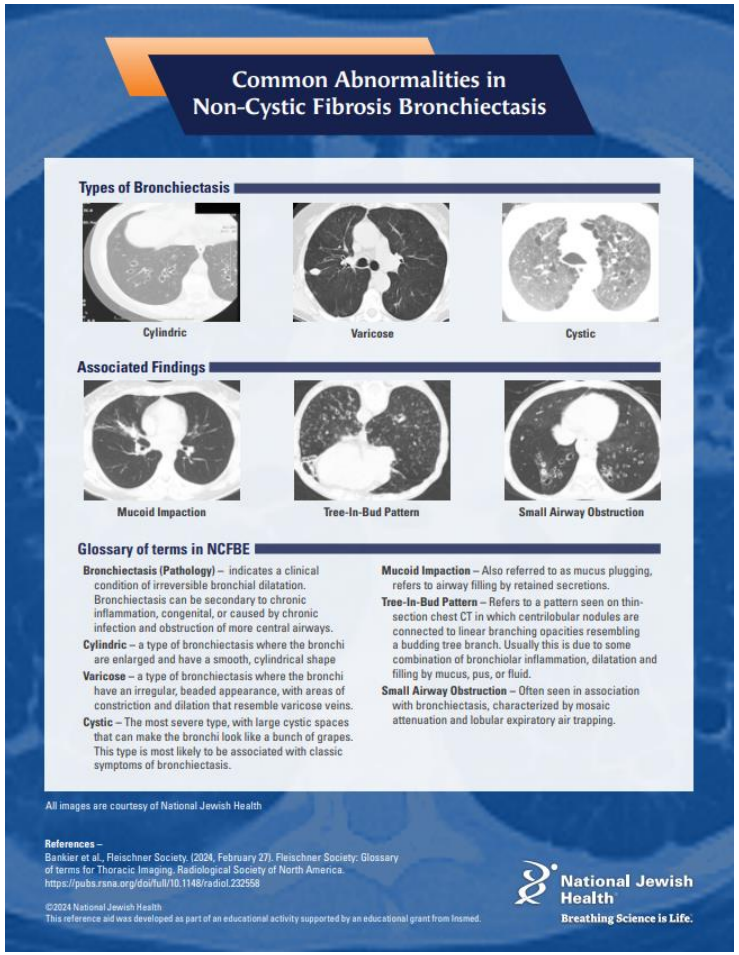
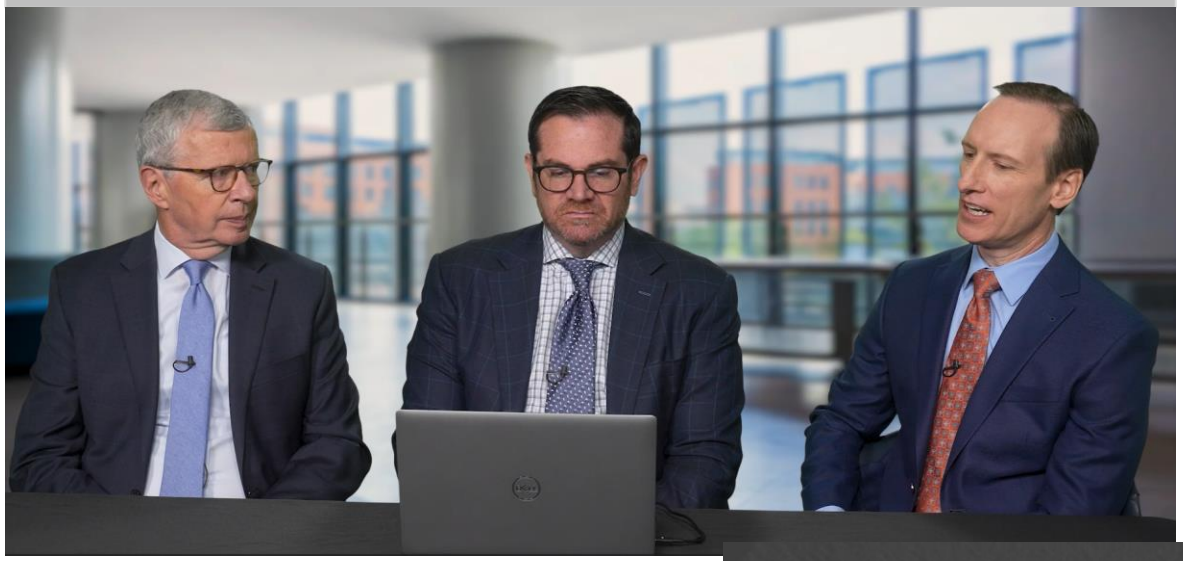
Clinical Reference Aid



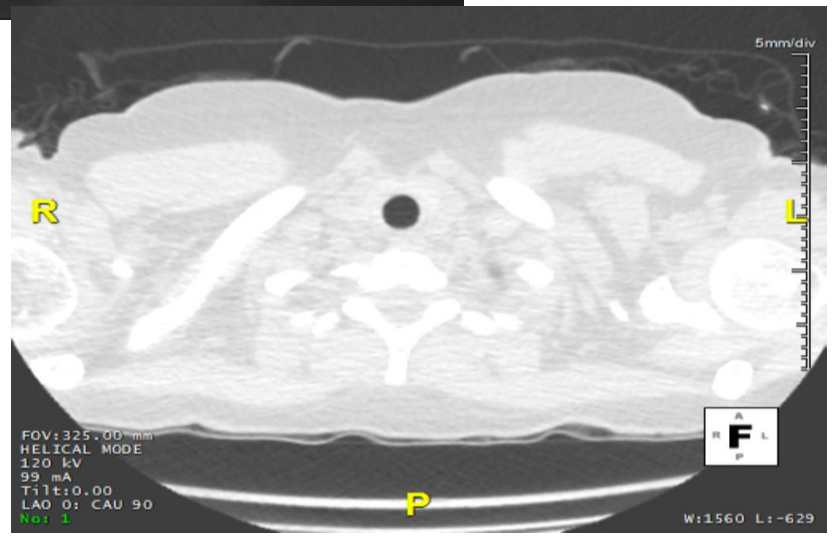
Faculty Roundtable Discussion about Radiologic Imaging



92%

evaluation respondents reported they were likely to use the clinical reference aid in their practice

(n=657)



Program Insights

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Diagnostic knowledge and confidence improved, but treatment remains a persistent gap

- While learners demonstrated strong gains in recognizing HRCT features and understanding the diagnostic role of imaging, post-test data reveal that therapeutic decision-making—particularly selecting optimal treatment strategies for recurrent exacerbations—remains a persistent challenge. Providers my benefit from additional education in this area.

Providers with more experience showed the highest completion rate

- A significant proportion of program completers were highly experienced clinicians, with 45% reporting more than 15 years in practice. Strong engagement and completion among seasoned practitioners suggests the activity delivered clinically relevant content that resonated beyond introductory education.

