

Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Final Outcomes: Online Enduring
(11/6/20 - 11/17/21)
and Live Broadcasts

Supported by an educational grant from Insmad.



Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Overview

This program was an innovative pre-recorded video-based educational activity with live faculty Q&A held as an adjunct symposium to the American College of Chest Physicians Annual Meeting (CHEST 2020), and as a second broadcast with live faculty Q&A on the ReachMD platform. The pre-recorded video-based content with the Q&A is endured on myCME and ReachMD. The goal of this live and online enduring program was to improve the awareness, knowledge, and competence of pulmonologists and infectious disease physicians in the diagnosis, management, and treatment of nontuberculous mycobacteria lung disease (NTM-LD or NTM). The engaging multimedia program featured a patient-focused video, question and answer session, and nationally known expert faculty to help attendees convert information into practice.

Learning Objectives

- Apply strategies to reduce time to diagnosis and initiation of evidence-based treatment of NTM-LD.
- Use a patient-centered approach for communications related to diagnosis and development of individualized treatment plans in NTM-LD.
- Integrate strategies to manage adverse events and improve adherence to promote the completion of treatment regimens and improved patient outcomes in NTM-LD.

Faculty



Charles Daley, MD
Chief, Division of
Mycobacterial and Respiratory
Infections
Professor of Medicine
National Jewish Health
University of Colorado Denver
Denver, Colorado



Shannon H. Kasperbauer, MD
Associate Professor of
Medicine
Division of Mycobacterial and
Respiratory Infections
National Jewish Health
University of Colorado Denver
Denver, Colorado

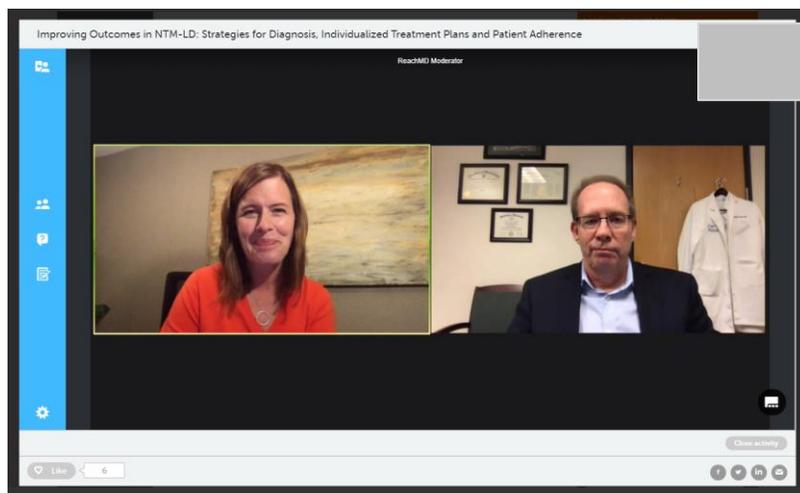
Improving Outcomes in NTM-LD:

[Final Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Features

Live Q&A with Faculty



Patient Perspective Video Clip



Clinical Reference Aid

Strategies for Monitoring and Improving Adherence in Nontuberculous Mycobacteria (NTM)

DRUG	ADVERSE REACTIONS	MONITORING	STRATEGY
Azithromycin/ clarithromycin	• Gastrointestinal	• Clinical monitoring	• Change clarithromycin to azithromycin • Move administration to bedtime • Take with small starch
	• Metallic taste • Dysgeusia	• Clinical monitoring	• Change clarithromycin to azithromycin
	• Tinnitus/hearing loss	• Audiogram	• Interruption/change to thrice weekly
	• Hepatotoxicity	• Liver function tests	• Hold medication and re-challenge with mild hepatitis to determine etiology
Ethambutol	• Prolonged QTc	• ECG (QTc)	• Stop concomitant QT prolonging medications • May be rate limiting toxicity
	• Ocular toxicity	• Visual acuity/color discrimination • Read fine print every day of the same font	• Stop medication immediately and see an ophthalmologist • Rate limiting toxicity
	• Neuropathy	• Clinical monitoring	• Rate limiting toxicity
Rifampin/rifabutin	• Hepatotoxicity	• Liver function test	• Hold medication and re-challenge with mild hepatitis to determine etiology
	• Cytopenia	• Complete blood count	• Continue medication with mild leukocytopenia • Stop if the platelet count drops significantly (ITP)
	• Hypersensitivity	• Clinical monitoring	• Stop medication
	• Orange discoloration	• Clinical monitoring	• Reassure patient orange discoloration of secretions is expected
Amikacin (parenteral)	• Uveitis (rifabutin)	• Visual acuity	• Rate limiting toxicity • Consider re-challenging with rifampin
	• Ototoxicity	• Audiogram	• May be rate limiting
	• Tinnitus	• Clinical monitoring	• Stop other medications that can cause tinnitus • May be rate limiting
	• Vestibular toxicity	• Clinical monitoring	• Rate limiting toxicity
	• Nephrotoxicity	• BUN, creatinine	• Maintain hydration • Stop unnecessary medications that may affect renal function
	• Electrolyte disturbances	• Metabolic panel	• Correct electrolyte abnormalities prior to initiation

Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Audience Generation

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 and e-newsletters: CHEST registrants & members, ReachMD, myCME & NJH databases

Because you joined us in recent years at CHEST, we want you to know we are back in 2020 with 3 free CME live webinars!

njhealth.org/CHEST2020symposia

Attendees must also be registered for the CHEST Annual Meeting to have access to the webinars.



Improving Outcomes in NTM-LD: Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Nontuberculous Mycobacteria Lung Disease (NTM-LD) is chronic and debilitating and it is on the rise. Learn the latest on how to identify and treat NTM, personalized treatment, management of adverse events, and strategies for patient adherence in NTM.

Live Webinar is Sunday, October 18, 2020
11:15 a.m. to 12:15 p.m. (CT)
Begins at 9:15 a.m. (PT), 10:15 a.m. (MT), 12:15 p.m. (ET)

Supported by an Educational Grant from Insmid.



Dedicated landing page on NJH website and ReachMD & myCME platforms

The landing page features the title "Improving Outcomes in NTM-LD: Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence". It includes a call to action "Are You Seeing More Patients Who May Have NTM?", a list of faculty members (Charles Daley, MD and Shannon H. Kasperbauer, MD), a "Live Webinar Satellite Symposia" schedule for Sunday, October 18, 2020, and sections for "TARGET AUDIENCE", "ACCREDITATION & DESIGNATION STATEMENTS", and "REGISTER". Logos for BEST Hospitals and National Jewish Health are also present.



Search engine optimization on ReachMD platform

Social media ads and posts



The social media post features the title "Nontuberculous Mycobacteria Lung Disease Webinar Oct. 18, 11:15 am (CT) at CHEST Annual Meeting" and includes photos of the speakers, Charles Daley, MD and Shannon H. Kasperbauer, MD.

Preferences in ReachMD and myCME user online profiles



Featured Industry Event Listing – CHESTDailyNews.org

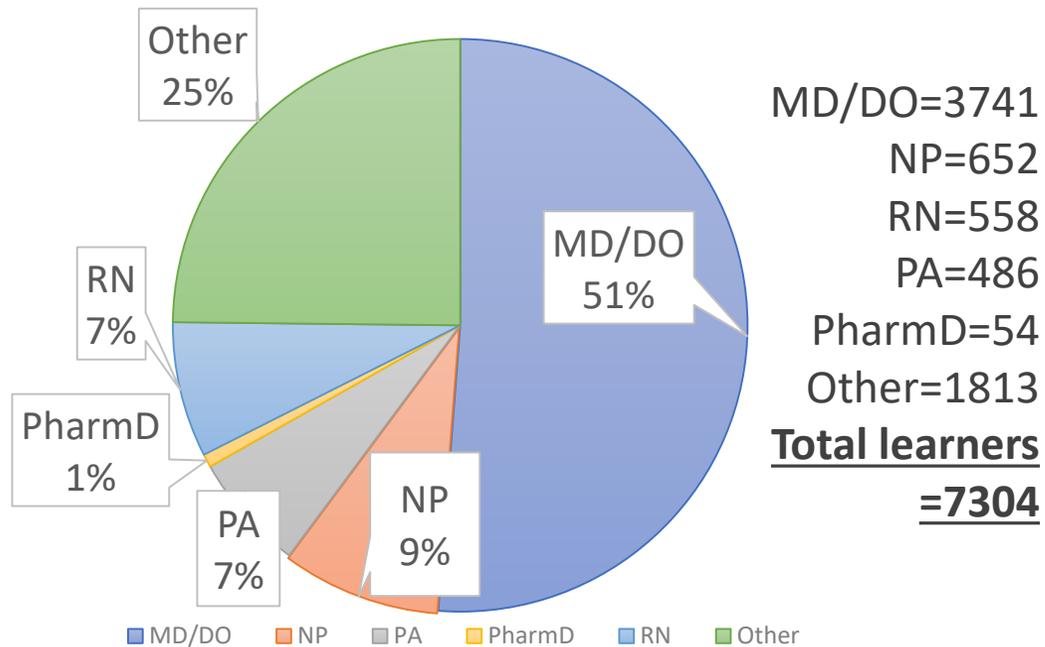


Improving Outcomes in NTM-LD:

[Final Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Overall Program Impact: Live Broadcasts and Online Enduring Program



51% of learners were physicians

“Excellent presentation, very practical, relevant, and up-to-date.”
- Online enduring learner

“This activity was wonderful, clear, and direct. I enjoyed it.”
- Online enduring learner

“A very easy to understand explanation of the changes in the guidelines.”
- Online enduring learner

7,304 total learners across entire program, exceeding guarantees by **3,029 learners!**
(live broadcasts and online enduring)

Total Patient Impact 133,744/Yr

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Online Enduring Program

Improving Outcomes in NTM-LD: Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

1.00 credits 60 minutes Like Share Save

CME/CE Broadcast Replay



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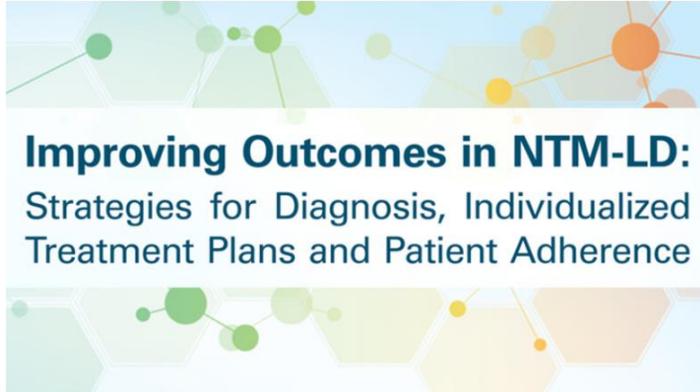
ReachMD

Launched 11/6/2020

Final Data Through 11/06/2021

Improving Outcomes in NTM-LD: Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

CME 1.00 Credit



Improving Outcomes in NTM-LD:
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Description	Educational Objectives	CME/CE Information	Faculty and Disclosures	Instructions
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Webcast
Time to Complete: 1 hour
Released: November 18, 2020
Expires: November 17, 2021
Maximum Credits:
1.00 / AMA PRA Category 1 Credit™

Start Activity

myCME

Launched 11/17/2020

Final Data Through 11/17/2021

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Learner Definitions: Online Enduring Program

Platform	Learner Definition	Test-Taker Definition	Completer Definition	Certificate Earner Definition	Learner Guarantee	Learner Actuals	Test-Taker Guarantee	Test-Taker Actuals	Completer Guarantee	Completer Actuals	Certificate Earners
ReachMD	Engaged with the content	Number of learners who passed the post-test	Completed evaluation & claimed credit on ReachMD platform	Completed evaluation & claimed credit on ReachMD platform	2,000	4,172	N/A	74	N/A	48	48
myCME	Number of times the activity was visited and at least one page was viewed	N/A	Number of learners who took and passed post-test	Completed the evaluation and claimed credit on myCME platform	2,000	2,918	N/A	N/A	400	463	430
TOTAL					4,000 Learners	7,090 Learners	N/A	74	400 Completers	537 Completers	478 Certificate Earners

Exceeded online learner guarantee by 3,090

Exceeded online completer guarantee by 137

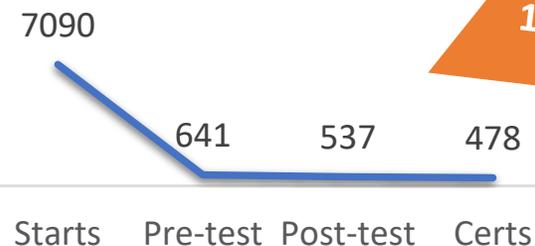
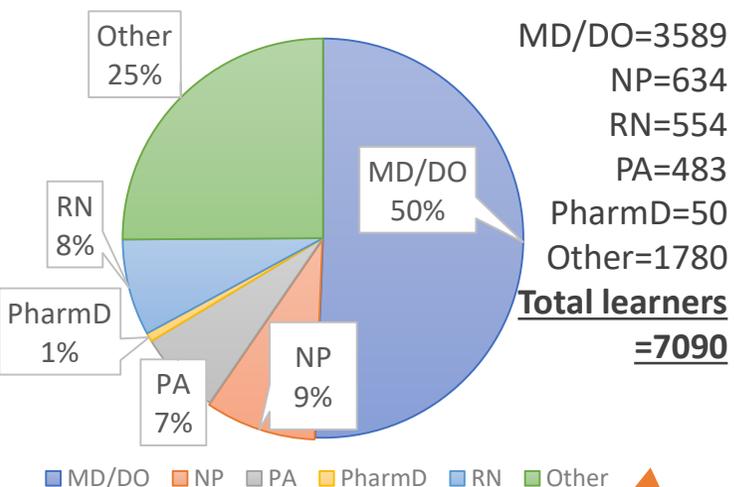
Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

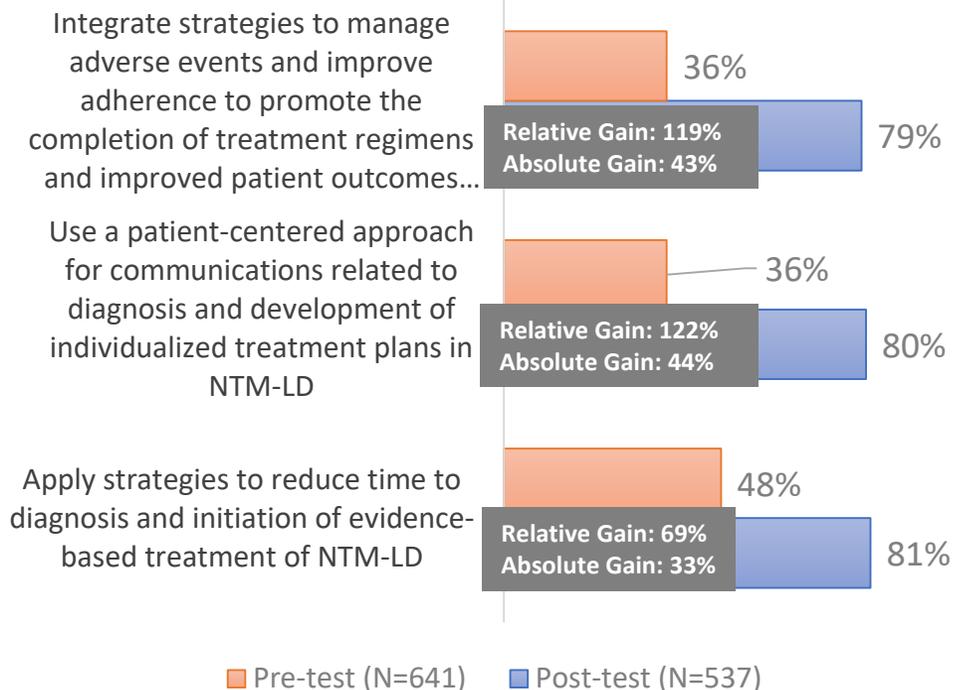
Quantitative Educational Impact Summary: Final Online Enduring Program

Participation

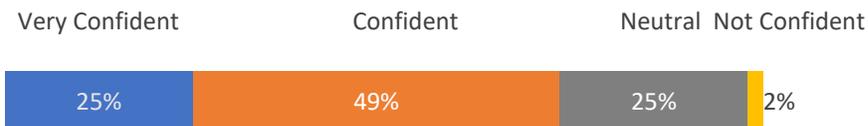


Patient Impact 127,140/Year

Learning Gain Across Objectives

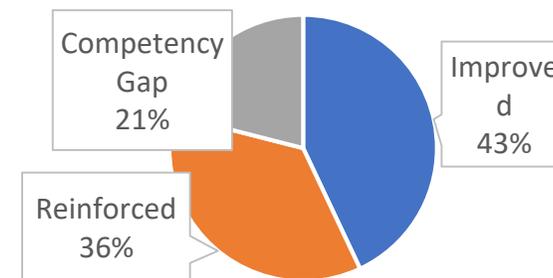


Confidence @ Post-Test

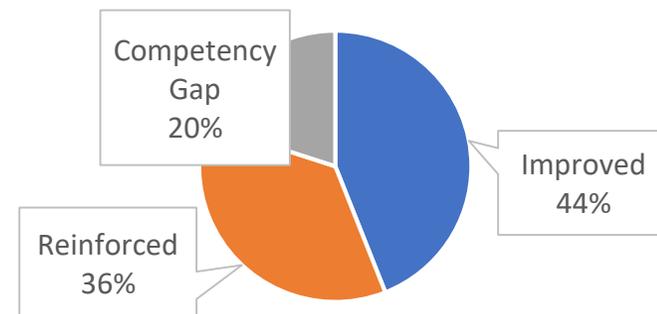


Persistent Learning Gaps/Needs

21% of learners remained unable to integrate strategies to manage adverse events



20% of learners remained unable to use a patient-centered approach



Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Qualitative Educational Impact Summary: Final Online Enduring Program

Patient Impact

478

Evaluation respondents

Who see

2,445

NTM Patients Weekly

Which translates to

127,140

Patient Visits Annually

Educational Impact

Knowledge and Competence Change by Learning Objective



Applying strategies to reduce time to diagnosis and initiation of evidence-based treatment of NTM-LD increased by **69%** [N=537]



