

# Challenges in Pulmonary and Critical Care



**NACE**

**LIVE CME CONFERENCE**



## **Non-Tuberculosis Mycobacterial Lung Disease (NTM-LD) – New Horizons**

Final Live Outcome Report

Prepared For Insmed

February 5, 2019

**NACE**

# Executive Summary

- ❖ This curriculum focused on the epidemiology and risk factors for NTM-LD, diagnostic evaluation, treatment recommendations for NTM-LD and how to integrate emerging therapies into the management of recurrent NTM-LD.
- ❖ 495 attendees in multiple professional specialties were reached via both live onsite and online formats
- ❖ Improvement across all learning domains was noted ranging from 38% to 650%
- ❖ Overall, the program improved the ability of learners to diagnose patients with NTM-LD and recommend appropriate treatment options.



## Persistent Educational Gaps

- ❖ . Though improvements were observed, learners demonstrated score slippage on the PCA indicating persistent gaps in several areas including:
  - ❖ Common isolates and risk factors for NTM-LD
  - ❖ Diagnostic evaluation and laboratory testing for NTM-LD
  - ❖ Pharmacotherapy recommendations for initial and recurrent NTM-LD

The post-test scores regarding the evaluation management of patients with NTM-LD signifies a clear gap in knowledge and an unmet need among clinicians. It continues to be an important area for future educational programs.

# Learning Objectives

- 1 Outline the epidemiology and risk factors for NTM-LD.
- 2 Describe an approach to the diagnosis of NTM-LD.
- 3 Discuss expert recommendations for the treatment of NTM-LD.
- 4 Summarize the data on emerging therapies for NTM-LD.

## Course Director

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### **Franck Rahaghi, MD, MHS, FCCP**

Director of Advanced Lung Disease Clinic  
Director, Pulmonary Hypertension Clinic  
Chairman, Dept. of Pulmonary and Critical Care  
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## Activity Planning Committee

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Division of Pulmonary, Critical Care,  
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\*Presented NTM-LD Lecture

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# Challenges in Pulmonary and Critical Care



## LIVE CME CONFERENCE

The Challenges in Pulmonary and Critical Care: 2018 CME activity was supported through educational grants or donations from the following companies:

- ❖ Bayer HealthCare Pharmaceuticals, Inc.
- ❖ Actelion Pharmaceuticals US, Inc.
- ❖ Boehringer Ingelheim Pharmaceuticals, Inc.
- ❖ CSL Behring, LLC.
- ❖ Grifols
- ❖ Insmed
- ❖ Mallinckrodt Pharmaceuticals, LLC

# Levels of Evaluation

Consistent with the policies of the ACCME, NACE evaluates the effectiveness of all CME activities using a systematic process based on Moore's model. This outcome study reaches Level 5.

**Level 1: Participation**

**Level 2: Satisfaction**

**Level 3: Declarative and Procedural Knowledge**

**Level 4: Competence**

**Level 5: Performance**

**Level 6: Patient Health**

**Level 7: Community Health**

Moore DE Jr, Green JS, Gallis HA. Achieving desired results and improved outcomes: integrating planning and assessment throughout learning activities. J Contin. Educ. Health Prof. 2009 Winter;29(1):1-15