Educational Impact Summary (Quantitative)

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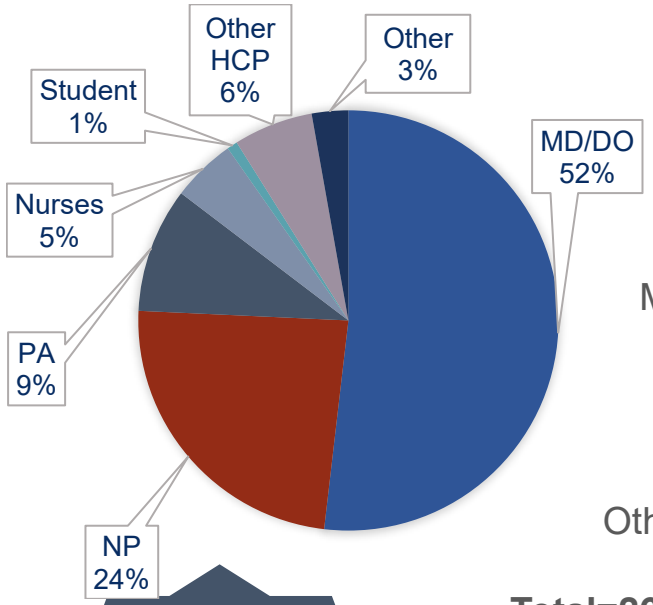
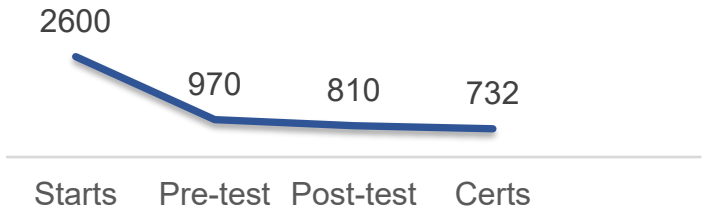
Participation

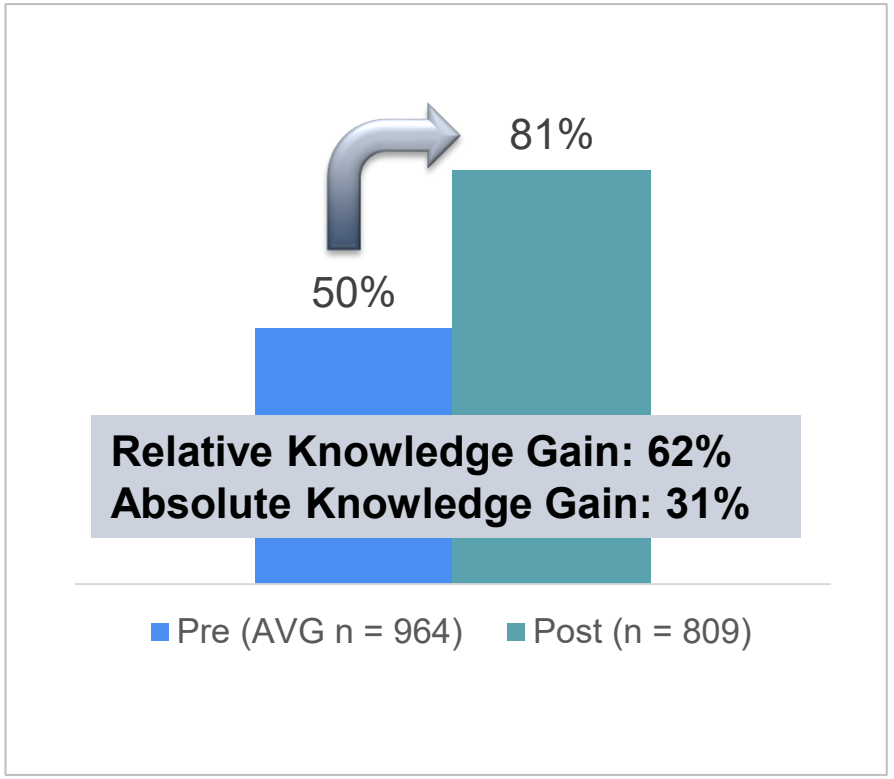


MD/DO=1348
NP=621
PA=250
Nurses=128
Student=21
Other HCP=159
Other=73
Total=2600 Learners

166,704 Potential patient visits impacted

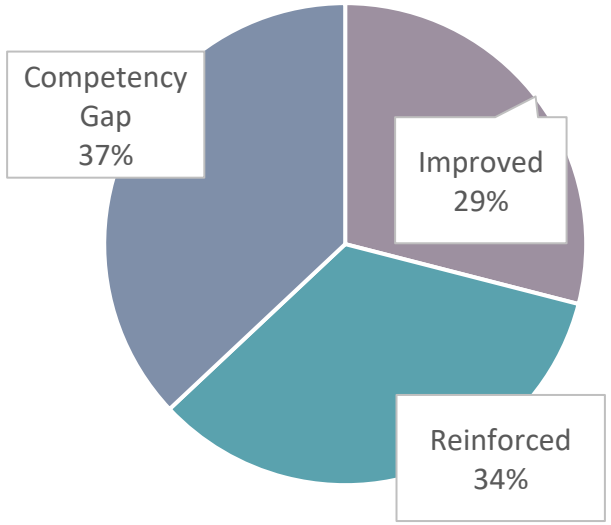


Learning Gain Across Objectives



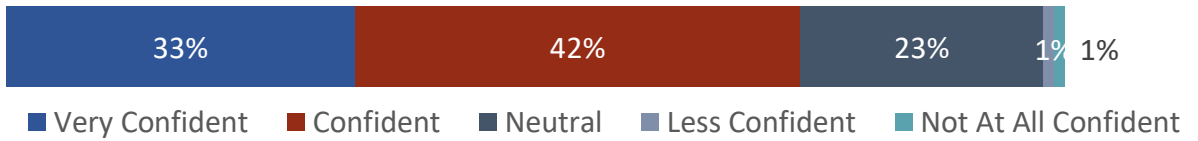
Persistent Learning Gaps/Needs

37% of learners were unable to identify the best treatment option for idiopathic non-cystic fibrosis bronchiectasis with recurrent exacerbations at post-test



Confidence at Post-Test

AVG n = 773



n= 810

Educational Impact Summary (Qualitative)

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National Jewish Health

Patient Impact

435
Evaluation respondents

Who have
3,473
Bronchiectasis Patient Visits Weekly

Which translates to
166,704
Patient Visits Potentially Impacted Annually*

**Note: represents patient visits, not unique patients*

Educational Impact

Knowledge and Competence Change by Learning Objective (AVG n=809)

- ✓ **55%** relative knowledge gain seen from learners in selecting best options in understanding the role of radiologic imaging, especially HRCT, in diagnosing NCFBE.
- ✓ **56%** relative knowledge gain seen from learners in recognizing the radiologic features of NCFBE, including bronchial dilatation, lack of bronchial tapering, and thickening of the airways
- ✓ **85%** relative knowledge gain seen from learners in evaluating current and emerging treatment options for patients with NCFBE and the role of early diagnosis
- ✓ **55%** relative knowledge gain seen from learners in selecting best options to develop an interdisciplinary approach for effectively communicating radiological findings to other healthcare team members to ensure an accurate and early diagnosis of NCFBE

Practice Change

90%
Reported intent to change their practice [n=642]

81%
Reported the activity provided tools and strategies they can apply in practice [n=775]

77%
Indicated the activity addressed strategies for overcoming barriers to optimal patient care [n=771]