Use of patient-centered approach for communications related to diagnosis and development of individualized treatment plans in NTM-LD increased by **122%** [N=537]



Integrating strategies to manage adverse events and improve adherence to promote the completion of treatment regimens increased by **119%** [N=537]

Practice Change

87%

Reported intent to change their practice [N=478]

83% Overall relative confidence gain [N=478]

79%

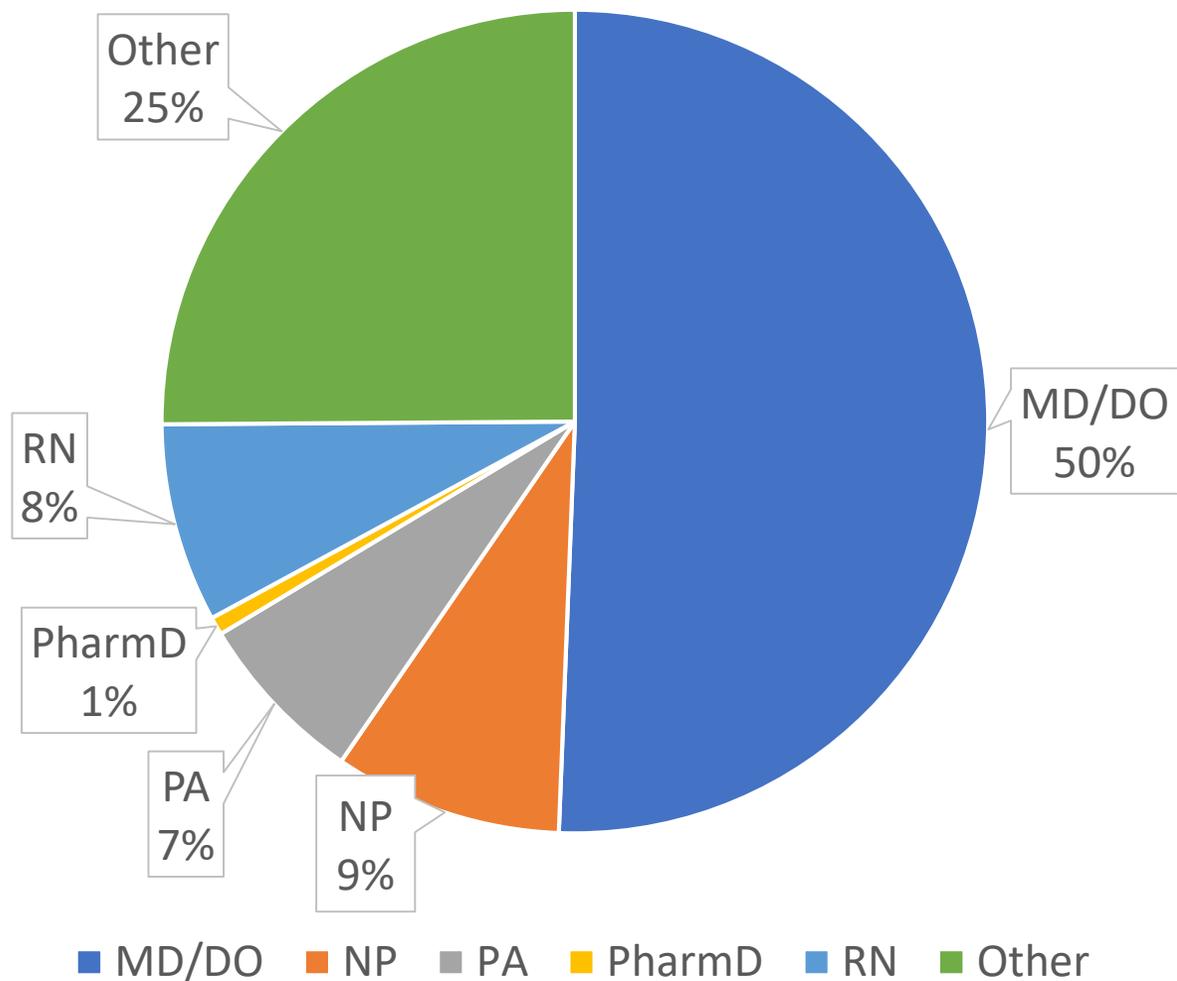
Evaluation respondents indicated the activity addressed strategies for overcoming barriers to optimal patient care [N=477]

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 1 Outcome: Final Online Enduring Program: Participation by Designation



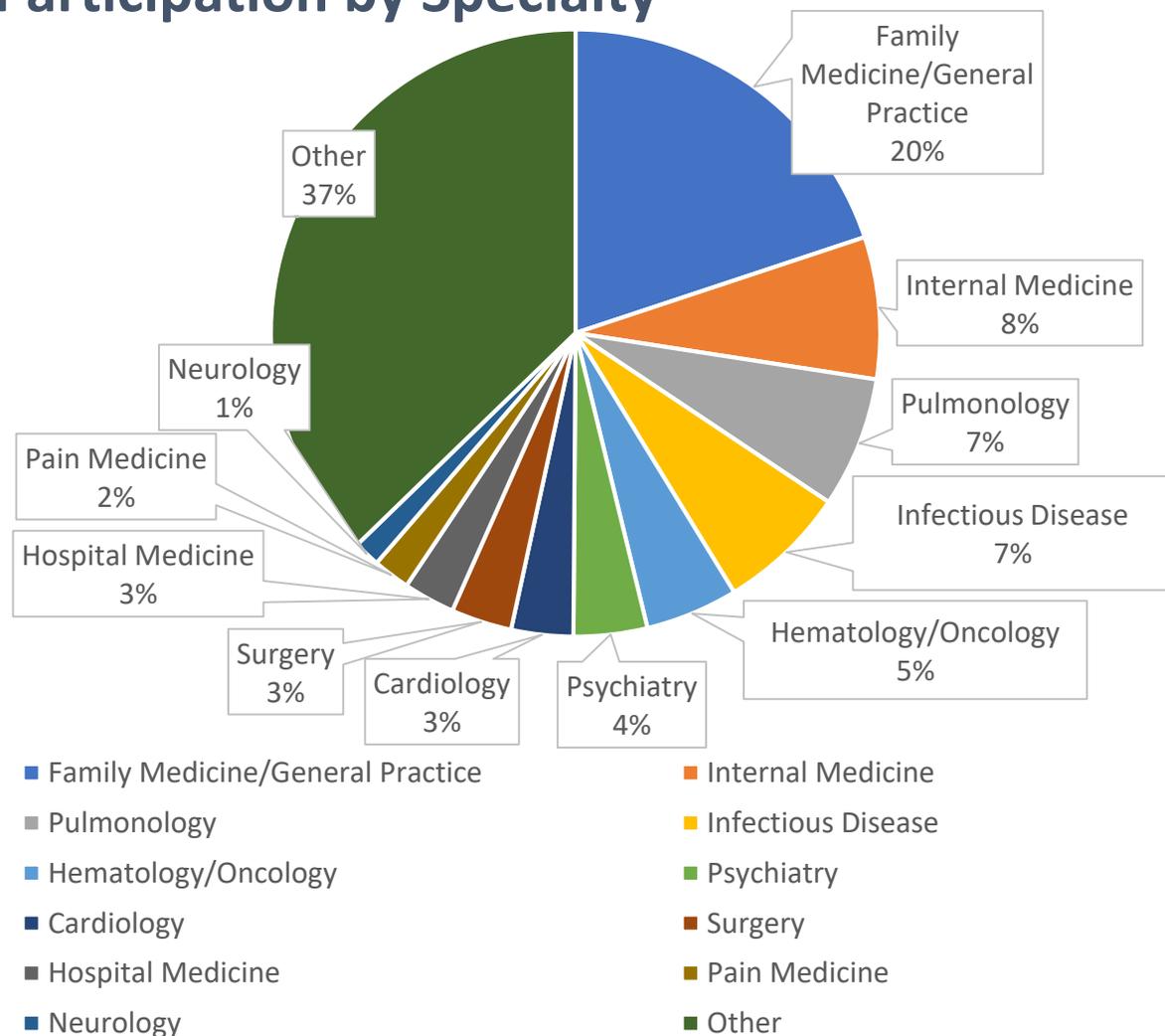
Designation	
MD/DO	3589
NP	634
PA	483
RN	554
PharmD	50
Other	1780
Total learners	7090

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 1 Outcome: Final Online Enduring Program: Participation by Specialty



Specialty	
Family Medicine/General Practice	1410
Internal Medicine	536
Pulmonology	493
Infectious Disease	488
Hematology/Oncology	349
Psychiatry	277
Cardiology	233
Surgery	229
Hospital Medicine	194
Pain Medicine	139
Neurology	99
Other (pediatrics, geriatric medicine, emergency medicine, critical care and more)	2643
Total learners	7090

Improving Outcomes in NTM-LD:

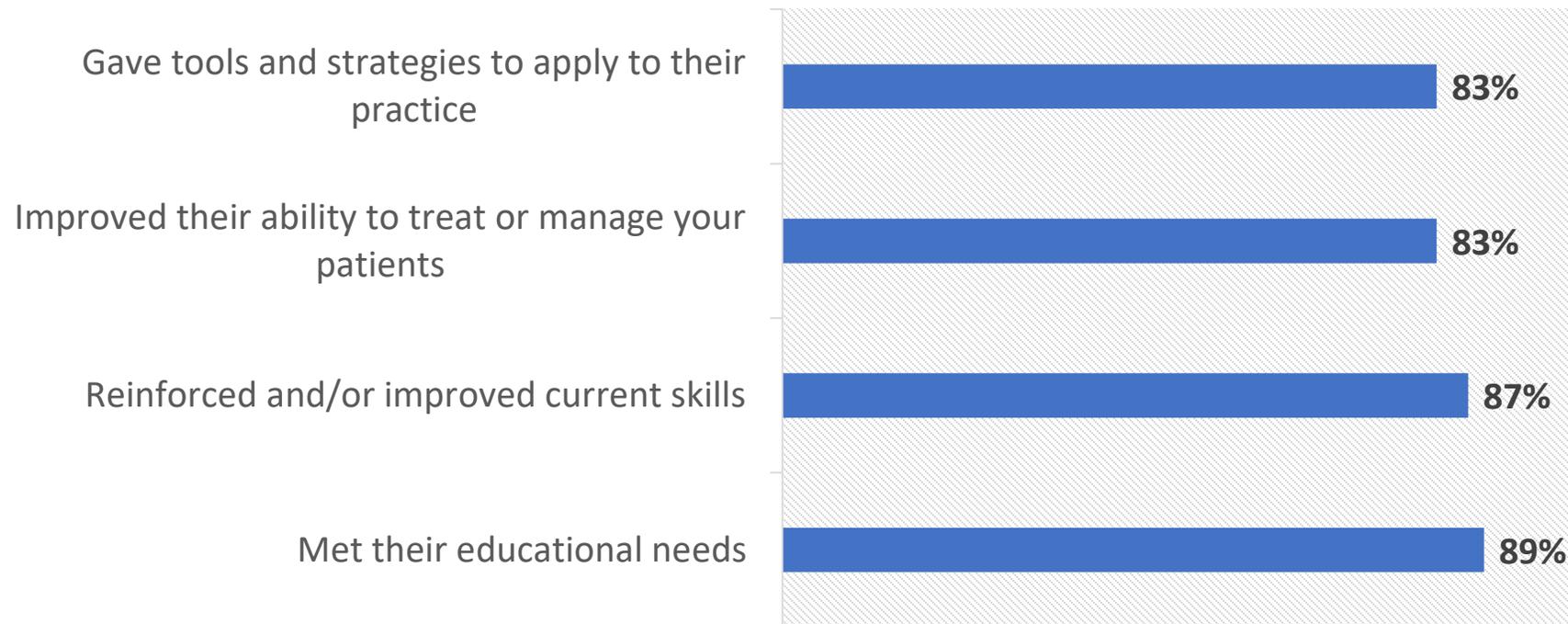
[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 2 Outcomes: Satisfaction – Final Online Enduring Program

Analysis of learner responses related to educational needs

Learners reported they agree or strongly agree the activity:



■ Strongly Agree to Agree (N=478)

Learners reported high levels of satisfaction related to the ability of the activity to impact practical applications

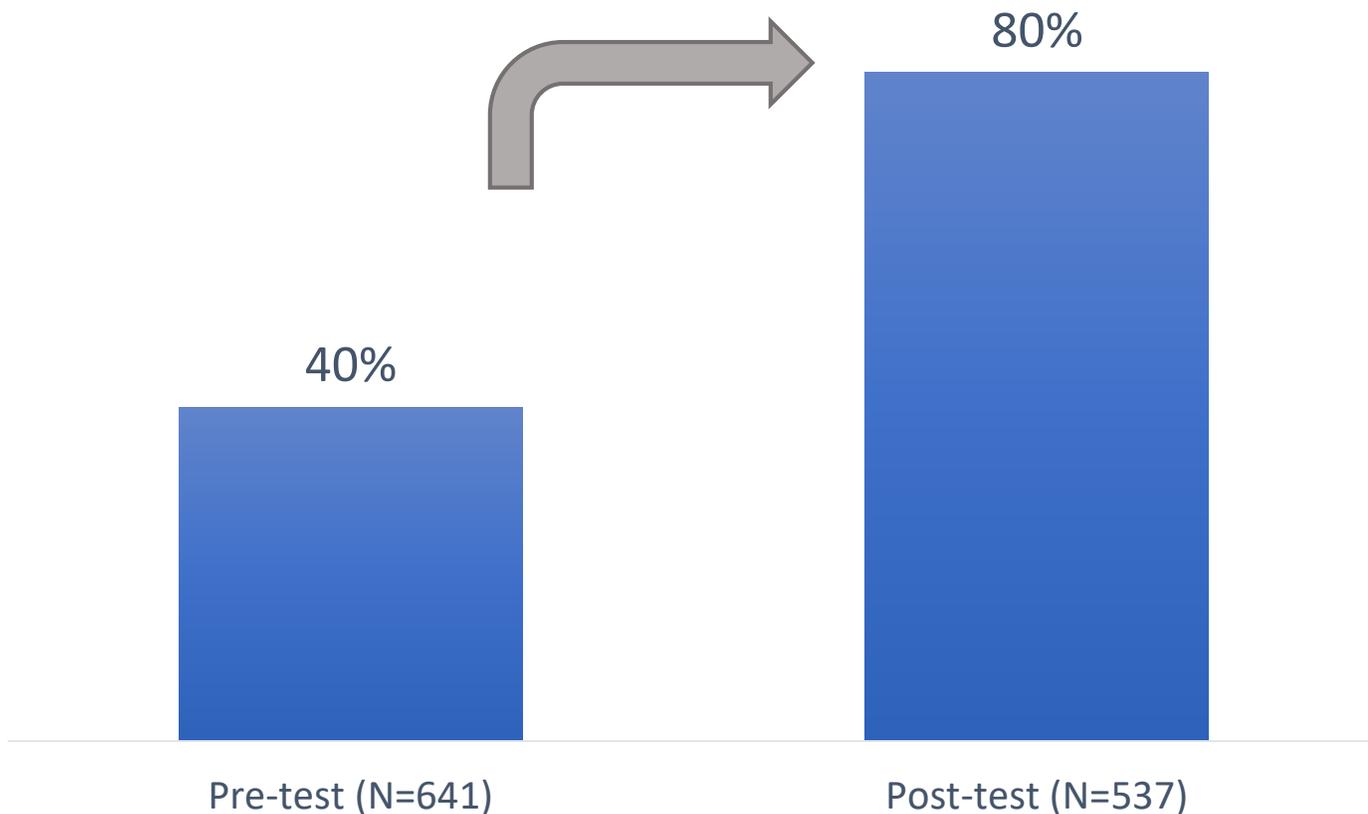
Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes: Overall Learning (Knowledge/Competence): Final Online Enduring Program

Overall Knowledge Gain



100% Overall Relative Knowledge Gain



40% Overall Absolute Knowledge Gain

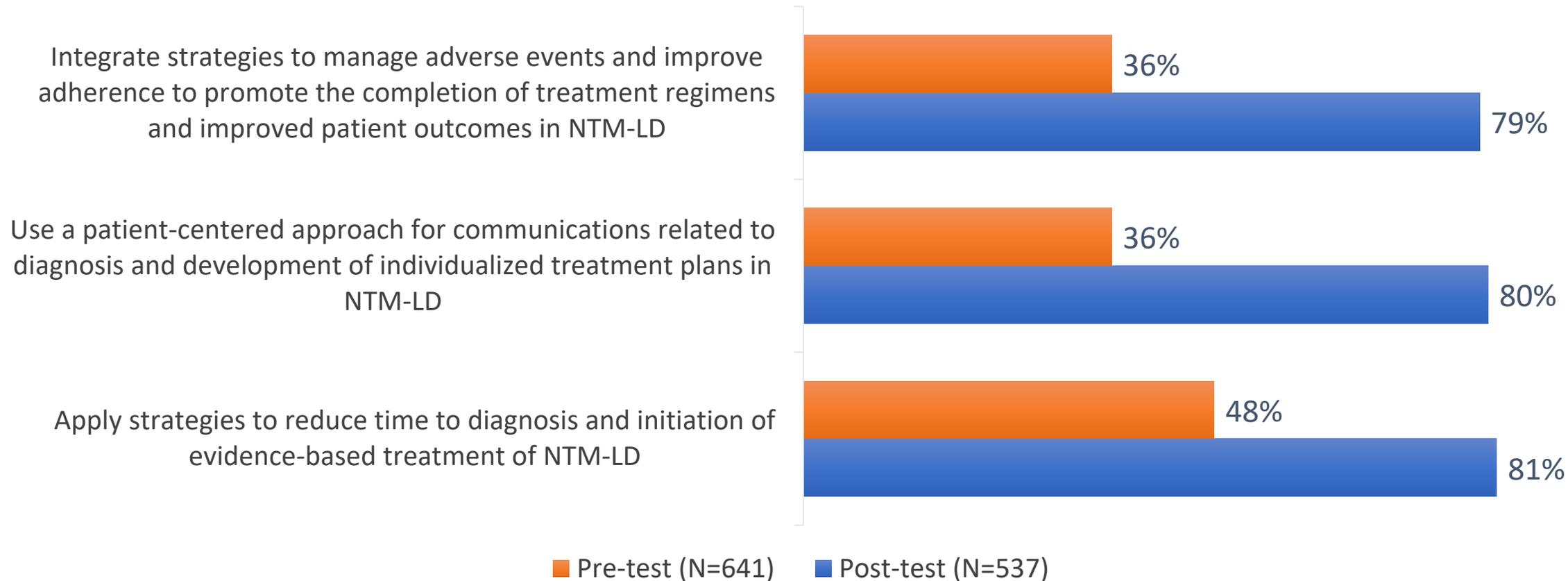
Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3 Outcomes (Knowledge): Final Online Enduring Program - By Learning Objective