**Level 1:**  
Participation and Demographics



# Level 1: Participation



December 1, 2018 Fort Lauderdale, FL



**90%**  
Provide direct  
patient care



**495** total attendees



On site: **113** attendees

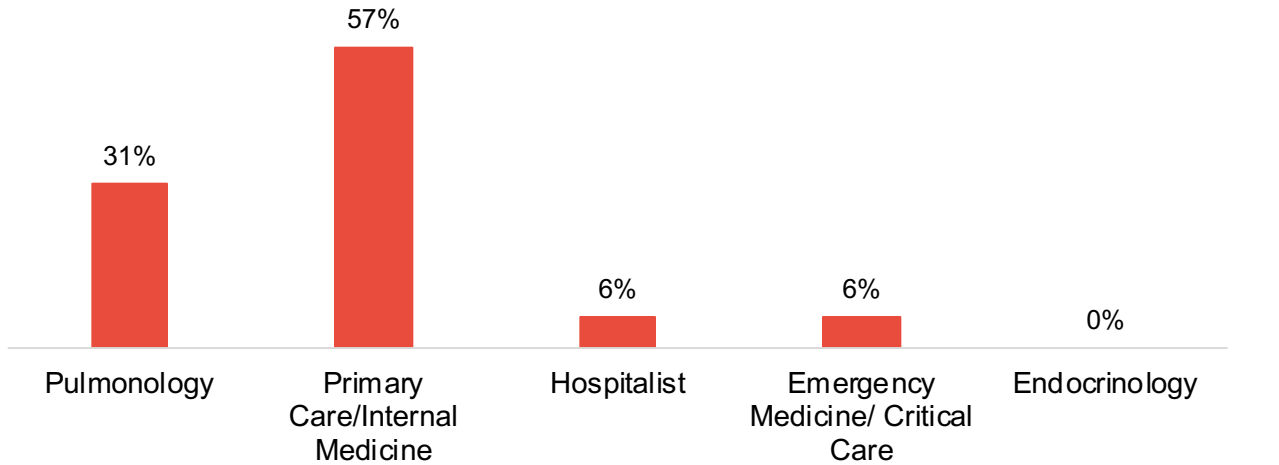


National online simulcast : **382** attendees

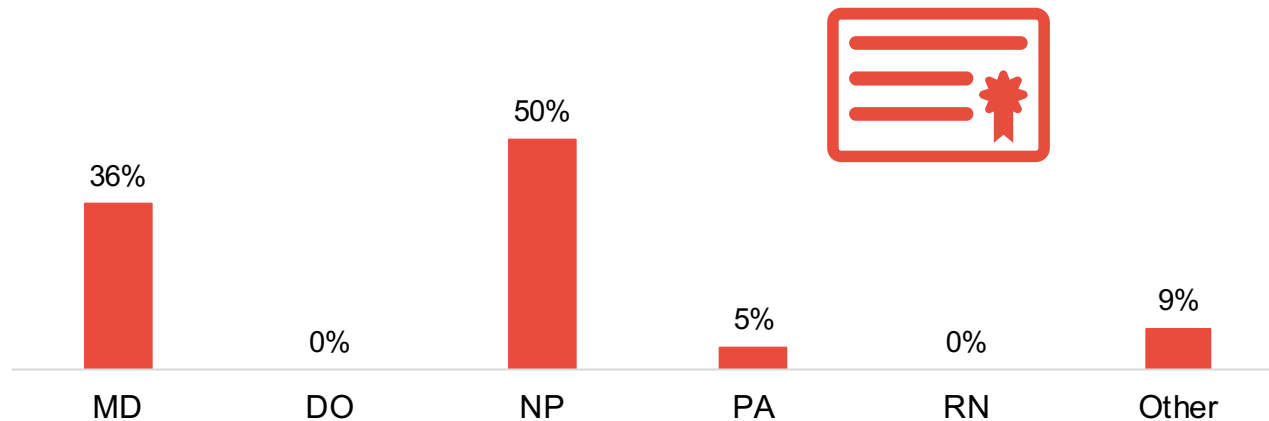


# Level 1: Demographics and Patient Reach

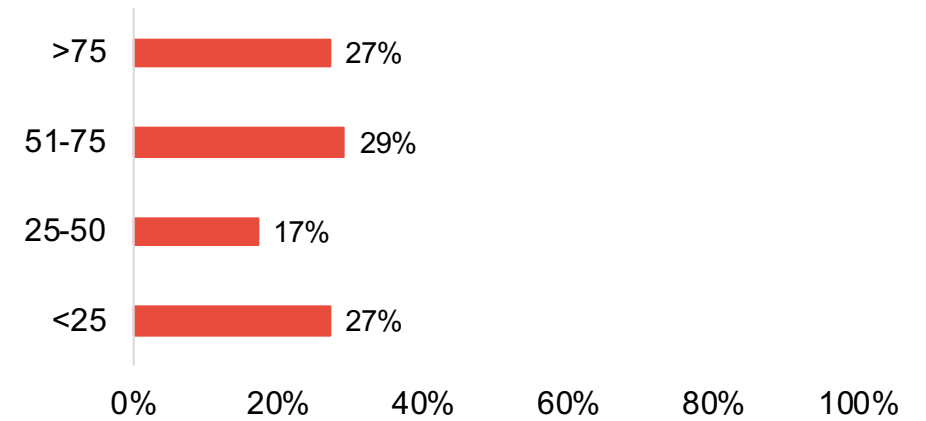