Level (1) Participation: Participation Funnel

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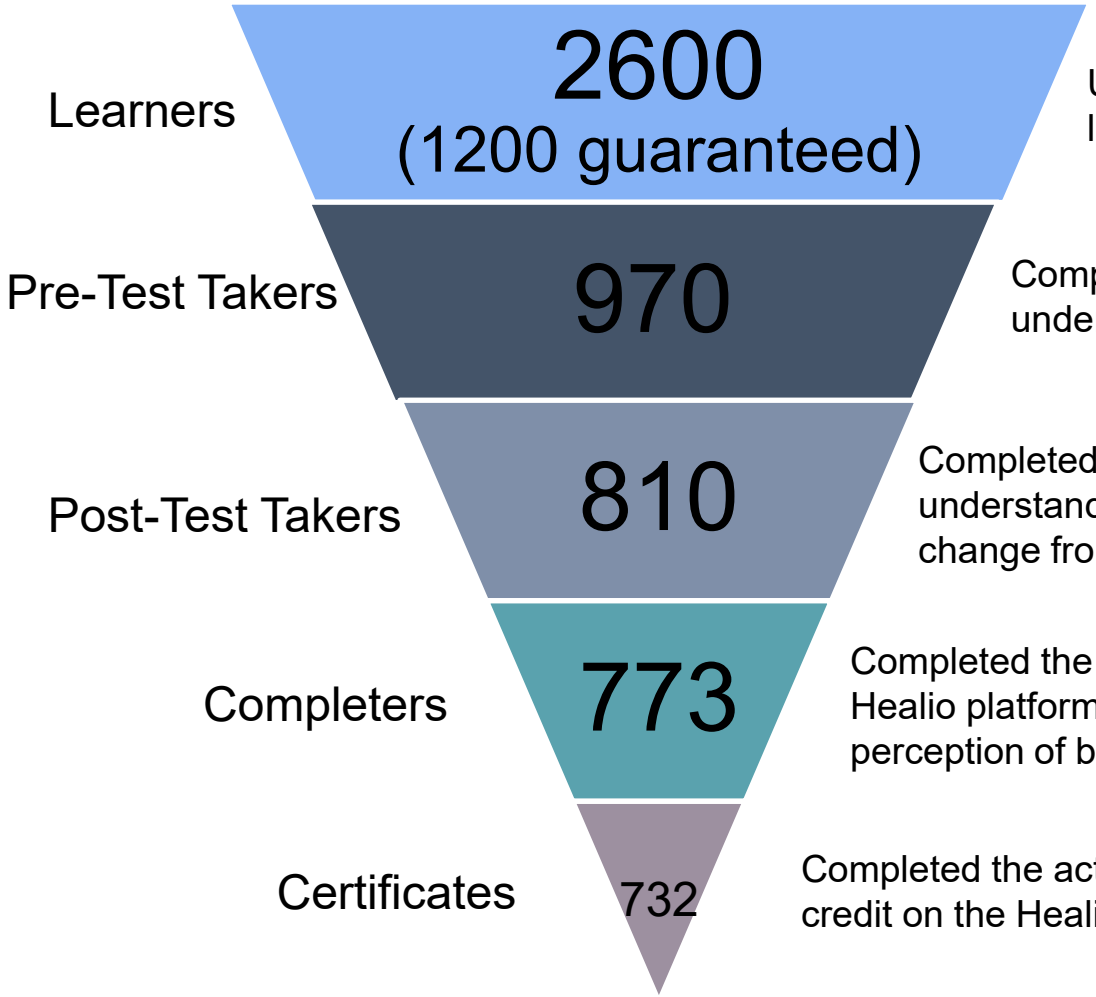
More than double the learner guarantee!



Unique visitors to the activity on the Healio platform. Used for learner breakdown by degree and specialty.

Completed the activity pre-test on the Healio platform. Used to understand pre-participation knowledge/competence.

Completed the activity and the post-test on the Healio platform. Used to understand post-participation knowledge/competence and measure change from pre- to post-activity.

Completed the activity, passed the post-test, and completed the evaluation on the Healio platform. Used to evaluate learner satisfaction, relevance of content, perception of bias, key takeaways, future needs, etc.

Completed the activity, passed the post-test, completed the evaluation, and claimed credit on the Healio platform.

Level (1) Participation: Degree/Profession

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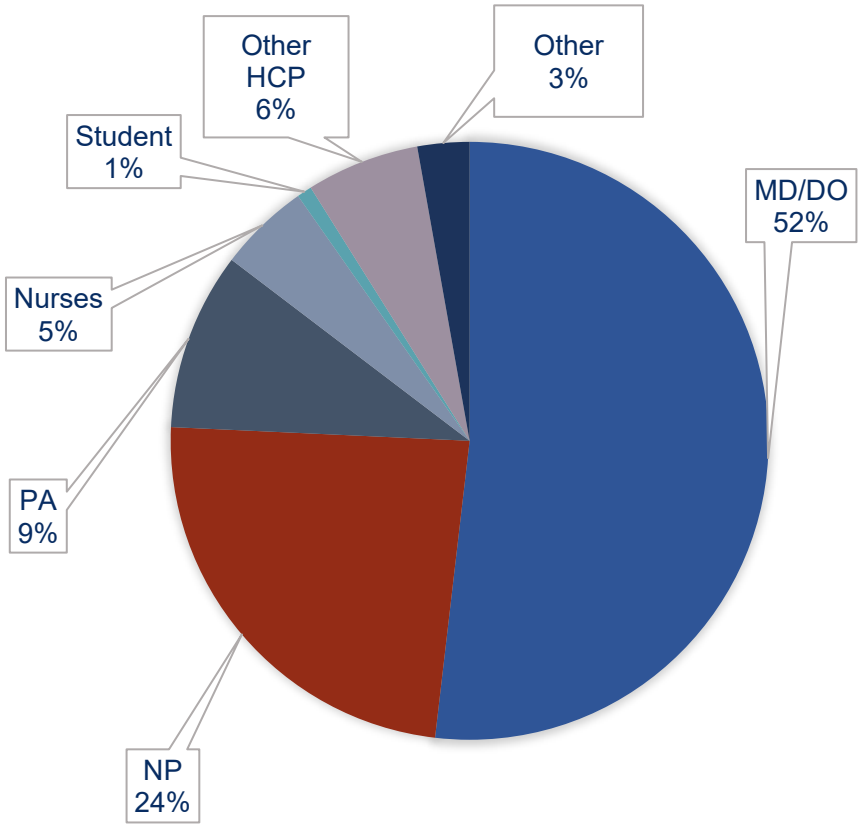
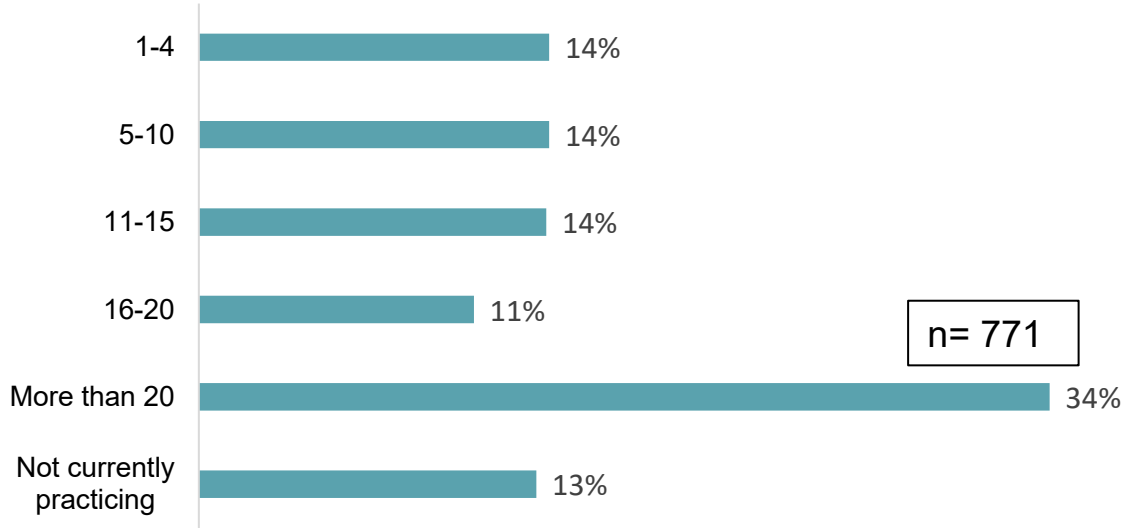
Degree/Profession