Knowledge Gain by Learning Objective



Improving Outcomes in NTM-LD:

[Final Online Outcomes]

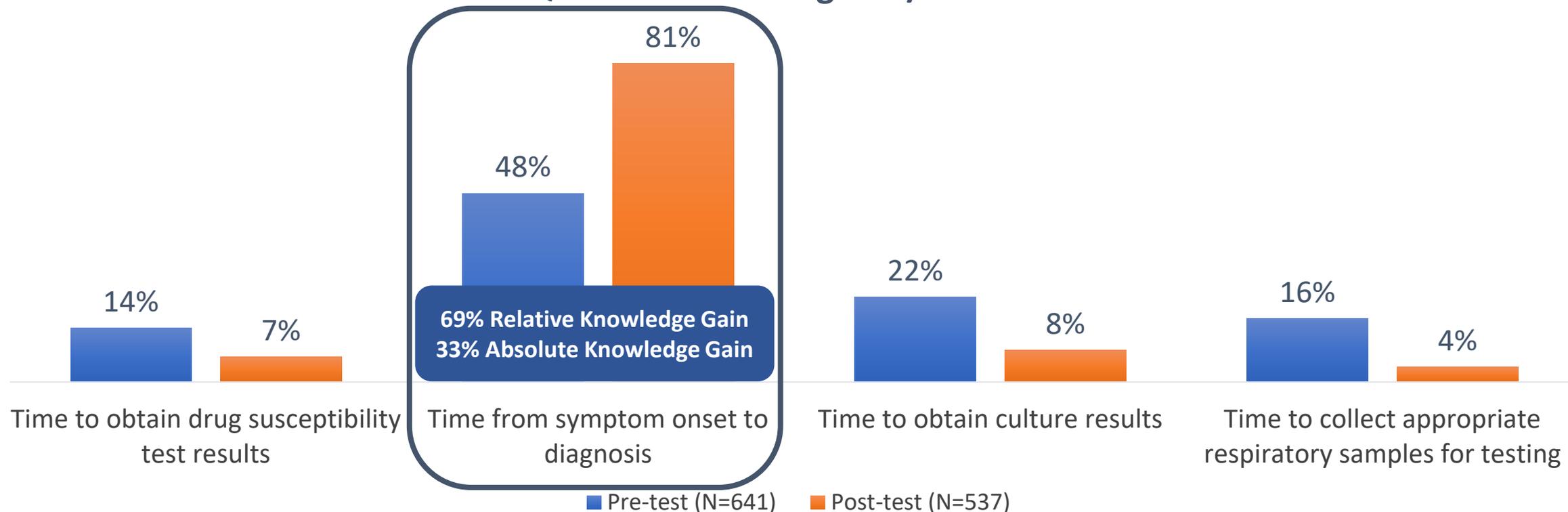
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes (Knowledge/Competence): Final Online Enduring Program -Question 1

Learning Objective: *Apply strategies to reduce time to diagnosis and initiation of evidence-based treatment of NTM-LD*

Q1: Which of the following contributes the most to diagnostic delay of nontuberculous mycobacterial pulmonary disease?

Q1 Online Enduring: Pre/Post-test



Improving Outcomes in NTM-LD:

[Final Online Outcomes]

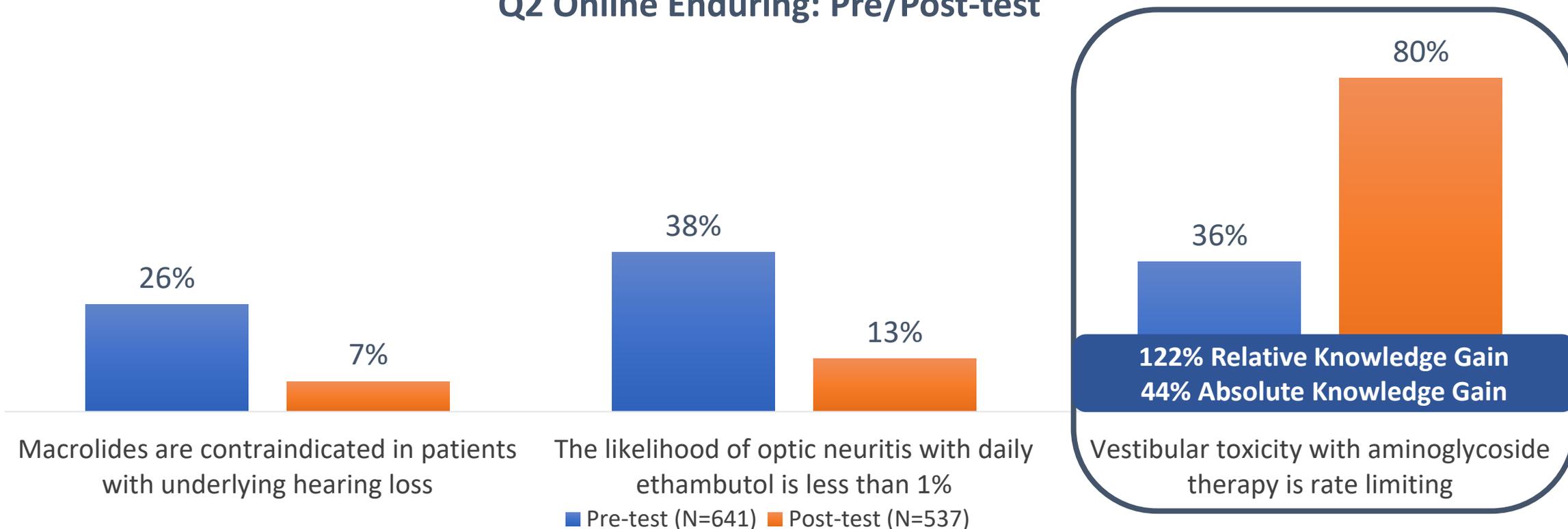
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes (Knowledge/Competence): Final Online Enduring Program Question 2

Learning Objective: *Use a patient-centered approach for communications related to diagnosis and development of individualized treatment plans in NTM-LD*

Q2: When counseling patients about their MAC treatment, which of the following is TRUE?

Q2 Online Enduring: Pre/Post-test



Improving Outcomes in NTM-LD:

[Final Online Outcomes]

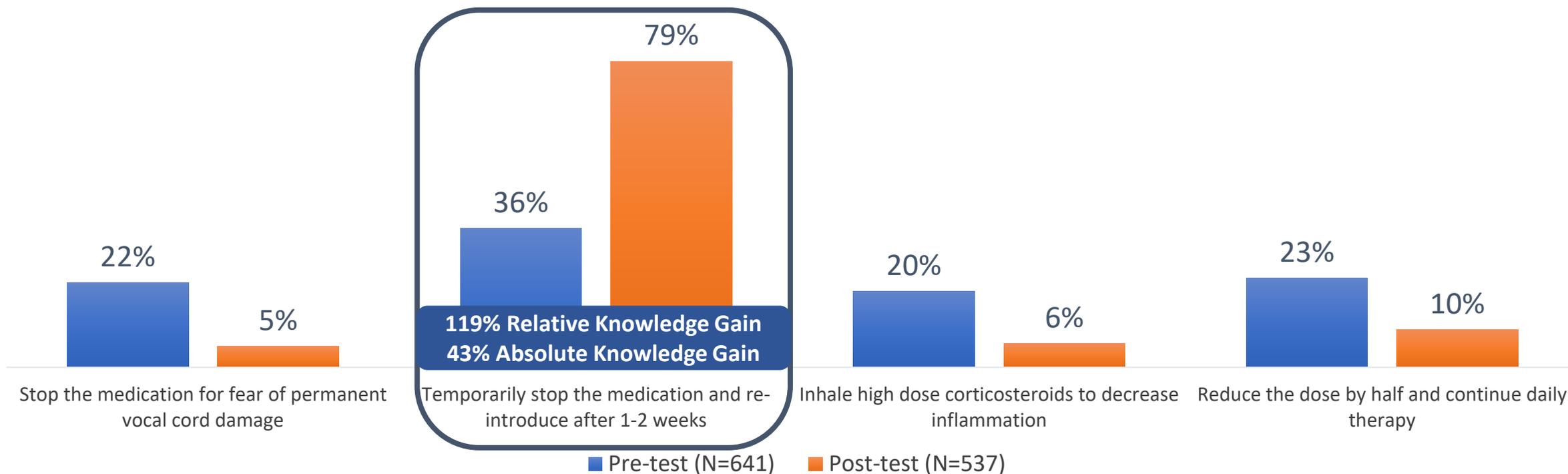
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes (Knowledge/Competence): Final Online Enduring Program Question 3

Learning Objective: *Integrate strategies to manage adverse events and improve adherence to promote the completion of treatment regimens and improved patient outcomes in NTM-LD*

Q3: Dysphonia is one of the most common adverse reactions associated with amikacin liposome inhalation solution (ALIS). Which of the following interventions would be most appropriate?

Q3 Online Enduring: Pre/Post-test



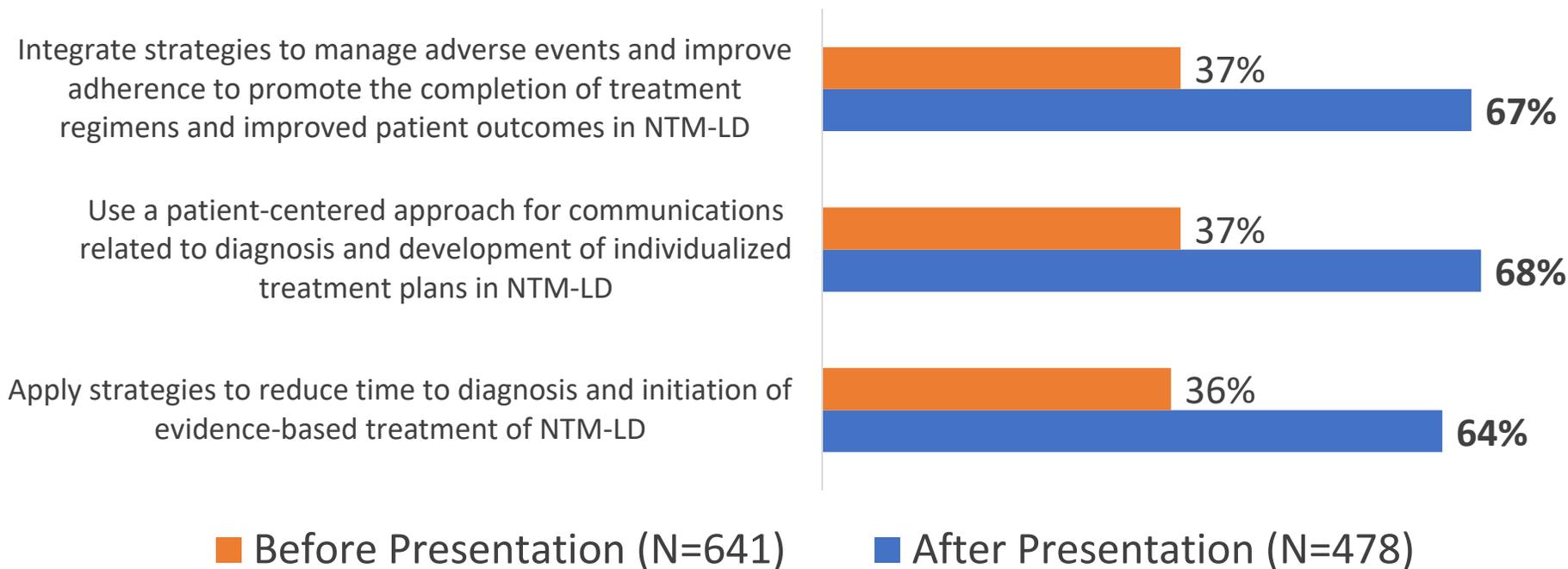
Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 4 Outcomes: Competence – Final Online Enduring Program

Learners reported their confidence on the learning objectives before and after the presentation (somewhat confident – very confident)



Relative Gain in Confidence: 83%

Absolute Gain in Confidence: 30%



Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

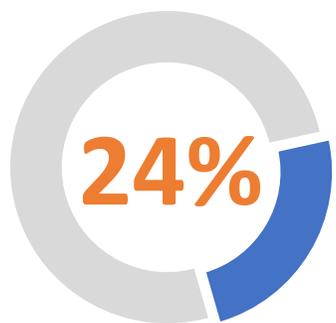
Level 4 Outcomes (Competence): Final Online Enduring Program

An analysis of open-ended comments demonstrates the following changes learners intend to make:

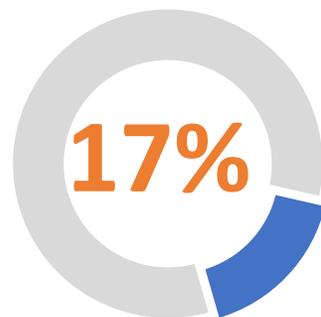
87%

N=478

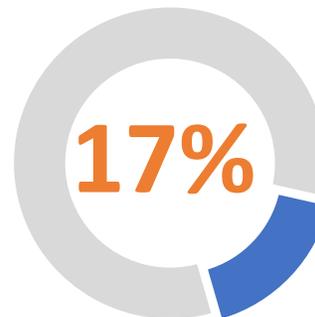
Evaluation respondents intend to make changes to practice as a result of the activity



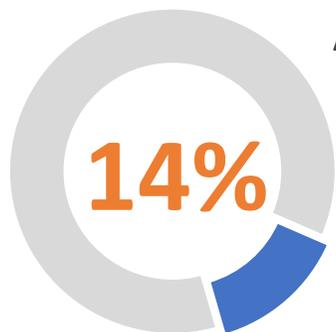
Implement evidence-based treatment strategies



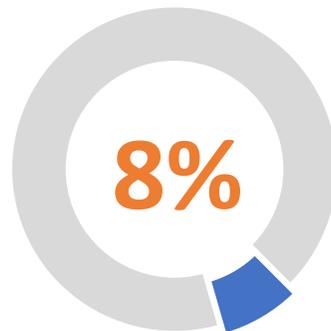
Improve patient communication and education



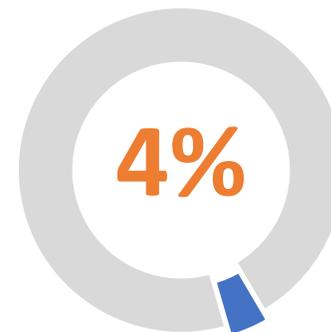
Include NTM in differential to improve earlier detection



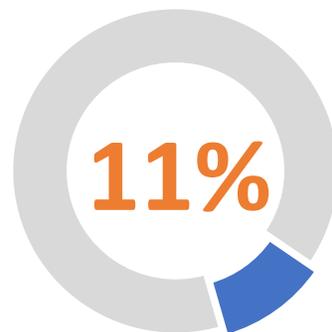
Adjustments in medication regimen and awareness of side effects



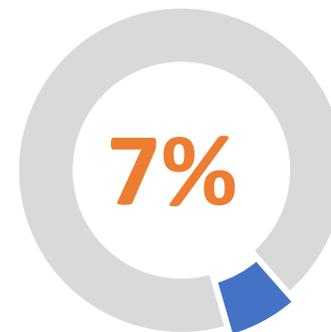
Coordination of care with the interdisciplinary team



Improve patient assessment to provide adequate treatment



Apply knowledge of NTM into clinic setting and teach colleagues



Frequent cultures and assessment of culture conversion

N=259

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Final Online Enduring Program

97%

- Material presented in an objective manner and free of commercial bias

89%

- Content presented was evidence-based and clinically relevant

N=478

Speciation of different microorganisms
(12 responses)

Coordinate with disease specialist when appropriate
(11 responses)

Strategies to manage adverse events & improve adherence
(27 responses)

Treatment strategies and guidelines
(78 responses)

Overall knowledge of NTM
(94 responses)

Medication regimens and management of side effects
(35 responses)

Earlier diagnosis of NTM
(46 responses)

Most Important Take-away

Patient communication and education
(27 responses)

N=330

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Final Online Enduring Program

What topics would you like more information about in future educational activities?