## Specialty



## Profession

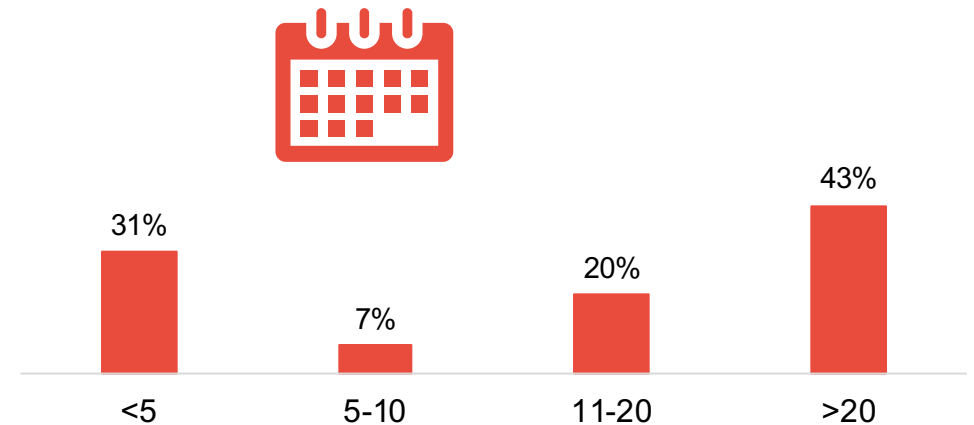


## Patients seen each week, in any clinical setting:



**Patient Care Focus: 90%**

## Years in Practice





**Level 2-5:**  
Outcomes Metrics

## Level 2: Satisfaction



**99%** rated the activity as excellent



**99%** indicated the activity improved their knowledge



**97%** stated that they learned new and useful