Degree	Total
MD/DO	1348
NP	621
PA	250
Nurse	128
Student	21
Other HCP	159
Other (Administrator, Consumer, etc.)	73
Total	**2600**

85% of learners are physicians and APPs

Years in Practice



Level (1) Participation: Specialty

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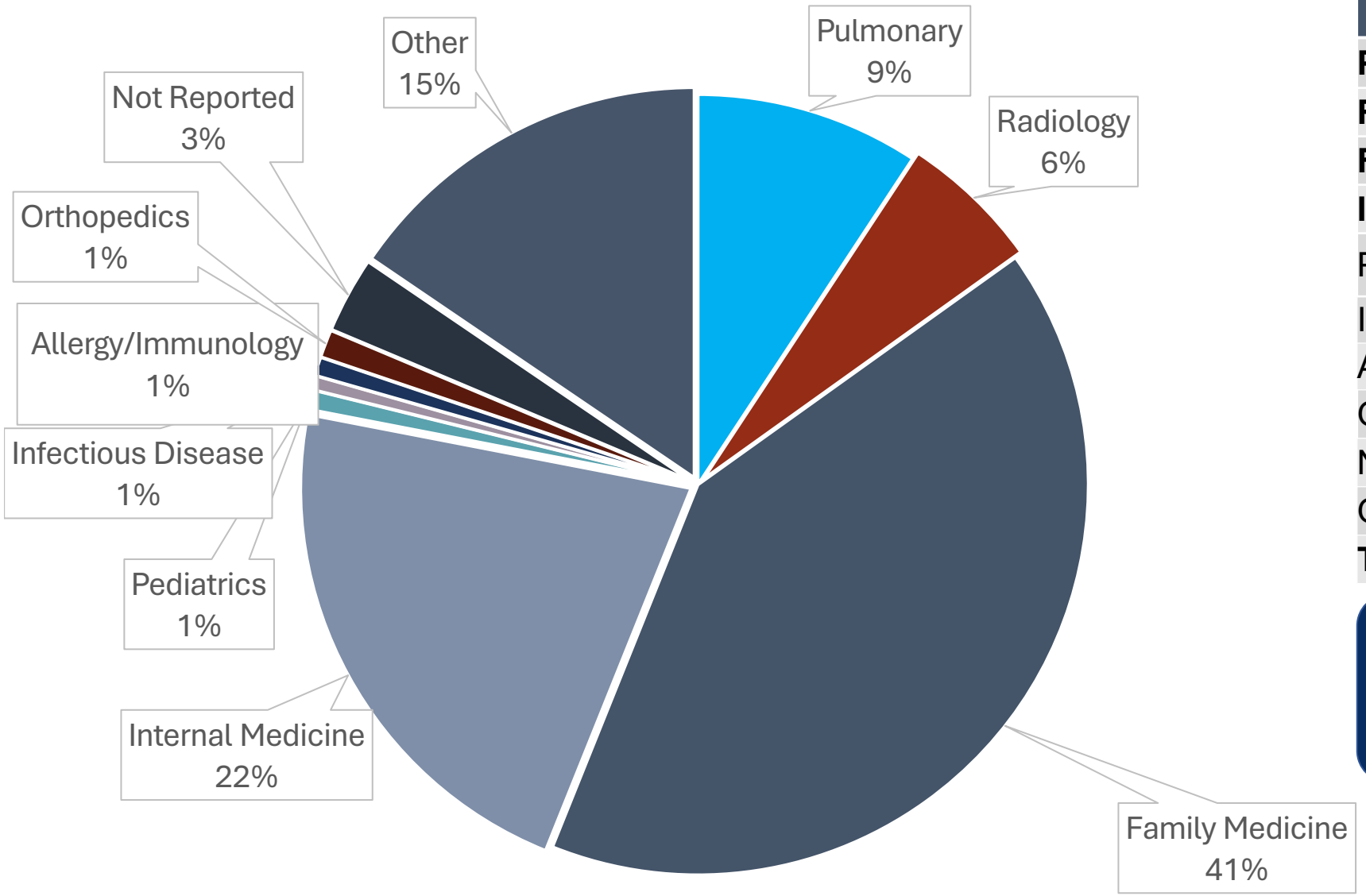

Specialty	Total
Pulmonology	**241**
Radiology	**152**
Family Medicine	**1065**
Internal Medicine	**571**
Pediatrics	21
Infectious Disease	15
Allergy/Immunology	20
Orthopedics	30
Not Reported	82
Other	403
Total	**2600**

78% of learners were from the target audience!