Other nontuberculous mycobacterium diagnosis and treatment	Protocols for lung transplant
Culture results	Prevention of NTM
Treatment of other NTM organisms	Asthma
COVID-19	Cystic fibrosis
Tuberculosis	Environmental risk to family and caregivers
Emerging therapies in NTM	Prevention of NTM

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Final Online Enduring Program Strategies for Overcoming Barriers

- Timing of obtaining cultures and starting treatment
- Managing medication side effects
- Patient compliance
- Earlier detection and treatments
- Patient education
- Practical issues such as follow-up between clinical appointments

79%

N=477

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

Improving Outcomes in NTM-LD:

[Final Online Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Final Online Enduring Program

91%

N=478

- Indicated they are likely to use the clinical reference aid in practice

85%

N=478

- Stated the patient testimonial helped them better understand the patient experience of NTM

Strategies for Monitoring and Improving Adherence in Nontuberculous Mycobacteria (NTM)

DRUG	ADVERSE REACTIONS	MONITORING	STRATEGY
Azithromycin/ clarithromycin	Gastrointestinal	Clinical monitoring	Change clarithromycin to azithromycin Move administration to bedtime Take with small starch
	Metallic taste Dysgeusia	Clinical monitoring	Change clarithromycin to azithromycin
	Tinnitus/hearing loss	Audiogram	Interruption/change to thrice weekly
	Hepatotoxicity	Liver function tests	Hold medication and re-challenge with mild hepatitis to determine etiology
	Prolonged QTc	ECG (QTc)	Stop concomitant QT prolonging medications May be rate limiting toxicity
Ethambutol	Ocular toxicity	Visual acuity/color discrimination Read fine print every day of the same font	Stop medication immediately and see an ophthalmologist Rate limiting toxicity
	Neuropathy	Clinical monitoring	Rate limiting toxicity
Rifampin/rifabutin	Hepatotoxicity	Liver function test	Hold medication and re-challenge with mild hepatitis to determine etiology
	Cytopenia	Complete blood count	Continue medication with mild leukocytopenia Stop if the platelet count drops significantly (ITP)
	Hypersensitivity	Clinical monitoring	Stop medication
	Orange discoloration	Clinical monitoring	Reassure patient orange discoloration of secretions is expected
	Uveitis (rifabutin)	Visual acuity	Rate limiting toxicity Consider re-challenging with rifampin
Amikacin (parenteral)	Ototoxicity	Audiogram	May be rate limiting
	Tinnitus	Clinical monitoring	Stop other medications that can cause tinnitus May be rate limiting
	Vestibular toxicity	Clinical monitoring	Rate limiting toxicity
	Nephrotoxicity	BUN, creatinine	Maintain hydration Stop unnecessary medications that may affect renal function
	Electrolyte disturbances	Metabolic panel	Correct electrolyte abnormalities prior to initiation

Improving Outcomes in NTM-LD:

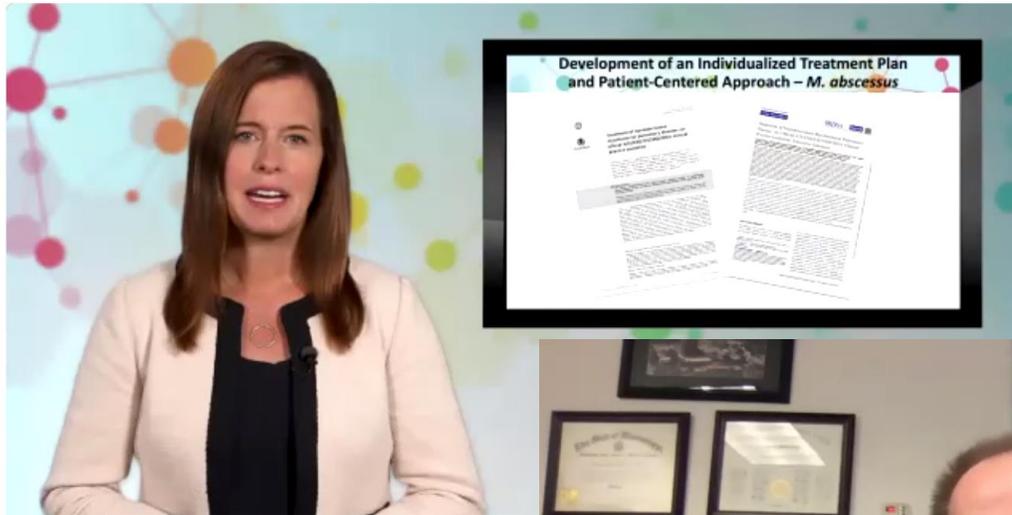
[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Live Broadcasts

CHEST Annual Conference on October 18, 2020

ReachMD Broadcast on November 5, 2020



The screenshot displays the ReachMD broadcast interface. On the left is a "Shared notes" panel with a question: "Have a question you'd like to ask the panelists? Submit it in the chat control panel on the left-hand side, and stay tuned for the Q&A session at the end!". Below this is a "Chat Messages" section with three messages from Lauren (NJH Staff), Seth Robinson, and an anonymous user. The main content area shows a flowchart titled "Treatment of *M. abscessus* complex".

Treatment of *M. abscessus* complex

The flowchart starts with "M. abscessus" and branches based on the presence of a "Functional" *erm41* gene:

- Yes:** Treatment includes ≥ 2 other drugs, Amikacin IV, and Macrolide for $2+$ months. A highlighted box lists: Imipenem (IV), Cefoxitin (IV), Tigecycline (IV), Omadacycline, Linezolid/Tedizolid, Clofazimine, Moxifloxacin, and Bedaquiline.
- No:** Treatment includes Macrolide ≥ 1 other drug and Amikacin IV for 1-2+ months. A highlighted box lists: Macrolide ≥ 1 other drug and Inhaled Amikacin.

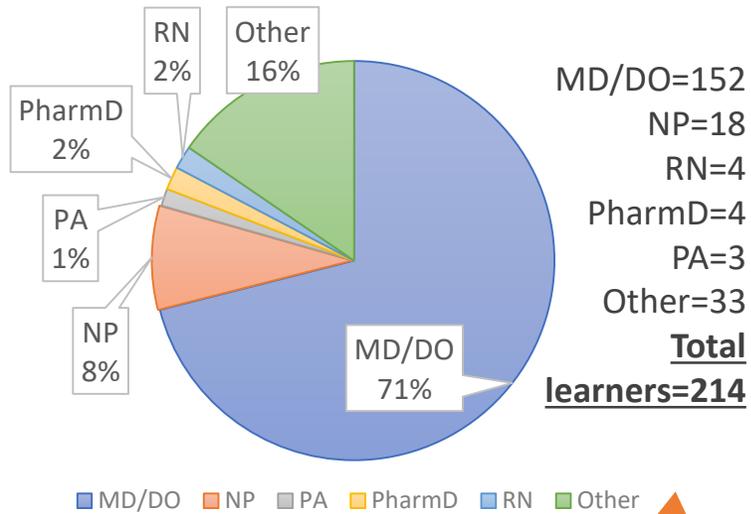
Additional branches include *M. boletii* (Yes) and *M. massiliense* (No).

Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

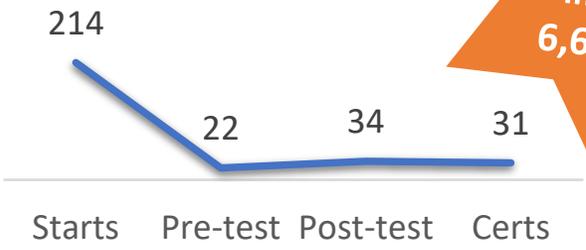
Quantitative Educational Impact Summary: Live Broadcasts (CHEST 2020 & ReachMD)

Participation

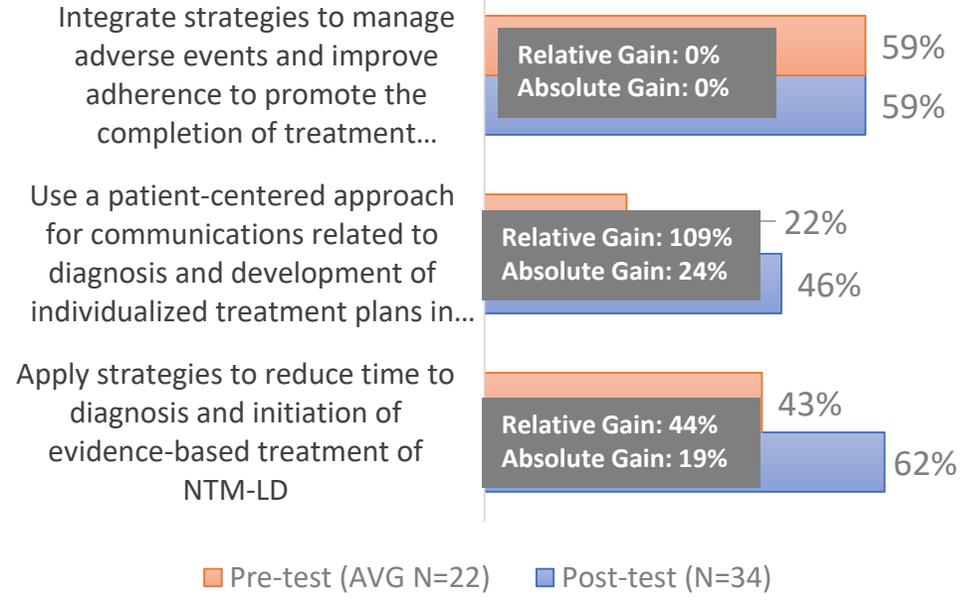


MD/DO=152
 NP=18
 RN=4
 PharmD=4
 PA=3
 Other=33
Total learners=214

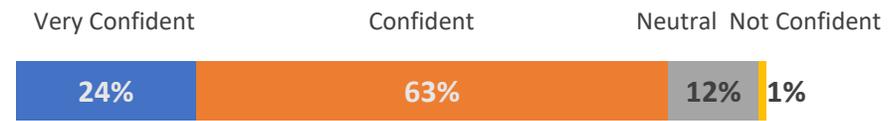
Patient Impact 6,604/Yr



Learning Gain Across Objectives

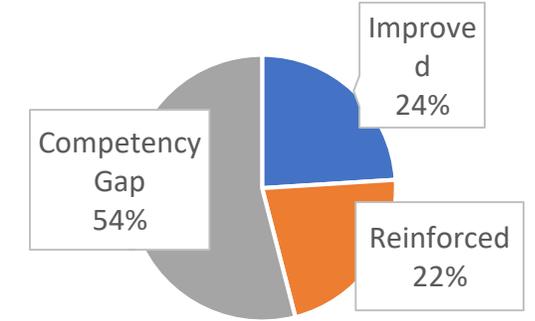


Confidence @ Post-Test

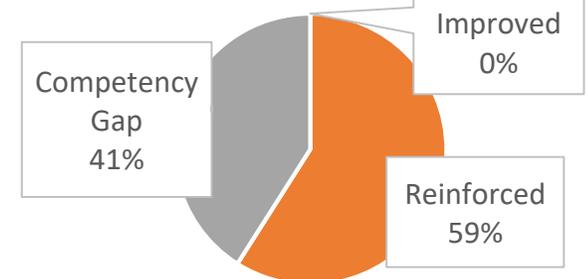


Persistent Learning Gaps/Needs

54% of learners remained unable to use a patient-centered approach



41% of learners remained unable to integrate strategies to manage adverse events & improve adherence



Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Qualitative Educational Impact Summary: Live Broadcasts (CHEST 2020 & ReachMD)

Patient Impact

31

Evaluation respondents

Who see

127

NTM Patients Weekly

Which translates to

6,604

Patient Visits Annually

Educational Impact

Knowledge and Competence Change by Learning Objective



Applying strategies to reduce time to diagnosis and initiation of evidence-based treatment of NTM-LD increased by **44%**



Increased use of patient-centered approach for communications related to diagnosis and development of individualized treatment plans in NTM-LD by **109%**



Learners reported their confidence based on the learning objectives of the program and confidence increased by **31%** after the presentation.

Practice Change

67%

Follow-up survey respondents reported changing their practice [N=6]

37 NTM patients have benefited from improved practice [N=6]

Which translates to interventions annually impacted

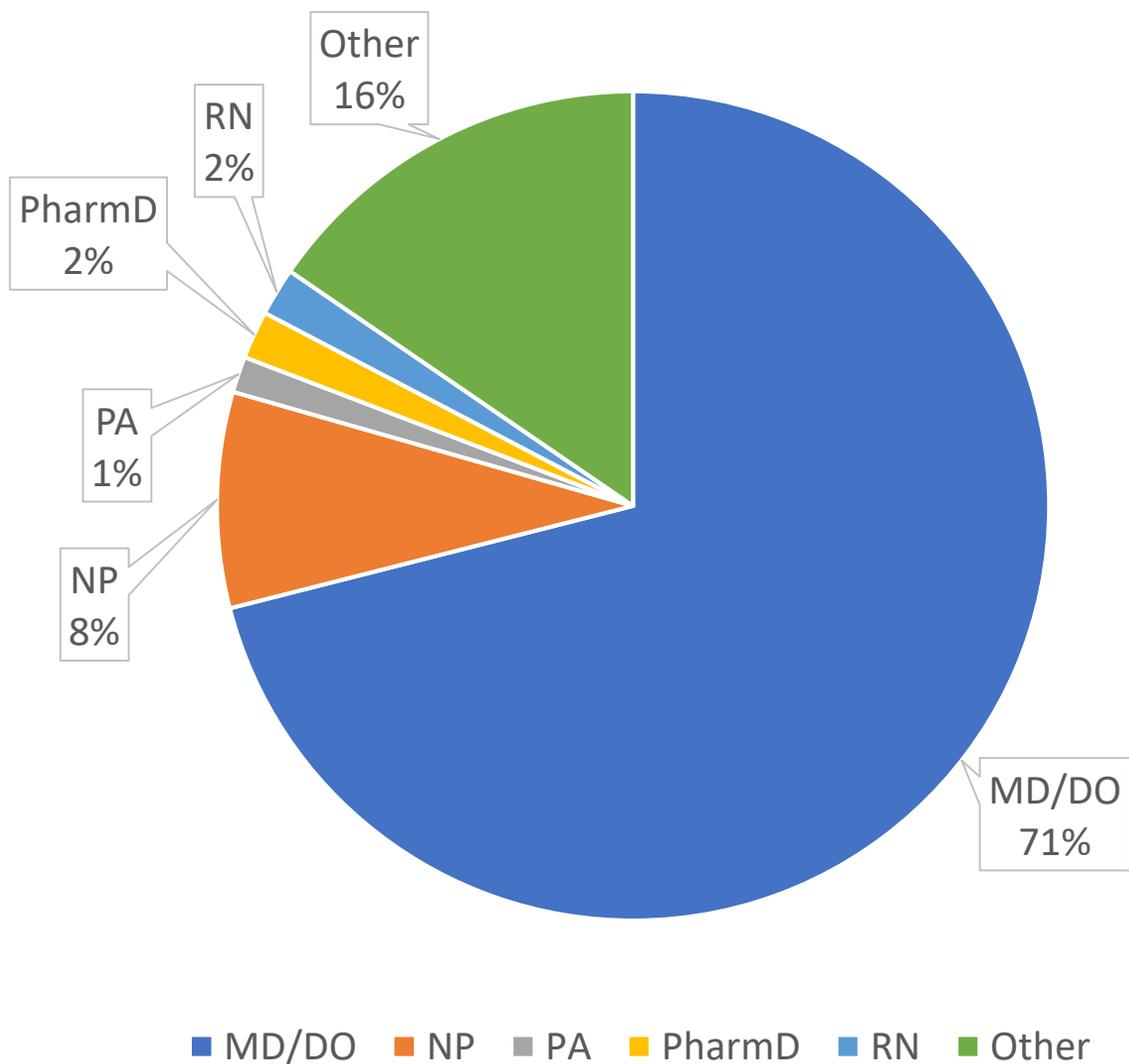
1,924

Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 1 Outcome: Live Broadcasts (CHEST 2020 & ReachMD) Participation by Designation

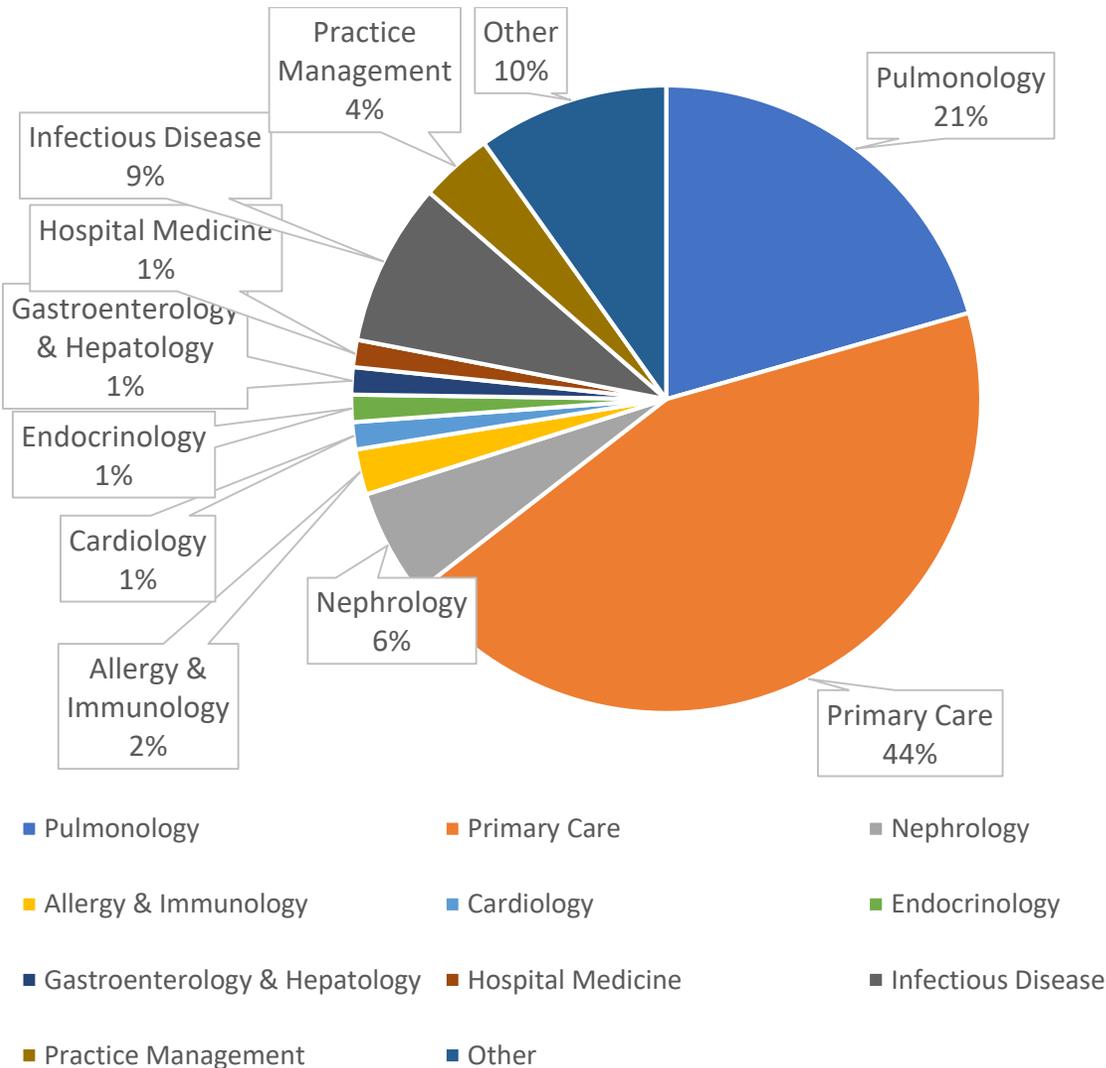


Designation	
MD/DO	152
NP	18
PharmD	4
RN	4
PA	3
Other	33
Total learners	214

Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 1 Outcome: Live Broadcasts (CHEST 2020 & ReachMD) Participation by Specialty