strategies for patient care



**91%** said they would implement new strategies that they learned

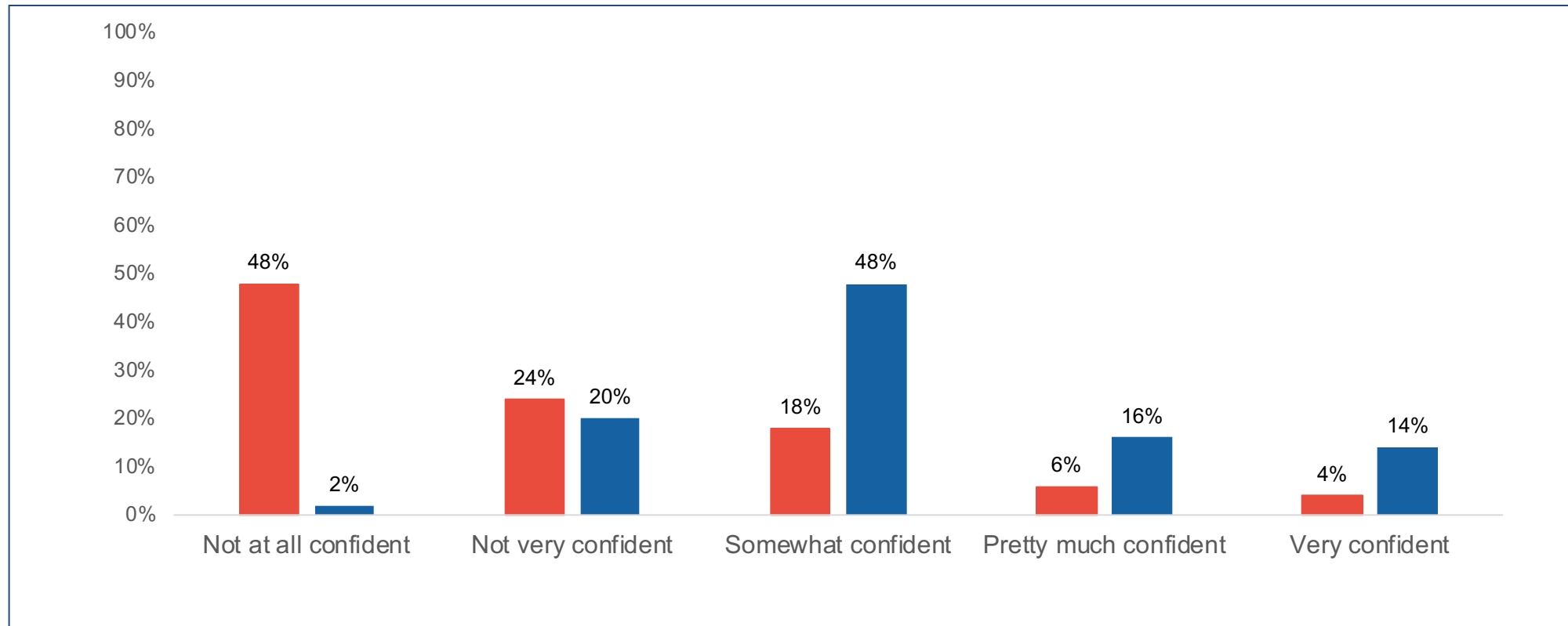


**100%** said the program was fair-balanced and unbiased

## Confidence Assessment

# Please rate your confidence in your ability to manage patients with Nontuberculous Mycobacterial Lung Disease:

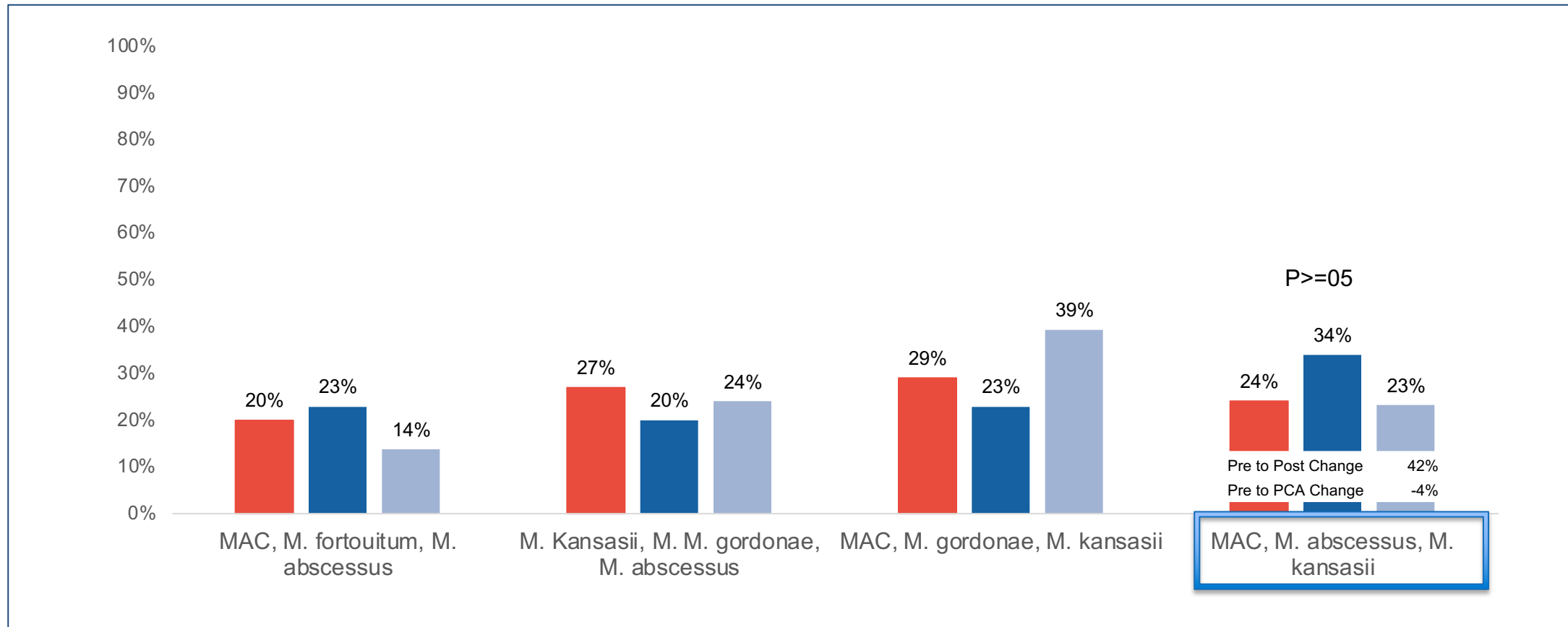
(Learning Objectives 2,3)