Level (2) Satisfaction

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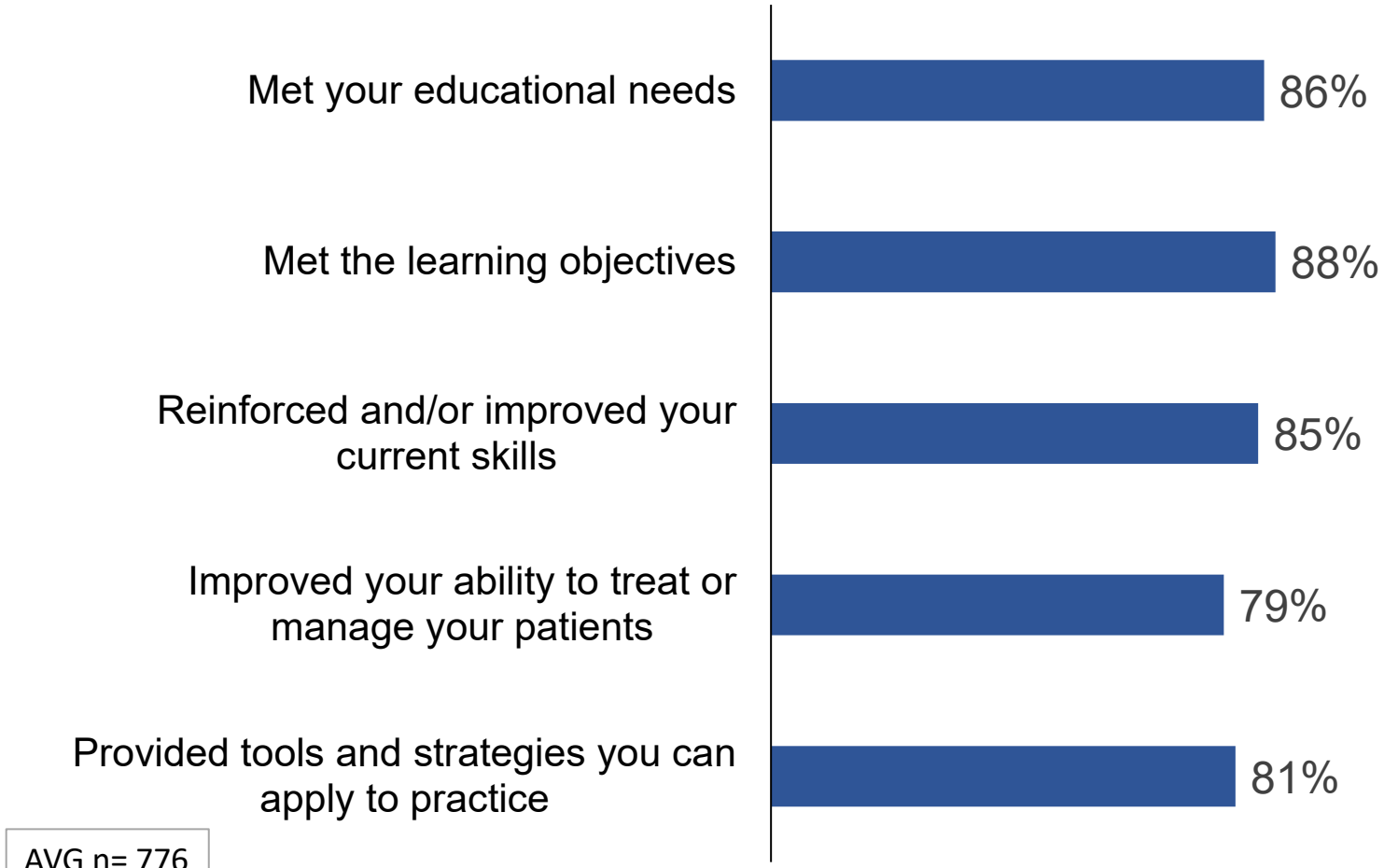
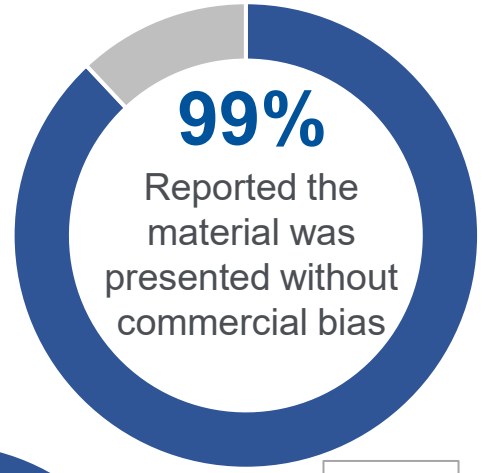
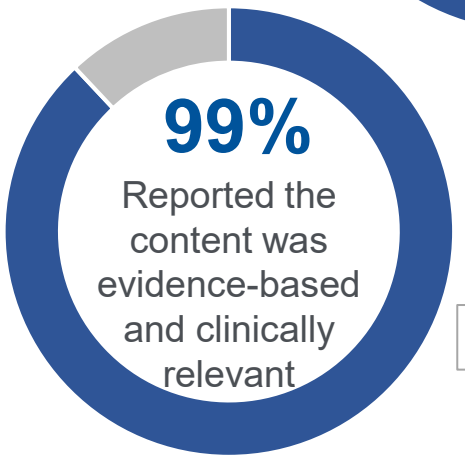
Evaluation respondents reported they "Strongly Agree" or "Agree" that the activity:



AVG n= 776



n=778



n=775

Level (3&4) Knowledge and Competence: Overall Gains

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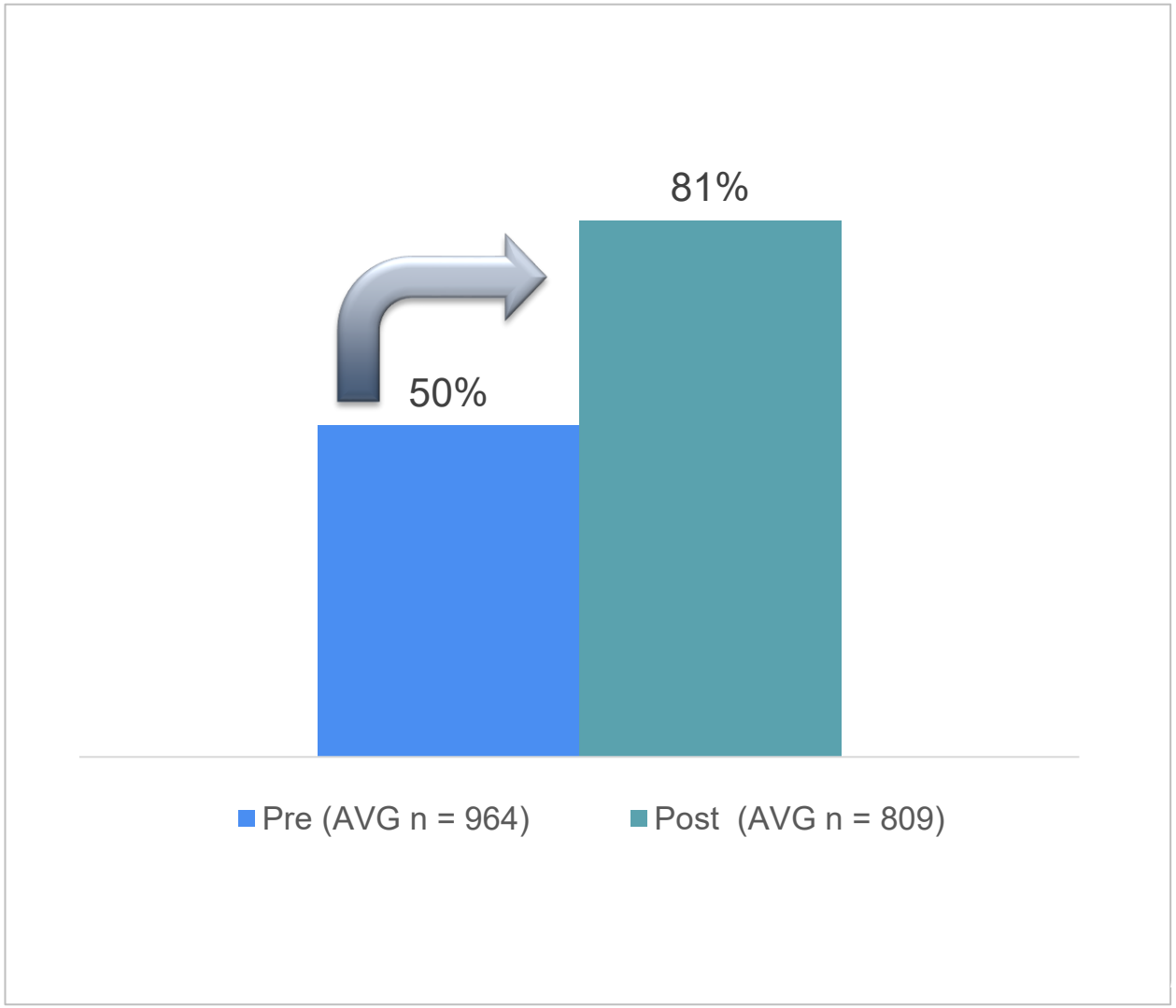
Overall Knowledge and Competence Gain Across Learning Objectives