Specialty	
Primary Care	94
Pulmonology	44
Infectious Disease	18
Nephrology	12
Practice Management	8
Allergy & Immunology	5
Cardiology	3
Endocrinology	3
Gastroenterology & Hepatology	3
Hospital Medicine	3
Other	21
Total learners	214

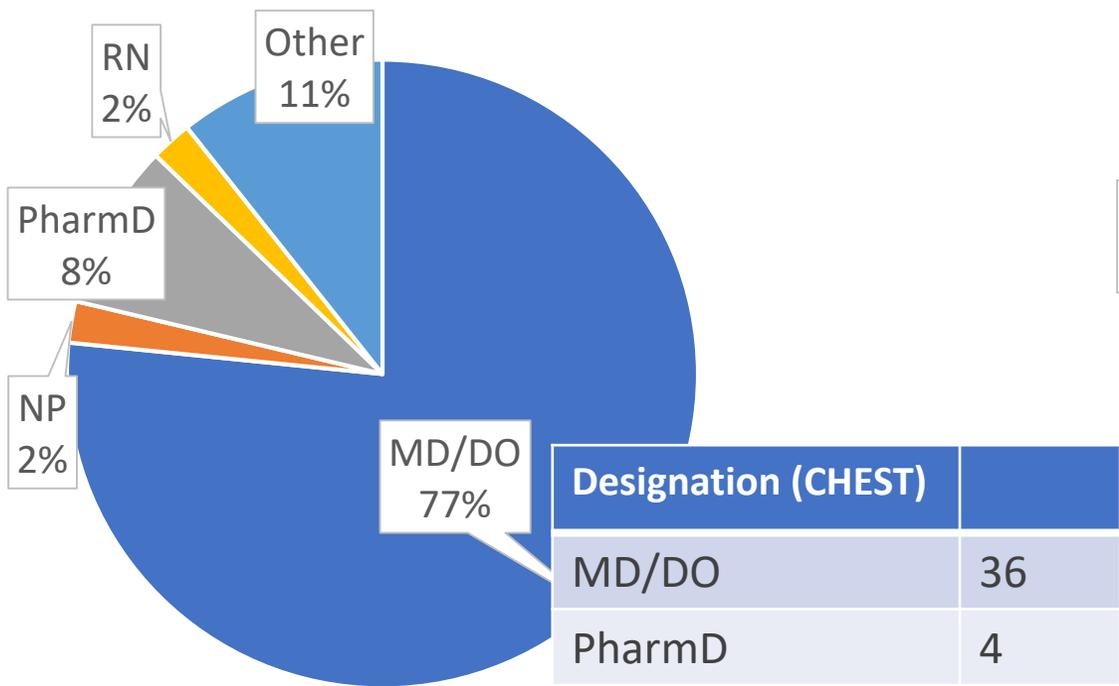
Improving Outcomes in NTM-LD:

[Live Outcomes]

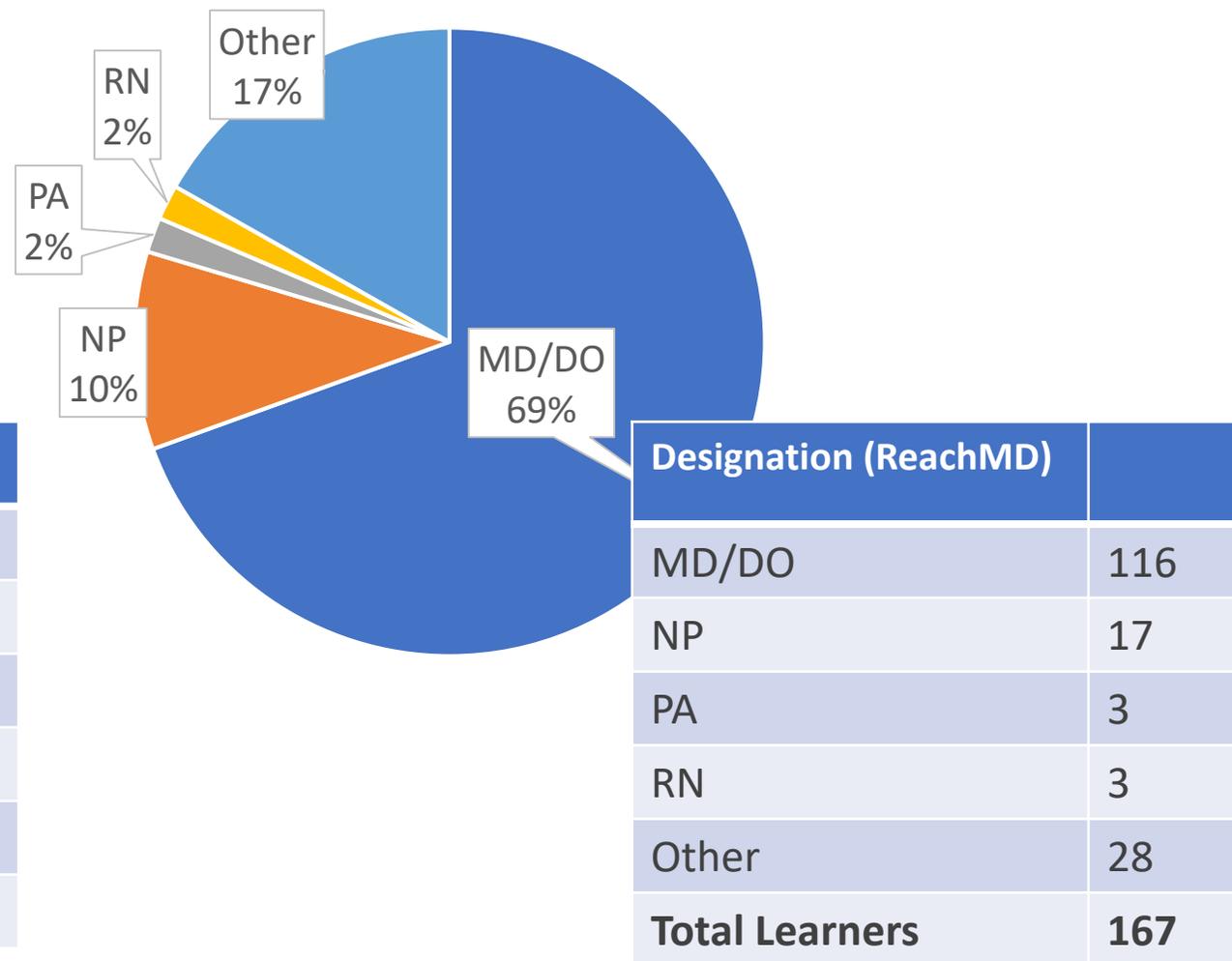
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 1 Outcome: Live Broadcasts (CHEST 2020 & ReachMD) Participation by Designation

Participation: CHEST 2020



Participation: ReachMD



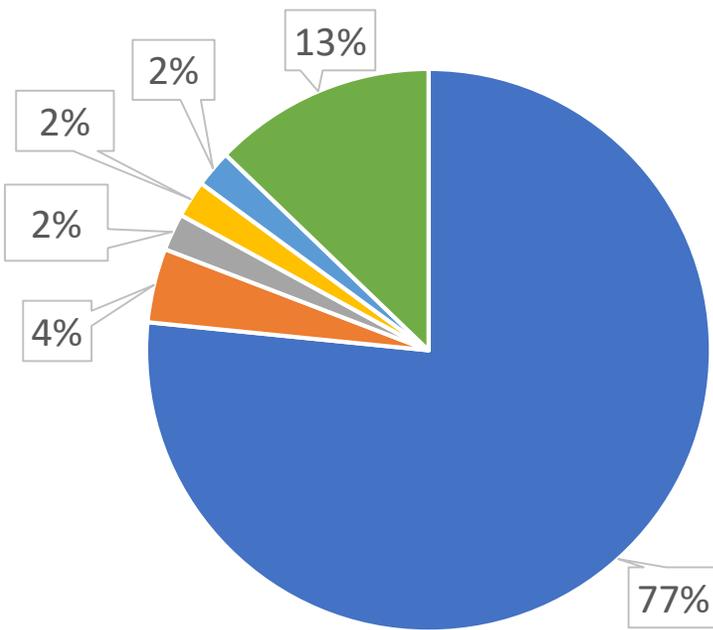
Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 1 Outcome: Live Broadcasts (CHEST 2020 & ReachMD) Participation by Specialty

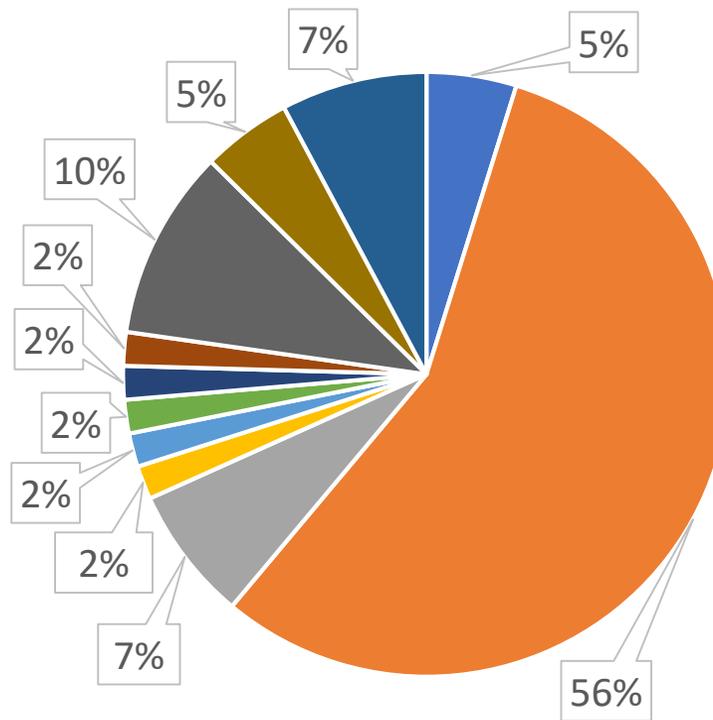
Participation: CHEST 2020



Specialty (CHEST)	Count
Pulmonology	36
Allergy & Immunology	2
Internal Medicine	1
Critical Care Medicine	1
Infectious Disease	1
Other	6
Total	47

- Pulmonology
- Allergy & Immunology
- Internal Medicine
- Critical Care Medicine
- Infectious Disease
- Other

Participation: ReachMD



Specialty (ReachMD)	Count
Primary Care	94
Infectious Disease	17
Nephrology	12
Pulmonology	8
Practice Management	8
Allergy & Immunology	3
Cardiology	3
Endocrinology	3
Gastroenterology & Hepatology	3
Hospital Medicine	3
Other	13
Total	167

Improving Outcomes in NTM-LD:

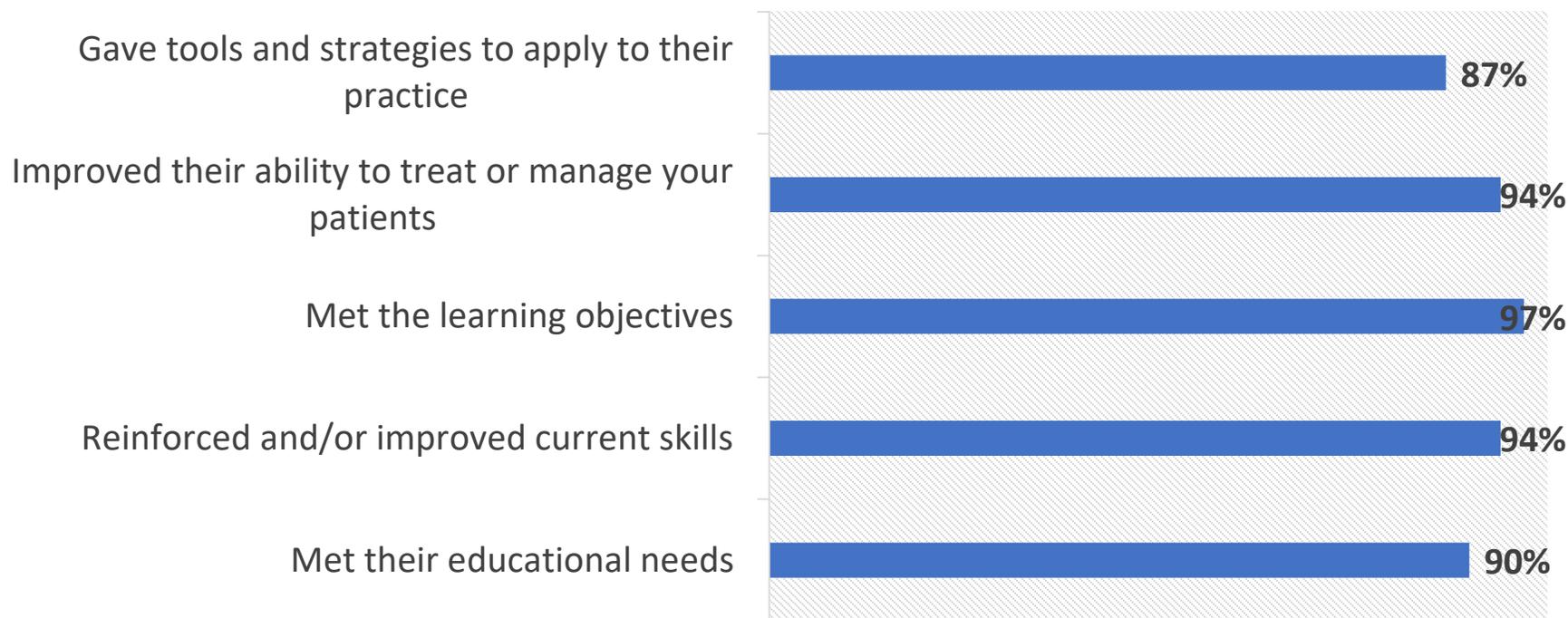
[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 2 Outcomes: Learning & Satisfaction – Live Broadcasts (CHEST 2020 & ReachMD)

Analysis of learner responses related to educational needs

Learners reported they agree or strongly agree the activity:



■ Strongly Agree to Agree (N=31)

Learners reported high levels of satisfaction related to the ability of the activity to impact practical applications

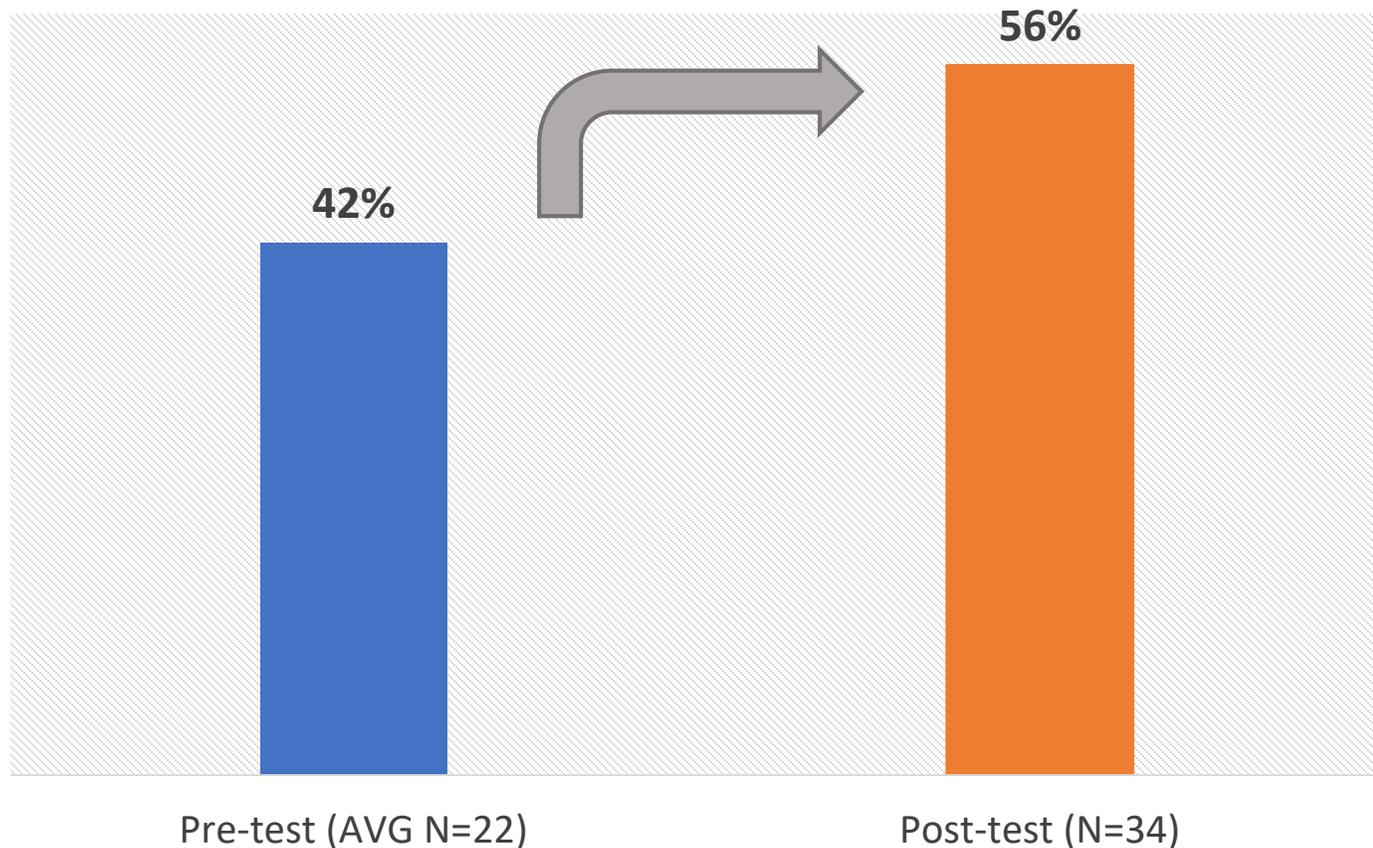
Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes: Overall Learning (Knowledge/Competence): Live Broadcasts (CHEST 2020 & ReachMD)