62% overall relative knowledge/ competence gain

31% overall absolute knowledge/ competence gain

Level (3&4) Knowledge and Competence: Gains by Question

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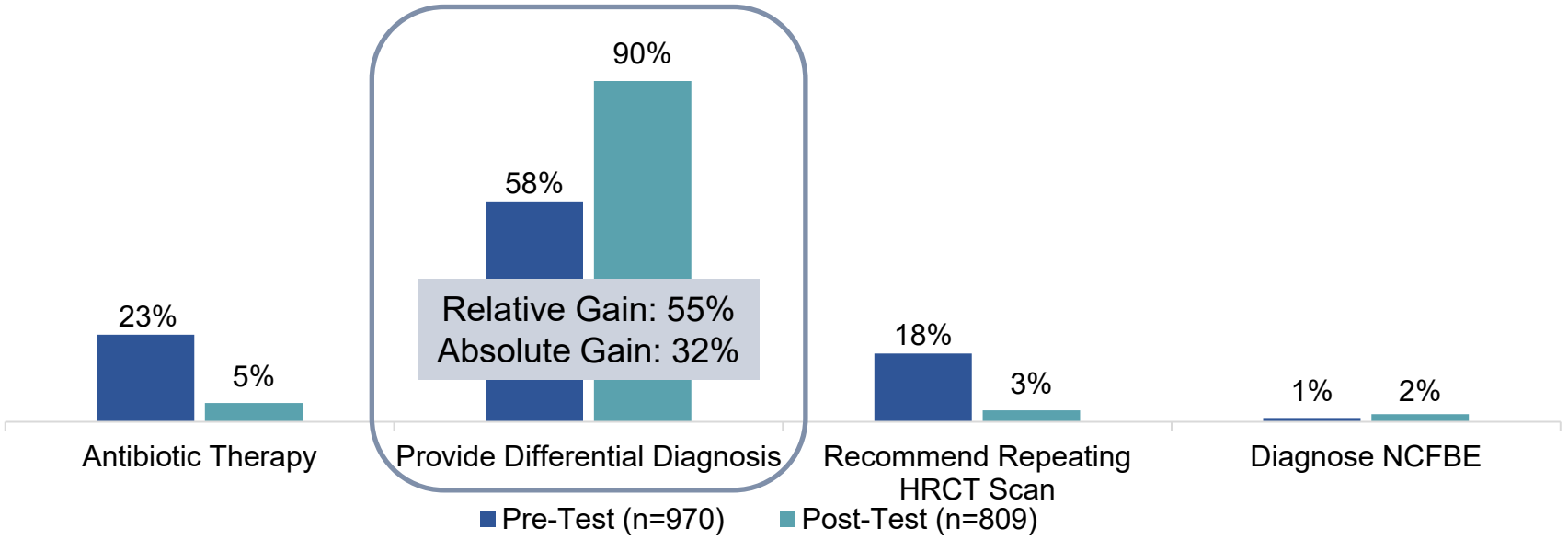
Question 1: A 55-year-old female presents with a chronic productive cough, intermittent hemoptysis, and recurrent respiratory infections over the past two years. She has no history of cystic fibrosis or significant smoking. Physical examination reveals bilateral crackles in the lower lung fields. Laboratory findings show normal sweat chloride levels and negative genetic testing for cystic fibrosis. Pulmonary function tests indicate moderate obstructive airway disease.

An HRCT scan was performed and shows dilated bronchi with a lack of normal tapering, bronchial wall thickening, and peribronchial consolidations in the right lower lobe.

Which of the following is the best next step for diagnosing and managing this patient's condition?



Learning Objective Addressed

1 Understand the role of radiologic imaging, especially HRCT, in diagnosing NCFBE.

4 Develop an interdisciplinary approach for effectively communicating radiological findings to other healthcare team members to ensure an accurate and early diagnosis of NCFBE

Outcomes Level Measured

4 Competence

Rationale:

Radiologists and pulmonologists need to collaborate to correlate imaging findings with clinical history and identify underlying etiologies. While antibiotics are often part of management, initiating them without further interdisciplinary consultation may lead to overlooking underlying causes of NCFBE, such as immunodeficiency or post-infectious damage. Non-contrast HRCT is the gold standard for diagnosing bronchiectasis; repeating the scan with contrast is unnecessary in this context. Lastly, HRCT findings strongly suggest NCFBE but do not indicate surgery as a primary intervention. The underlying cause must be addressed first.

Level (3) Knowledge and Competence: Gains by Question

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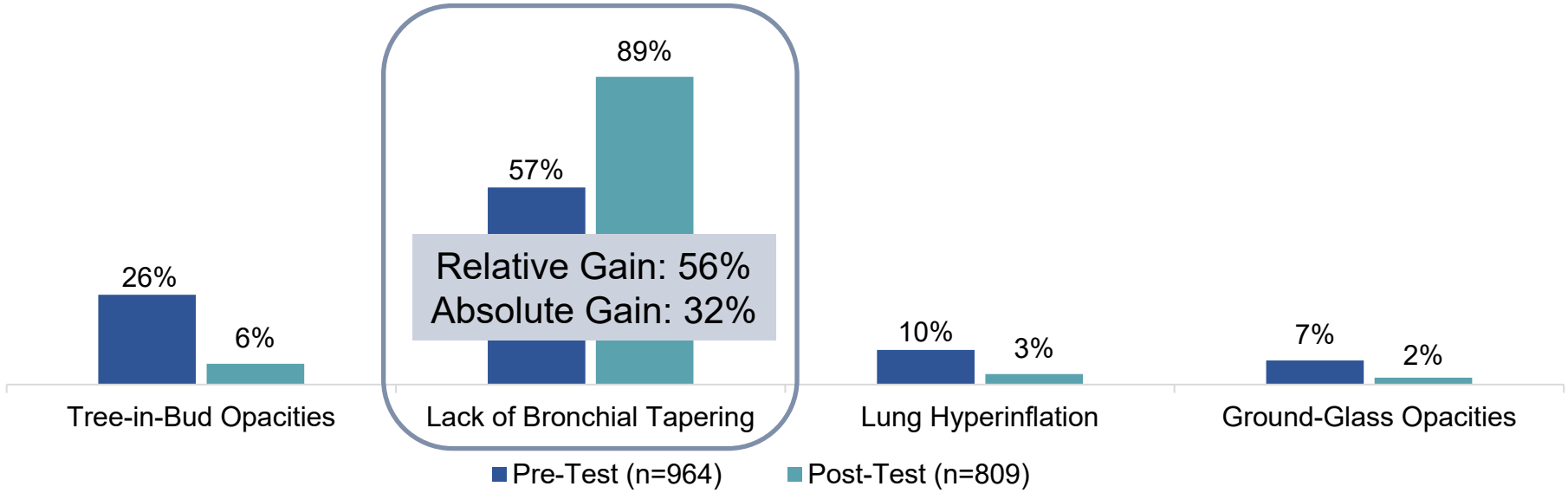
Question 2: A 45-year-old male with no history of cystic fibrosis presents with persistent cough, frequent sputum production, and three episodes of pneumonia in the past year. He denies smoking or exposure to environmental pollutants. He underwent an HRCT scan, which reveals the following findings:

- Bronchial dilation with internal diameters exceeding those of adjacent blood vessels.
- Lack of bronchial tapering.
- Bronchial wall thickening.
- Tree-in-bud opacities in the lower lobes.