Overall Knowledge Gain: Two Live Broadcasts



33% Overall Relative Knowledge Gain



14% Overall Absolute Knowledge Gain

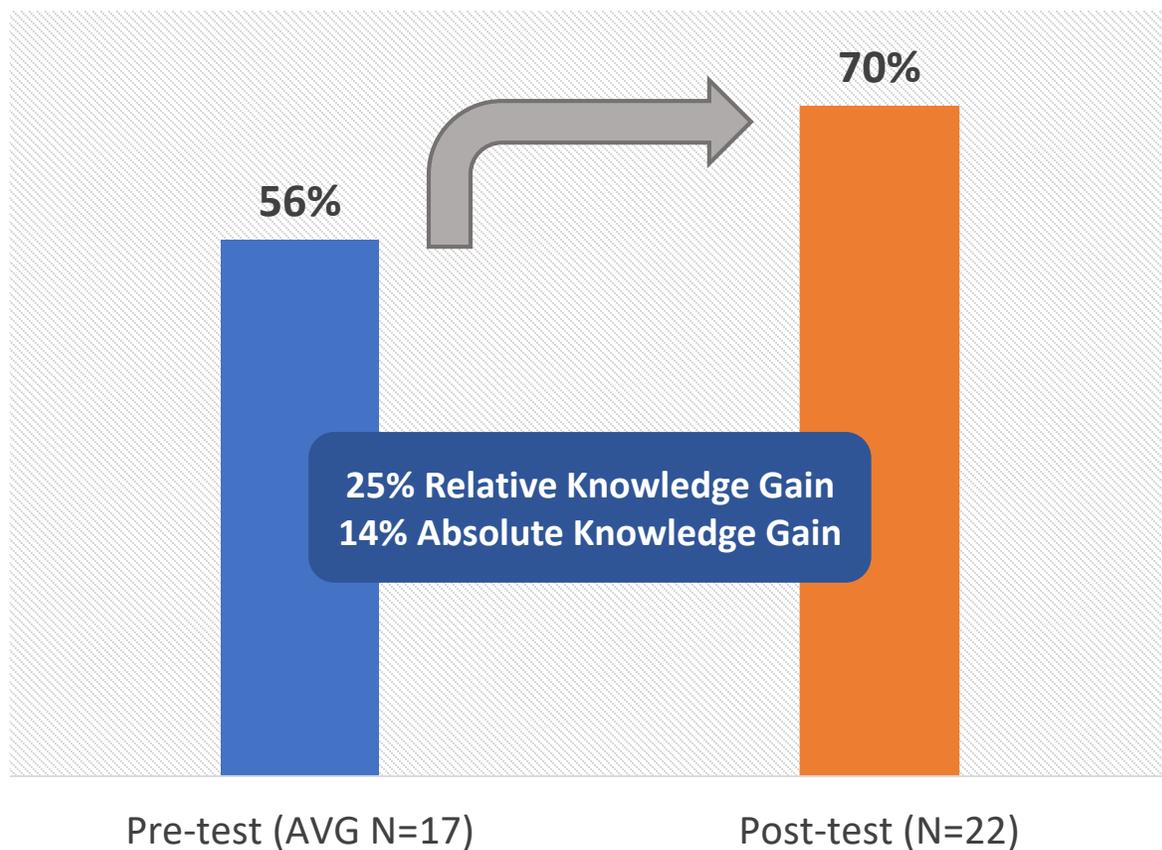
Improving Outcomes in NTM-LD:

[Live Outcomes]

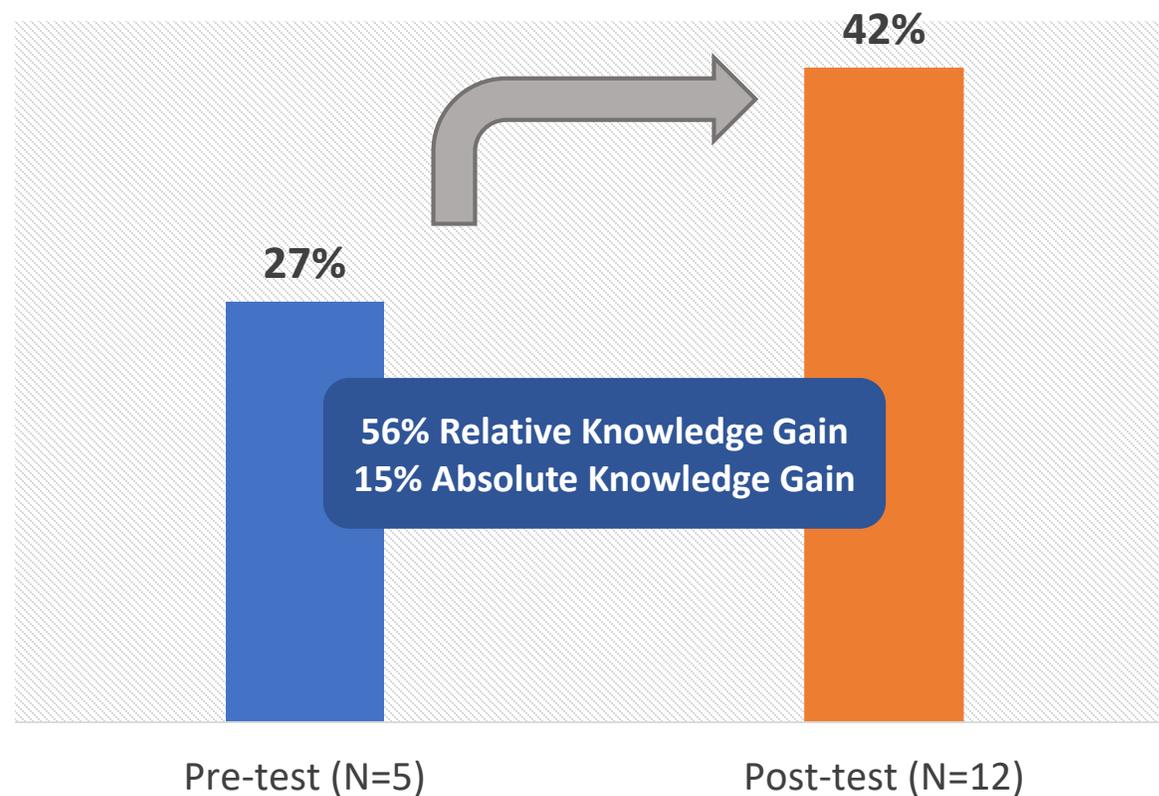
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes: Overall Learning (Knowledge/Competence): Live Broadcasts (CHEST 2020 & ReachMD)

Overall Knowledge Gain: CHEST Broadcast



Overall Knowledge Gain: ReachMD Broadcast



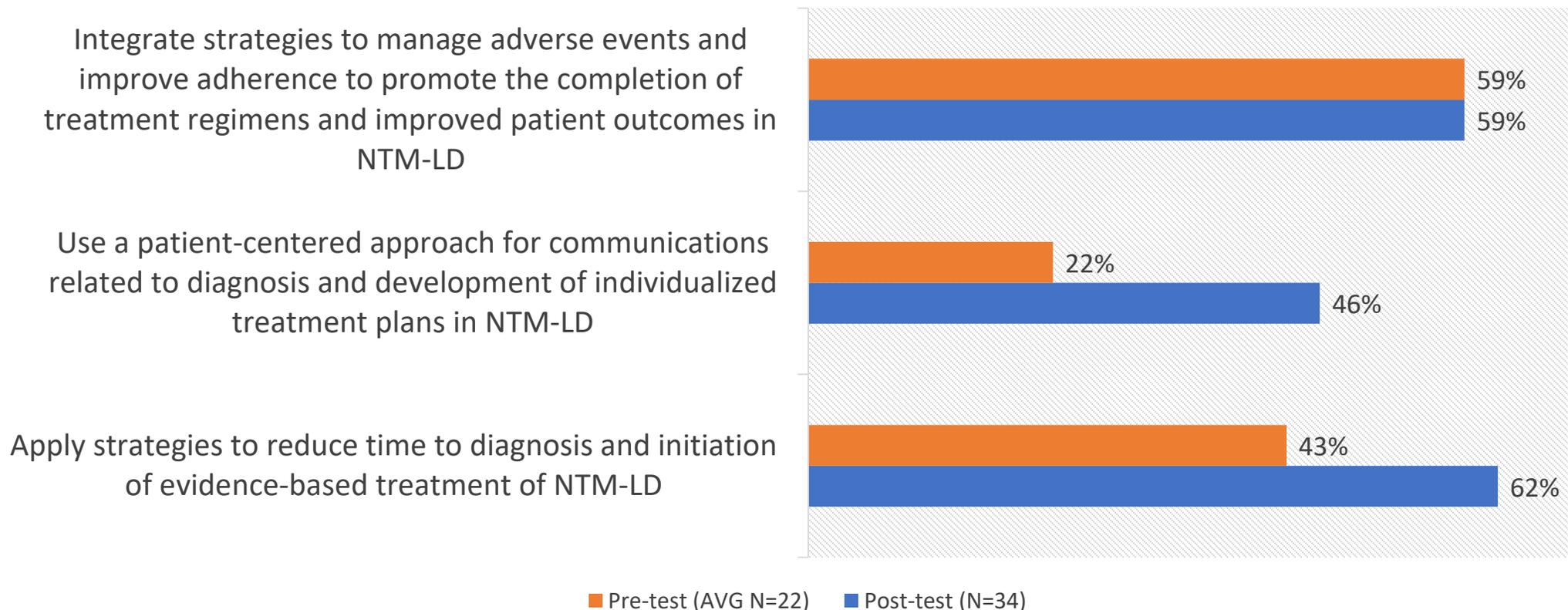
Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3 Outcomes (Knowledge) – Live Broadcasts (CHEST 2020 & ReachMD) By Learning Objective

Knowledge Gain by Learning Objective



Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

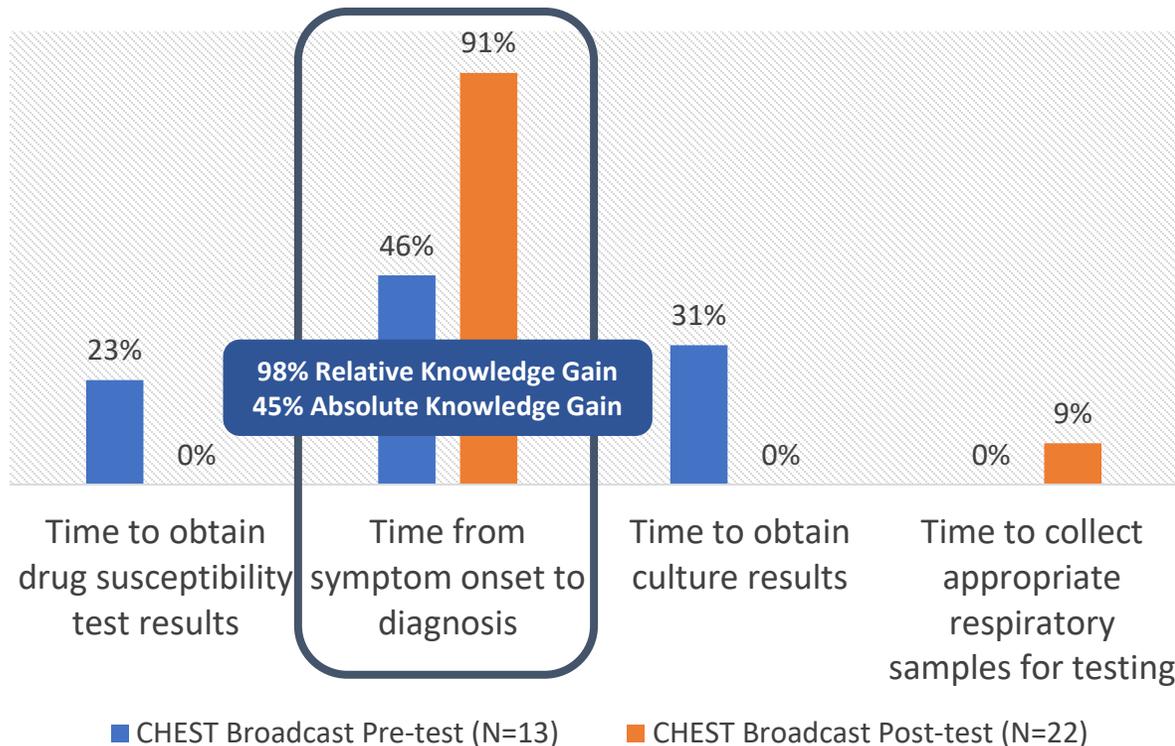
Level 3&4 Outcomes (Knowledge/Competence): Live Broadcasts (CHEST 2020 & ReachMD)

Question 1

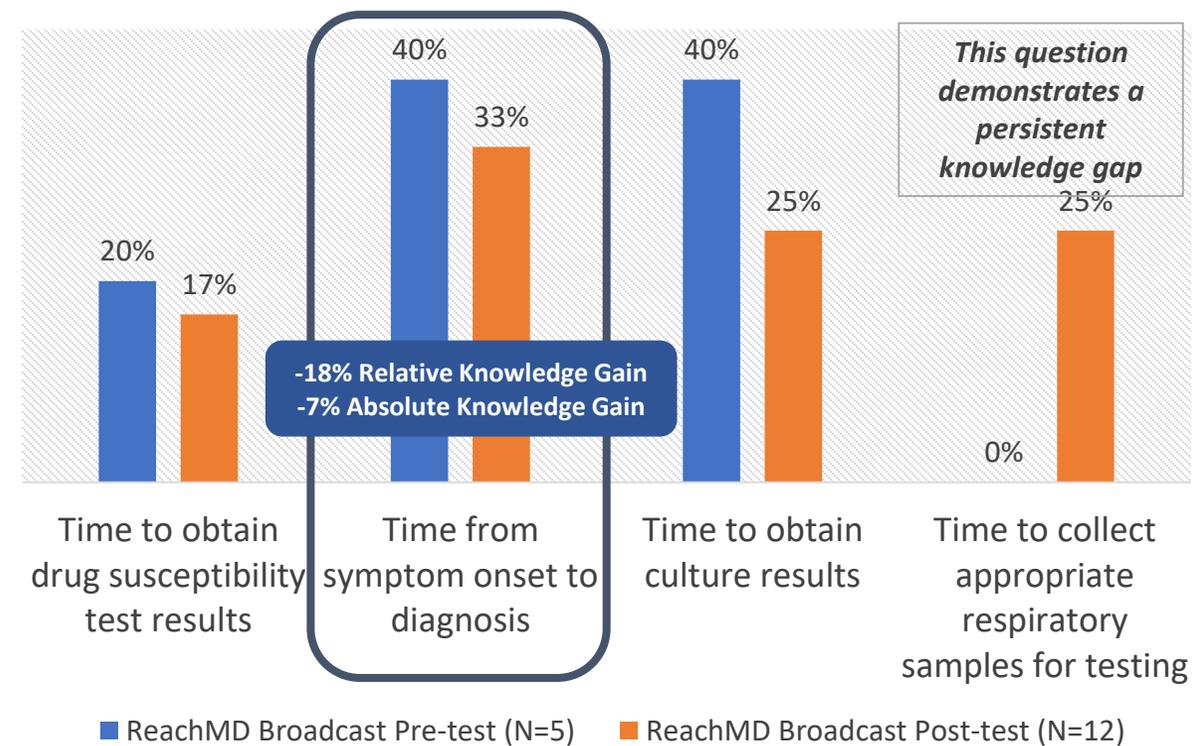
Learning Objective: *Apply strategies to reduce time to diagnosis and initiation of evidence-based treatment of NTM-LD*

Q1: Which of the following contributes the most to diagnostic delay of nontuberculous mycobacterial pulmonary disease?

Q1: Pre/Post-test CHEST Broadcast



Q1: Pre/Post-test ReachMD Broadcast



Improving Outcomes in NTM-LD:

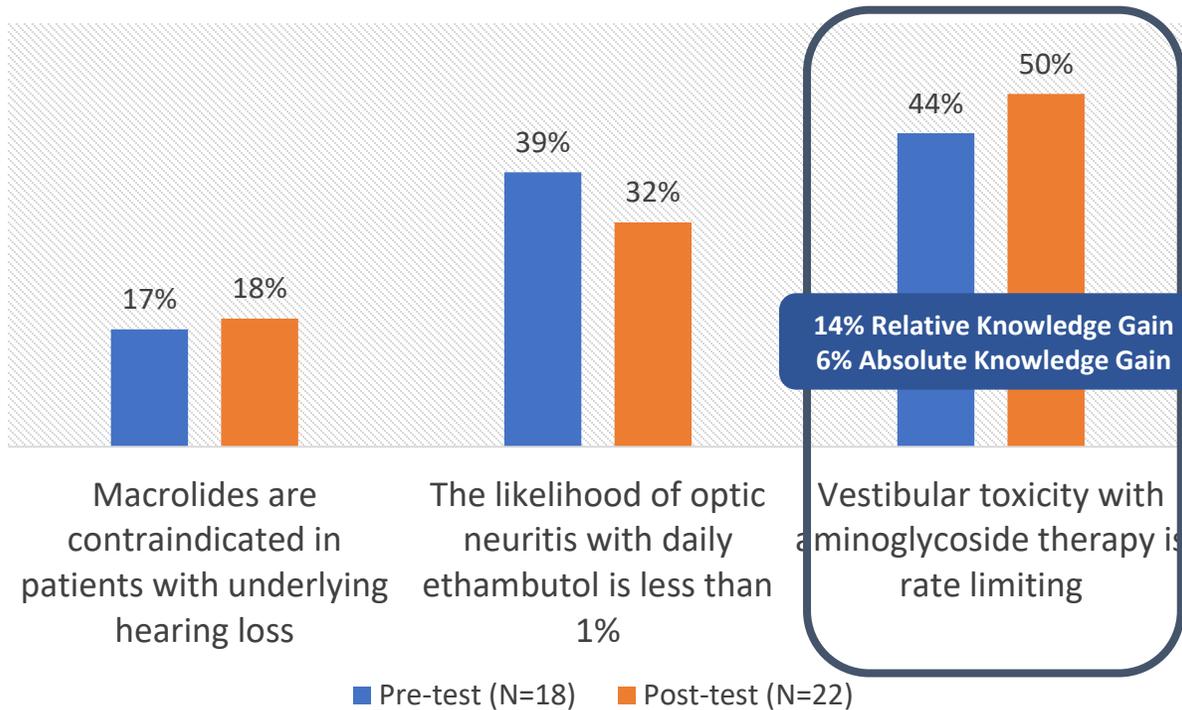
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Level 3&4 Outcomes (Knowledge/Competence): Live Broadcasts (CHEST 2020 & ReachMD) Question 2

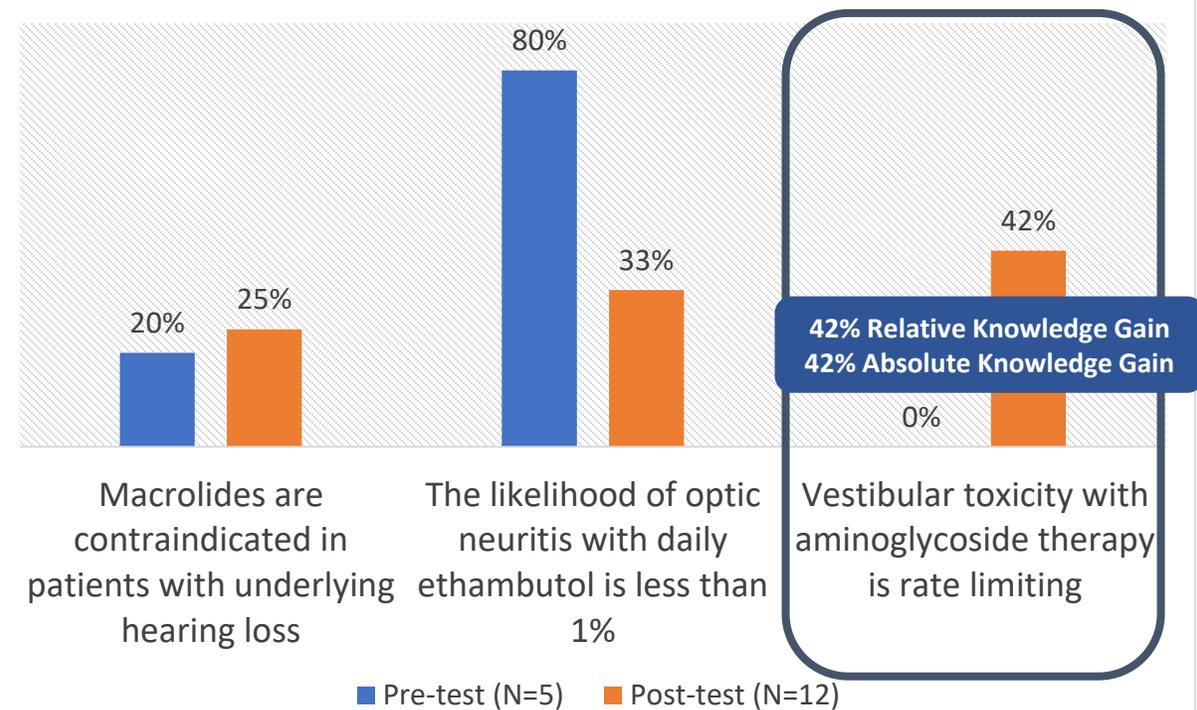
Learning Objective: Use a patient-centered approach for communications related to diagnosis and development of individualized treatment plans in NTM-LD

Q2: When counseling patients about their MAC treatment, which of the following is TRUE?

Q2: Pre/Post-test CHEST Broadcast



Q2: Pre/Post-test ReachMD Broadcast



Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

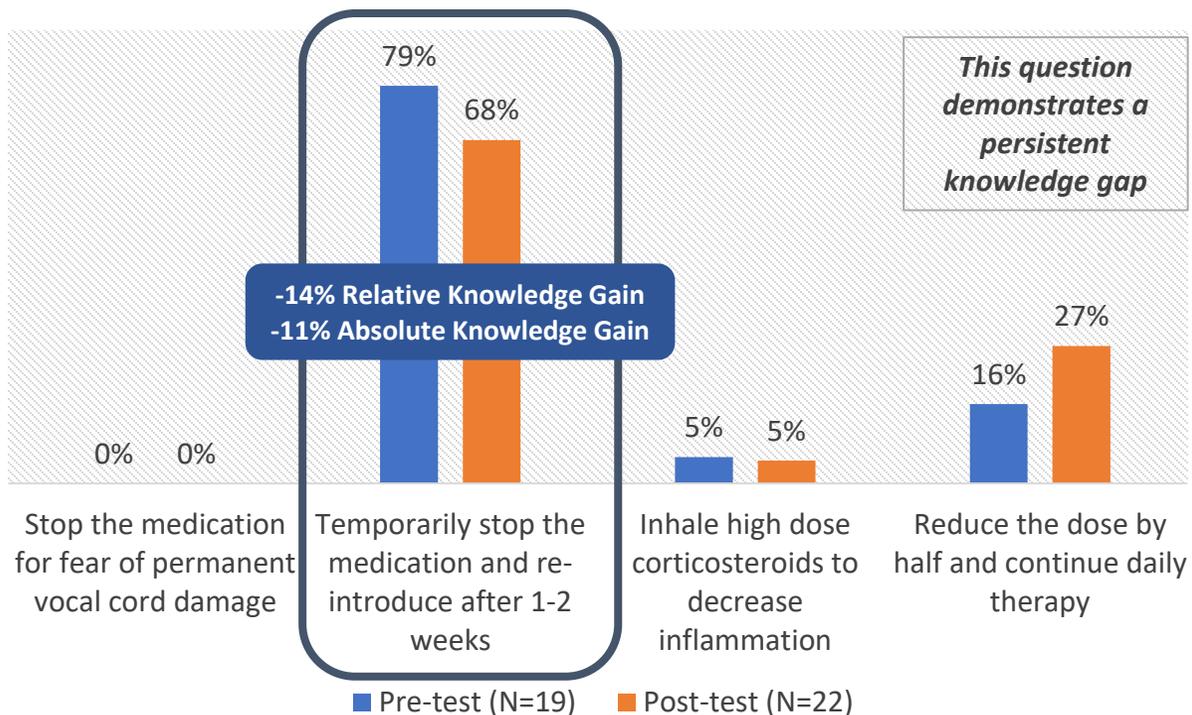
Level 3&4 Outcomes (Knowledge/Competence): Live Broadcasts (CHEST 2020 & ReachMD)

Question 3

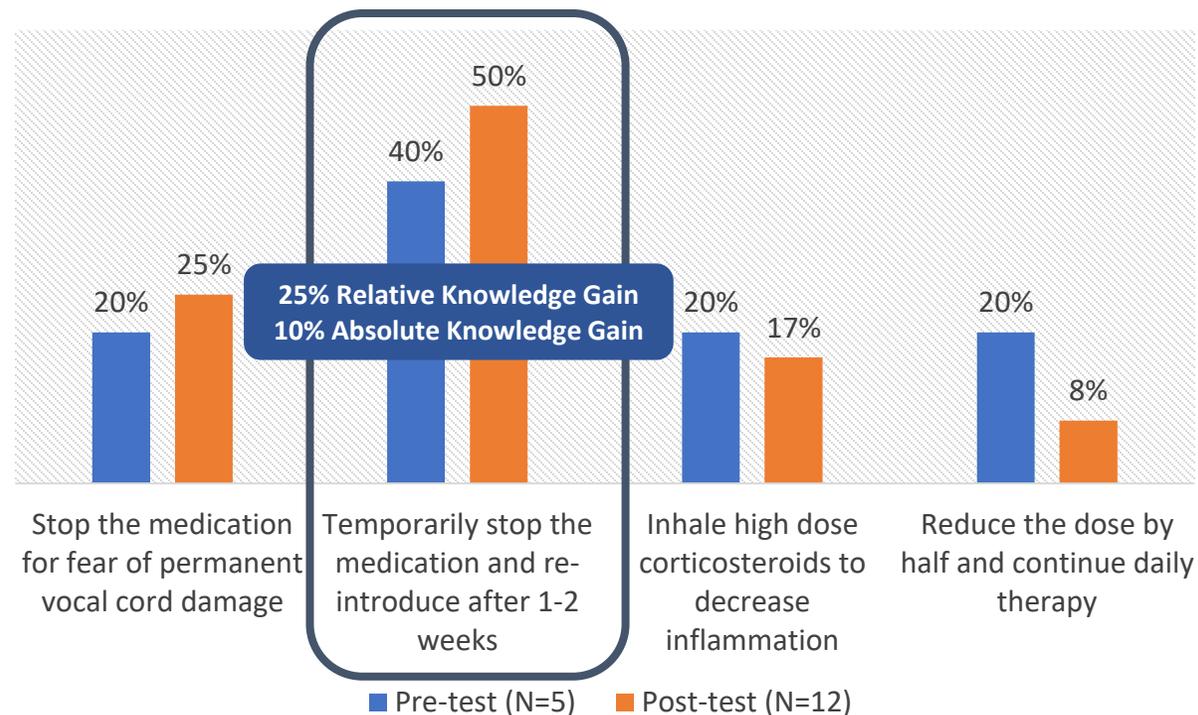
Learning Objective: *Integrate strategies to manage adverse events and improve adherence to promote the completion of treatment regimens and improved patient outcomes in NTM-LD*

Q3: Dysphonia is one of the most common adverse reactions associated with amikacin liposome inhalation solution (ALIS). Which of the following interventions would be most appropriate?

Q3: Pre/Post-test CHEST Broadcast



Q3: Pre/Post-test ReachMD Broadcast



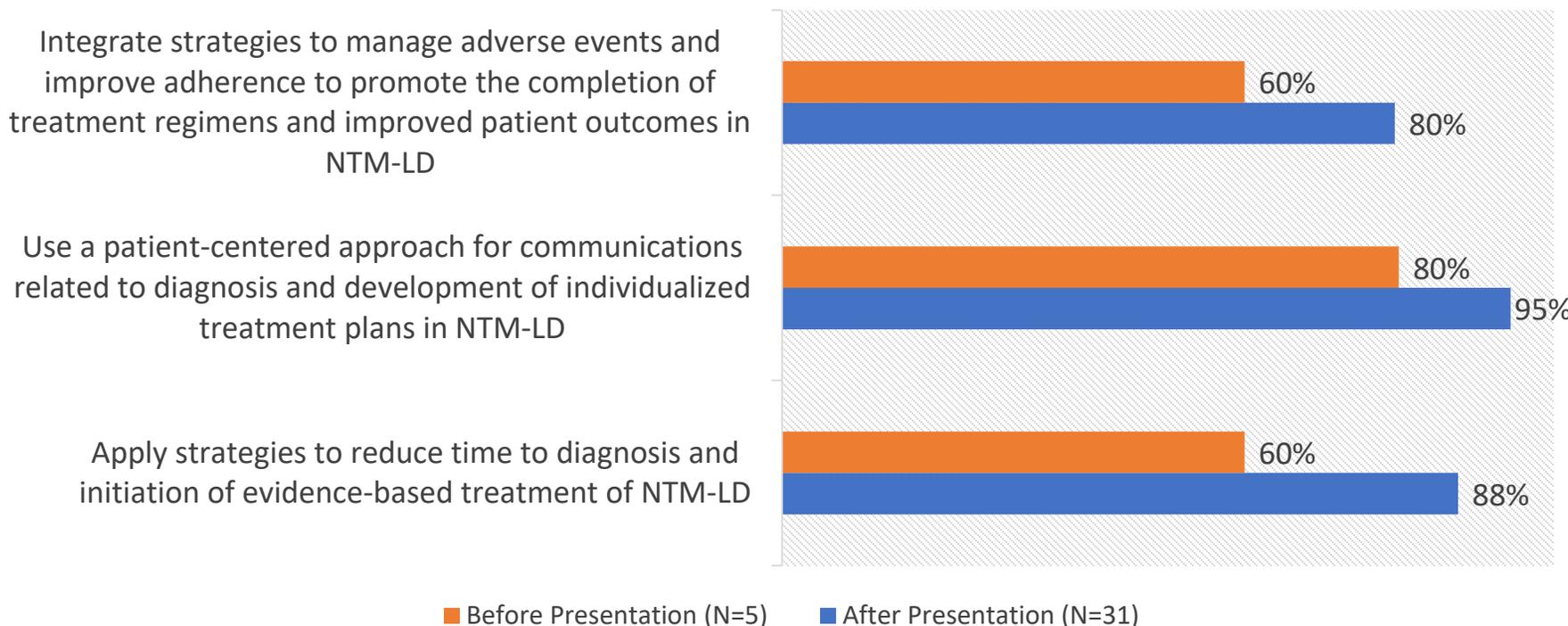
Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

[Live Outcomes]

Level 4 Outcomes (Competence) - Live Broadcasts (CHEST 2020 & ReachMD)

Learners reported their confidence on the learning objectives before and after the presentation (somewhat confident – very confident)



Relative Gain in Confidence: 31%

Absolute Gain in Confidence: 21%



Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

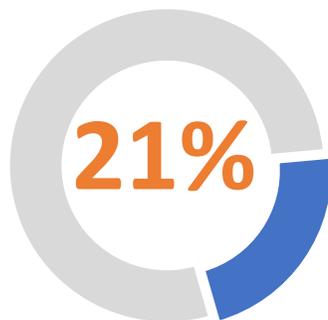
Level 4 Outcomes (Competence): Live Broadcasts (CHEST 2020 & ReachMD)

An analysis of open-ended comments demonstrates the following changes learners intend to make:

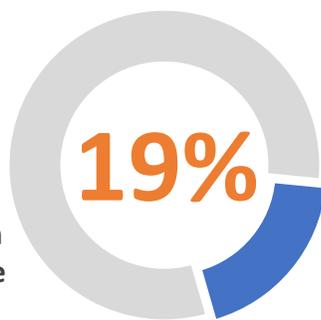
100%

N=31

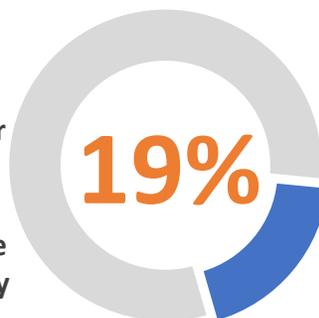
Evaluation respondents intend to make changes to practice as a result of the activity



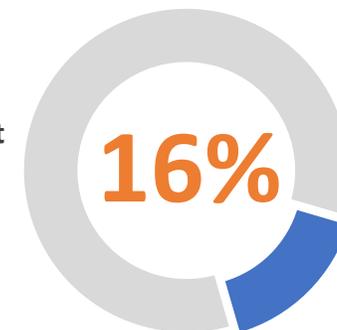
Introduce the use of amikacin liposome inhalation suspension (ALIS) more frequently



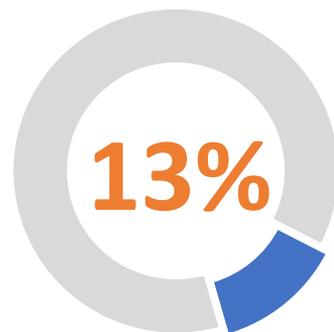
Monthly sputum samples after initiation of therapy; collect before bronchoscopy



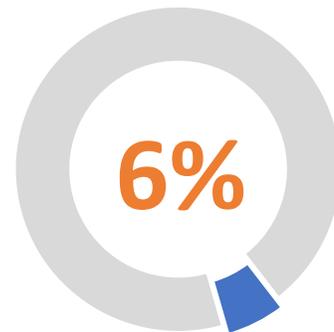
Effective management of medications



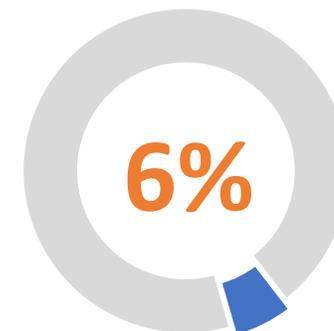
Treatment strategies per recent ATS guidelines