Which of the following combinations of radiologic features most strongly supports a diagnosis of NCFBE in this patient?



Learning Objective Addressed

2 Recognize the radiologic features of NCFBE, including bronchial dilatation, lack of bronchial tapering, and thickening of the airways

Outcomes Level Measured

3 Knowledge

Rationale:

Bronchial dilation, lack of tapering, and wall thickening is the classic triad of radiologic findings in NCFBE, strongly supporting the diagnosis. Tree-in-bud opacities and bronchial wall thickening may suggest infection or small airway disease, but cavitary lesions are not hallmark features of NCFBE. Lung hyperinflation is more commonly associated with obstructive airway diseases like COPD, and pleural effusion is not characteristic of NCFBE. Ground-glass opacities and mediastinal lymphadenopathy may suggest interstitial or infectious processes but are not defining features of NCFBE.

Level (3&4) Knowledge and Competence: Gains by Question

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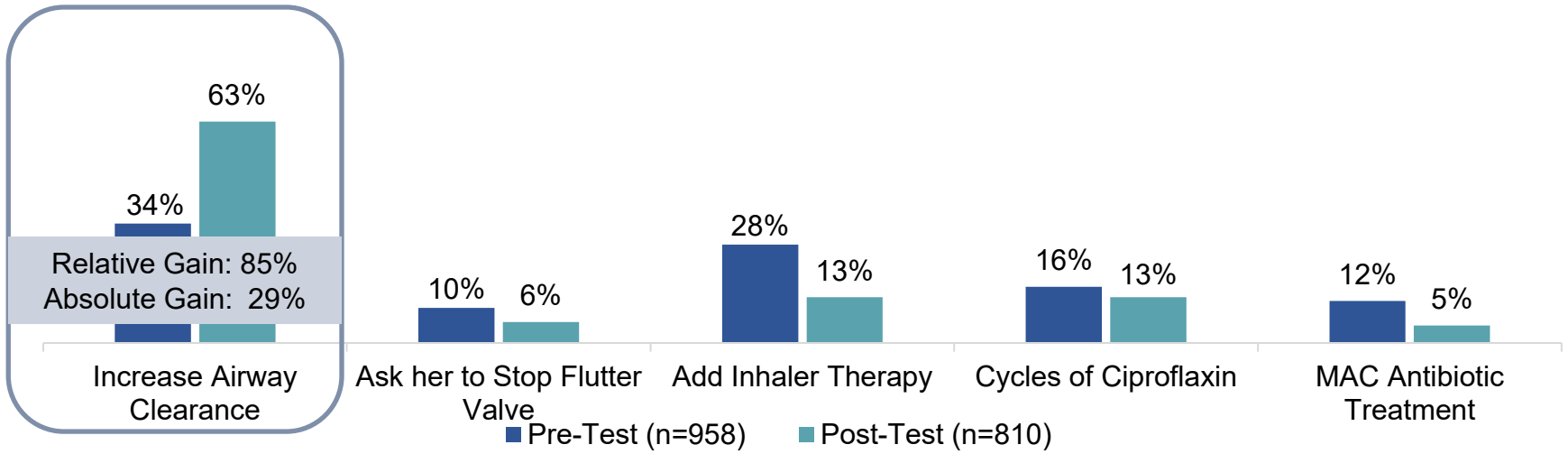
Question 3: Mrs. Small is a 38-year-old female patient with idiopathic non-cystic fibrosis bronchiectasis who has been having recurrent exacerbations and intermittently only growing Pseudomonas aeruginosa in her sputum cultures. She has a chronic cough but does not produce a lot of mucus with the daily use of a flutter valve, and she is short of breath with activities. Her Pulmonary Function Test (PFTs) are within the normal limits, and she has no bronchodilator effect pre and post albuterol assessment. Below is an example of her chest CT scan and radiographic burden of disease. Which of the following would be the best next step in management for this patient?



Learning Objective Addressed

3 Evaluate current and emerging treatment options for patients with NCFBE and the role of early diagnosis

Outcomes Level Measured

4 Competence

Rationale:

Some patients with bronchiectasis may have mild CT findings but severe symptoms, frequent exacerbations, and high bacterial burden, underscoring the need to pair imaging with clinical assessment. Increasing airway clearance, such as adding hypertonic saline, is a safe and effective first step, even in "dry" patients using only a flutter valve. Stopping airway clearance risks worsening outcomes, as it is central to treatment. ICS/LABA inhalers are not first-line unless asthma is present, and ICS should be avoided in chronically infected patients. Oral antibiotic rotation is outdated; inhaled antibiotics are preferred. NTM diagnosis requires positive cultures plus symptoms—radiographic findings alone are not enough.

Level (4) Competence: Change in Confidence

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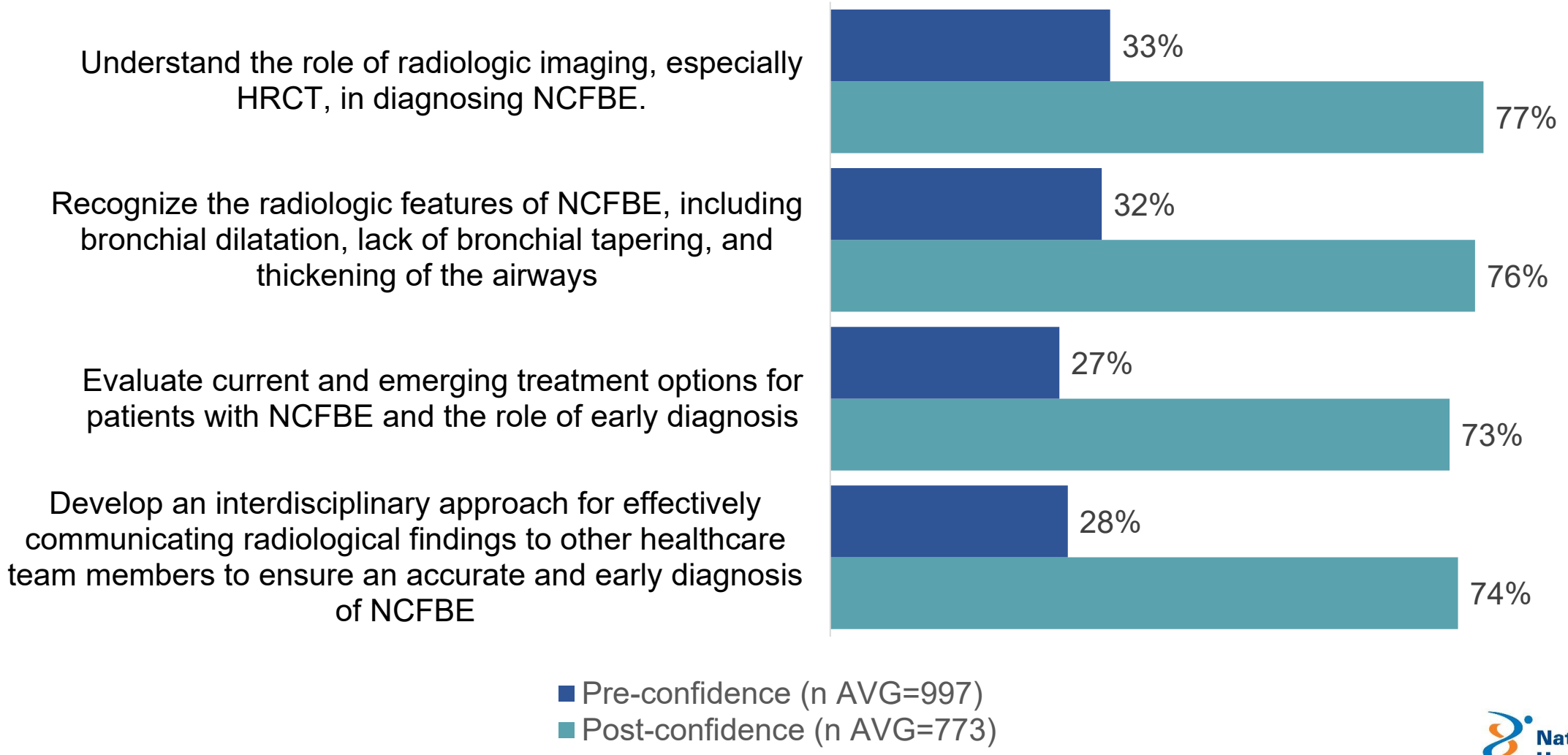
After having participated in this activity, how confident are you in your ability to: (% Very confident / Somewhat confident)