Earlier diagnosis and treatment of NTM



Multidisciplinary approach to treatment; refer to infectious disease



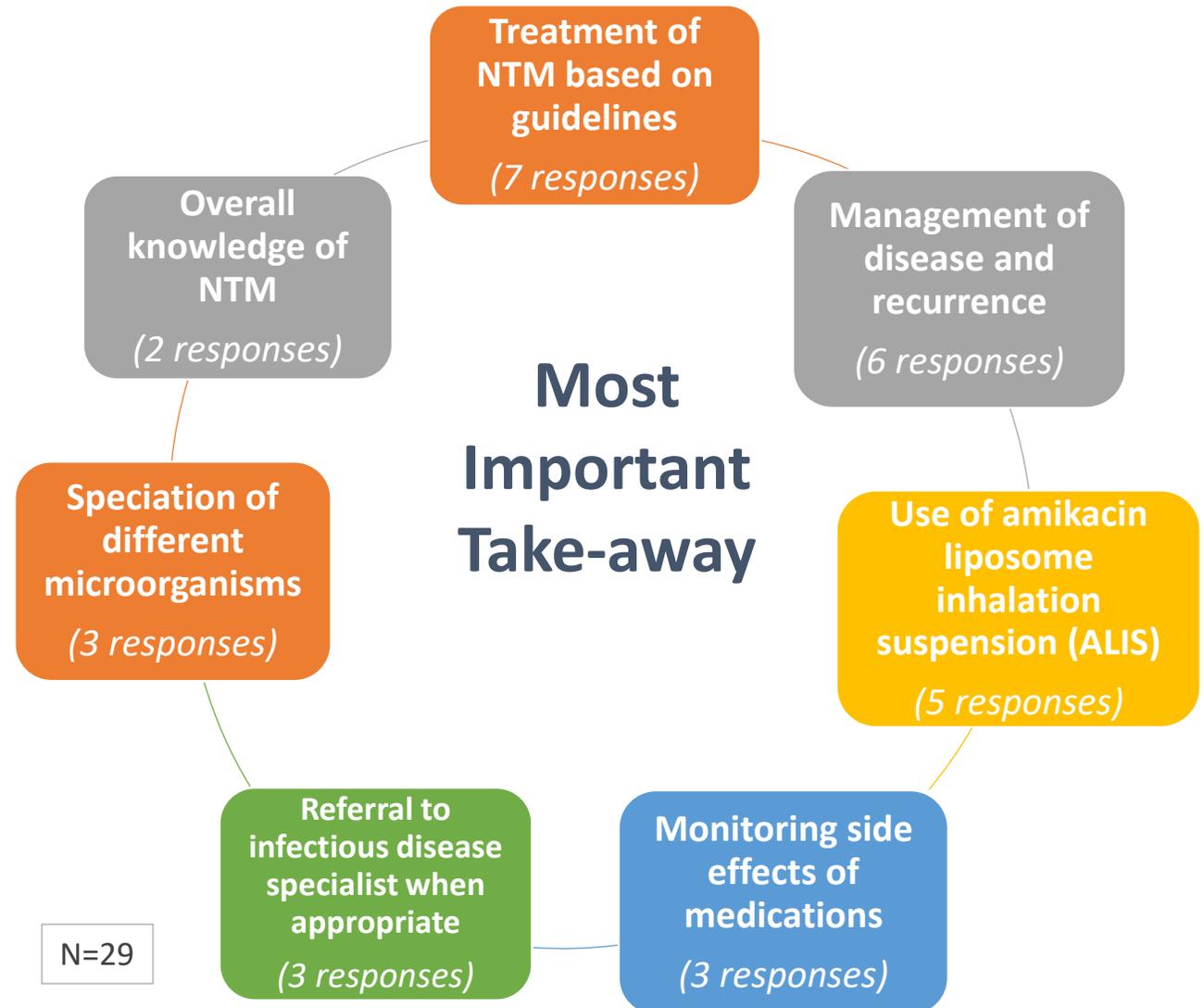
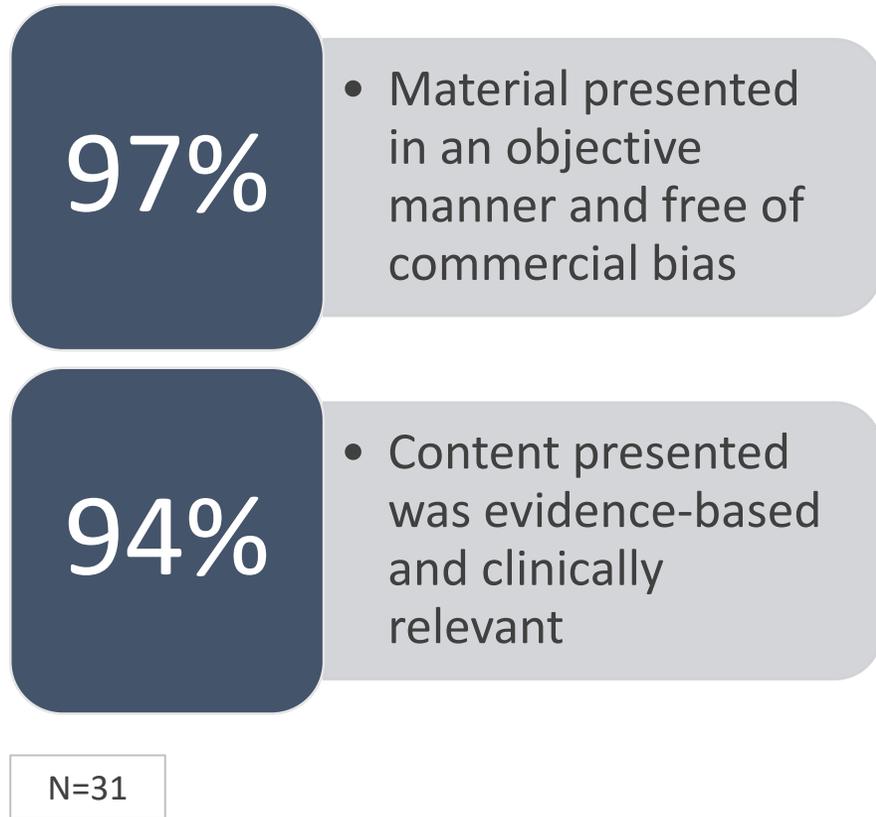
Improve process for speciation

N=32

Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Live Broadcasts (CHEST 2020 & ReachMD)



Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

[Live Outcomes]

Program Evaluation: Live Broadcasts (CHEST 2020 & ReachMD)

What topics would you like more information about in future educational activities?

Tips on how to get patients to tolerate medications	Use of clofazamine in MAC
New approaches to individuals extremely sensitive to therapy	Dosing and help with non-MAC NTM
Pulmonary hypertension	TB
COVID-19	Interstitial lung disease
Treating abscesses	Sarcoidosis

Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Live Broadcasts (CHEST 2020 & ReachMD)

Strategies for Overcoming Barriers

- Management of adverse reactions
- Patient compliance with treatment
- Sputum sampling
- Medication fatigue
- Facilitating culture and sensitivity
- Diagnosis
- Patient visits

84%

N=31

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

Improving Outcomes in NTM-LD:

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Program Evaluation: Live Broadcasts (CHEST 2020 & ReachMD)

100%

N=9

- Indicated they are somewhat – extremely likely to use clinical reference aid in practice

83%

N=30

- Stated the patient testimonial helped them better understand the patient experience of NTM

Strategies for Monitoring and Improving Adherence in Nontuberculous Mycobacteria (NTM)

DRUG	ADVERSE REACTIONS	MONITORING	STRATEGY
Azithromycin/clarithromycin	Gastrointestinal	Clinical monitoring	Change clarithromycin to azithromycin Move administration to bedtime Take with small starch
	Metallic taste Dysgeusia	Clinical monitoring	Change clarithromycin to azithromycin
	Tinnitus/hearing loss	Audiogram	Interruption/change to thrice weekly
	Hepatotoxicity	Liver function tests	Hold medication and re-challenge with mild hepatitis to determine etiology
Ethambutol	Prolonged QTc	ECG (QTc)	Stop concomitant QT prolonging medications May be rate limiting toxicity
	Ocular toxicity	Visual acuity/color discrimination Read fine print every day of the same font	Stop medication immediately and see an ophthalmologist Rate limiting toxicity
	Neuropathy	Clinical monitoring	Rate limiting toxicity
Rifampin/rifabutin	Hepatotoxicity	Liver function test	Hold medication and re-challenge with mild hepatitis to determine etiology
	Cytopenia	Complete blood count	Continue medication with mild leukocytopenia Stop if the platelet count drops significantly (ITP)
	Hypersensitivity	Clinical monitoring	Stop medication
	Orange discoloration	Clinical monitoring	Reassure patient orange discoloration of secretions is expected
	Uveitis (rifabutin)	Visual acuity	Rate limiting toxicity Consider re-challenging with rifampin
Amikacin (parenteral)	Ototoxicity	Audiogram	May be rate limiting
	Tinnitus	Clinical monitoring	Stop other medications that can cause tinnitus May be rate limiting
	Vestibular toxicity	Clinical monitoring	Rate limiting toxicity
	Nephrotoxicity	BUN, creatinine	Maintain hydration Stop unnecessary medications that may affect renal function
Electrolyte disturbances	Metabolic panel	Correct electrolyte abnormalities prior to initiation	

Improving Outcomes in NTM-LD:

[Live Outcomes]

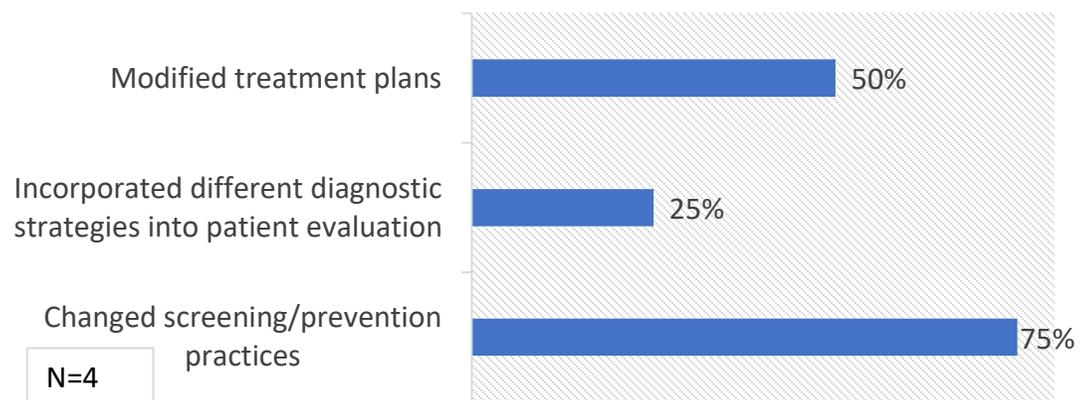
Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

45-day Follow-up Survey: Live Broadcasts (CHEST 2020 & ReachMD)

67% of follow-up survey respondents stated that the activity provided new ideas or information they have used in practice.

[N=6]

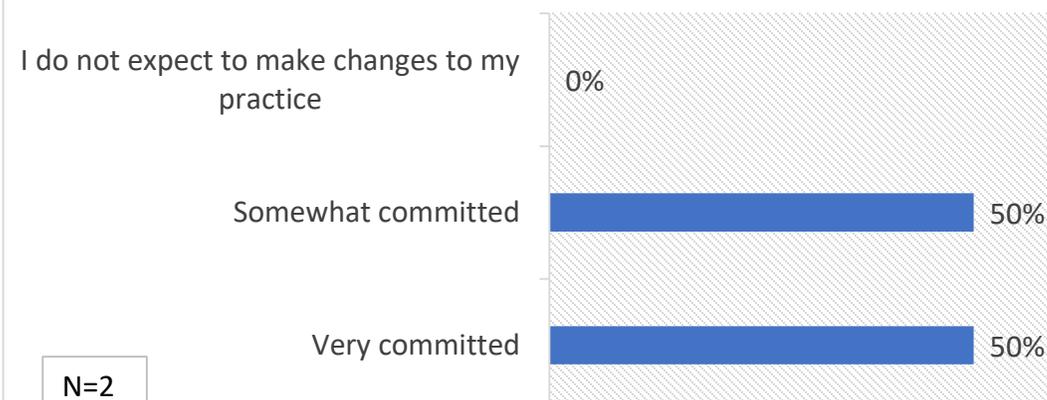
What changes have you incorporated into practice as a result of this activity?



33% indicated they had not yet made changes but remain committed to making changes in practice.

[N=6]

What is your level of commitment to making those changes?



Of the respondents [N=6], 100% were physicians and of those physicians 83% were pulmonologists

Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

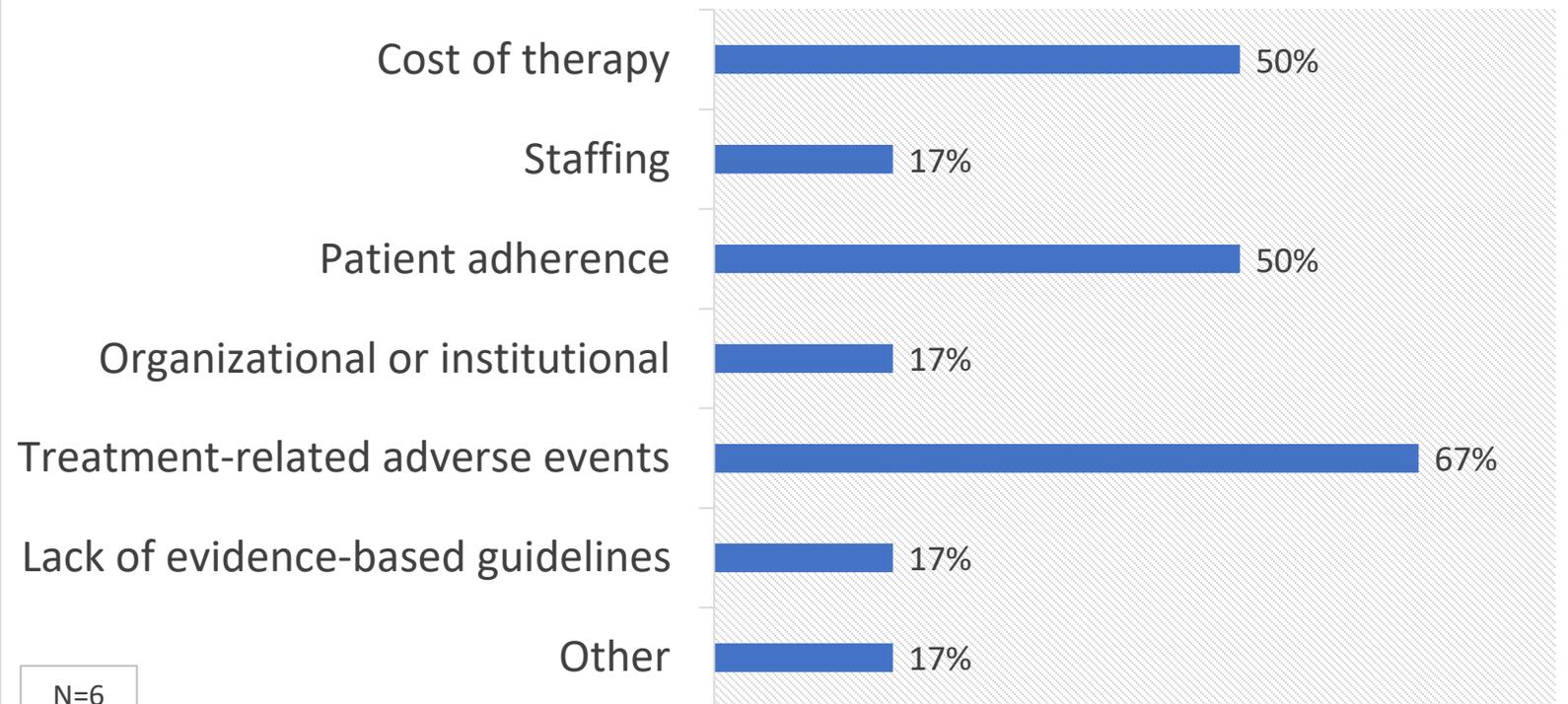
45-day Follow-up Survey: Live Broadcasts (CHEST 2020 & ReachMD)

50%

N=6

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

What barriers have you experienced since this activity that may impact patient outcomes or optimal patient care?



N=6

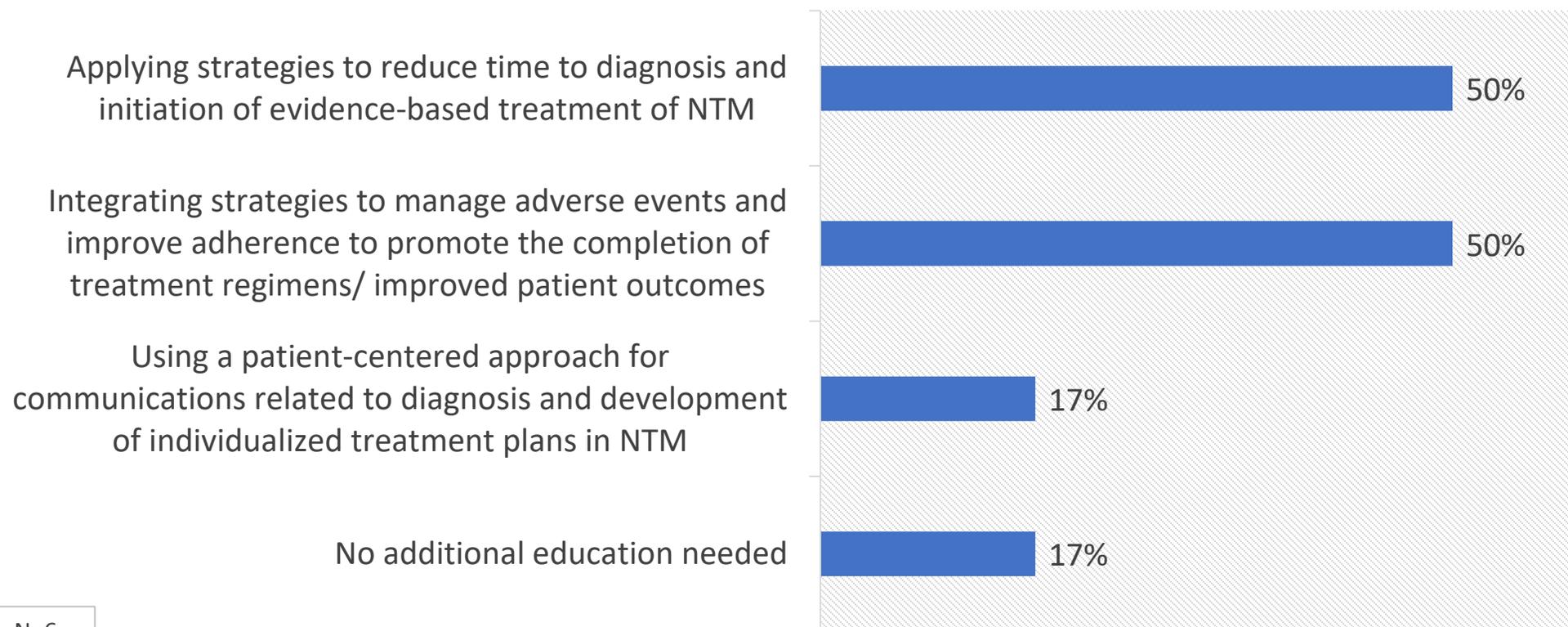
Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

45-day Follow-up Survey: Live Broadcasts (CHEST 2020 & ReachMD)

In which areas do you feel you need more education?



N=6

Improving Outcomes in NTM-LD:

[Live Outcomes]

Strategies for Diagnosis, Individualized Treatment Plans and Patient Adherence

Accreditation

NJH is accredited 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.

NJH designates the live activity for a maximum of 1.0 *AMA PRA Category 1 Credit*[™].

NJH designates the enduring material for a maximum of 1.0 *AMA PRA Category 1 Credit*[™].