Level (4) Competence: Practice Change
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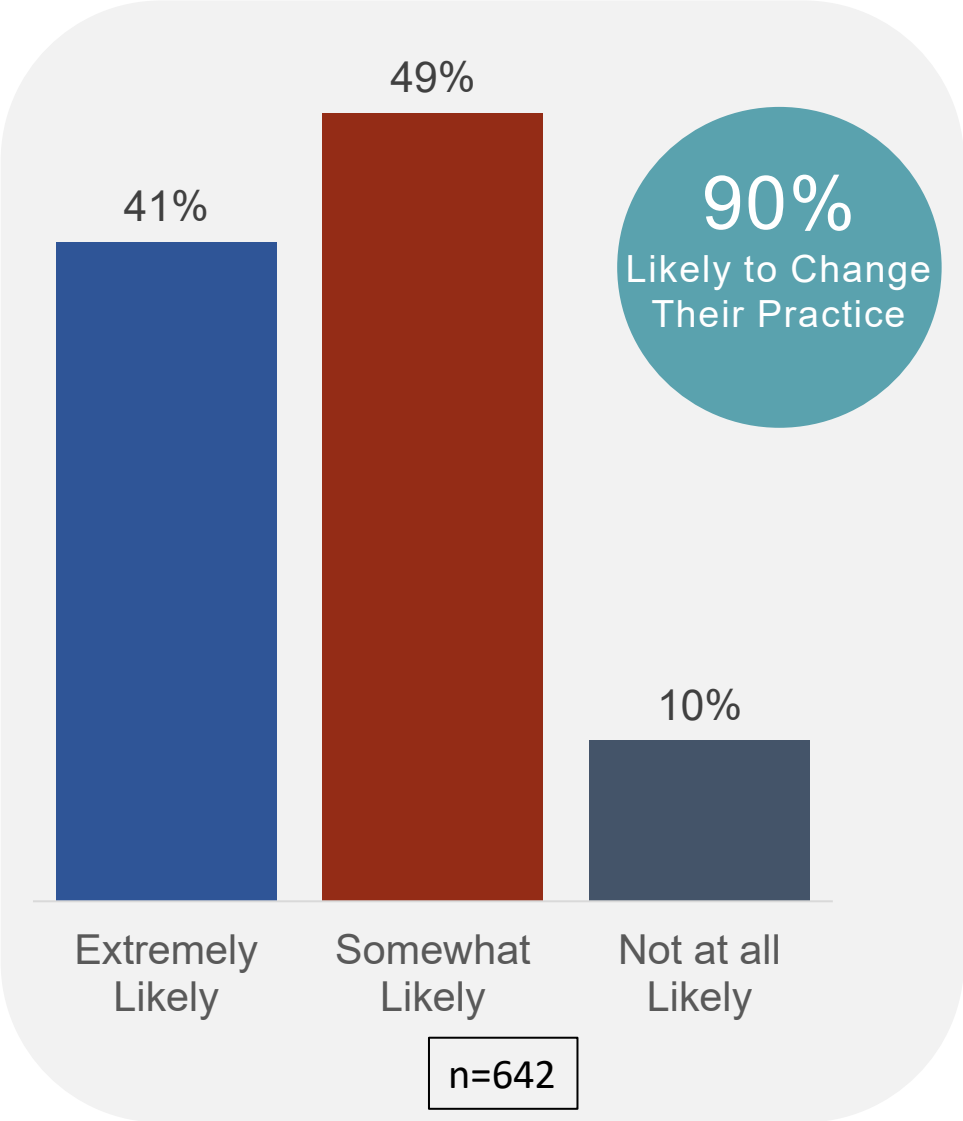
How likely are you to make changes in your practice?



What changes will you incorporate into your practice as a result of what you learned?

- Increased engagement with radiologists, pulmonologists, and other specialists for better diagnosis and management.
- Greater understanding of when and how to use HRCT for accurate diagnosis of bronchiectasis.
- Emphasis on improved differential diagnosis and timely identification using appropriate imaging.
- Recognizing when to refer patients, especially after failed treatments, to ensure proper specialist care.
- Participants feel more capable in managing bronchiectasis and applying knowledge in their clinical setting.
- Plans to educate patients better and incorporate tools like sputum clearance devices to support care.
- Attention to respiratory treatments like nebulized mucolytics and hypertonic saline to enhance symptom control.
- Desire to continue learning, especially in interpreting radiology findings and staying current with best practices

Evaluation Survey Results: Barriers

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What barriers to optimal patient care are you facing that the activity will help to address?

- “Compliance, follow up, cost”
- “Cost of tests and treatments”
- “Well trained radiologists, specialized respiratory therapists, access to sputum clearance gadgets”
- “Cost and insurance issues.”
- “Access to clinicians and radiologists with expertise in NCFB.”
- “Approval for devices, inhaled meds”
- “Frequency of HRCT”
- “Patient cooperating”
- “Teaching strategies”
- “Dealing with insurances”
- “Insurance barrier”

77%

n = 771

of evaluation respondents report the activity will help to address barriers to optimal patient care

Evaluation Survey Results

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Key Takeaways

- “Very well done, can now appreciate the utility of high-resolution CT in differentiating basis for bronchiectasis”
- “Importance of collaboration for accurate diagnosis for effective management”
- “I feel a little more comfortable looking at images and am more likely to contact the radiologist to discuss the findings.”
- “Respiratory illness is an arduous condition for patient, and it requires a whole team approach with medication as well as non-pharmacological management”
- “Understanding non-cystic fibrosis bronchiectasis and its associated etiologies”
- “Use of imaging earlier in work up. Patterns on CT chest to be aware of and consider for Bronchiectasis”

Future Topics

- “New molecules like brensocatib in bronchiectasis treatment”
- “Treatment of complications and when is surgical treatment needed or if it is really needed at all.”
- “The different types and its management secondary to autoimmune diseases.”
- “Prevention of Bronchiectasis”
- “More radiographic information.”

Accreditation Details

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

National Jewish Health designates this enduring material for a maximum of 1.5 *AMA PRA Category 1 Credits*™.