N= Pre: 175 Post: 162 PCA: 117

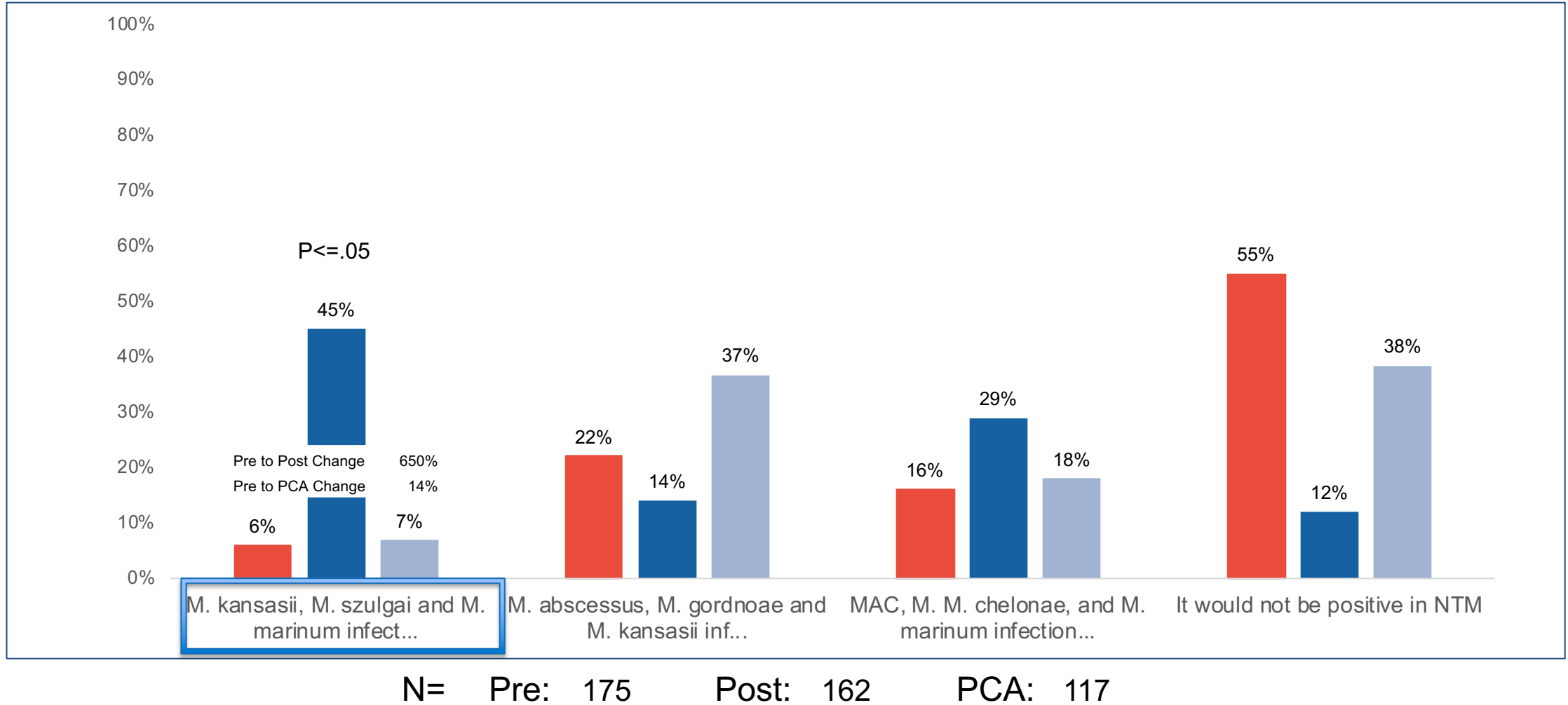
# What are the most common isolates of pulmonary NTM (Non-Tuberculous Mycobacterial) infections in the US?

(Learning Objective 1)



N= Pre: 175 Post: 162 PCA: 117

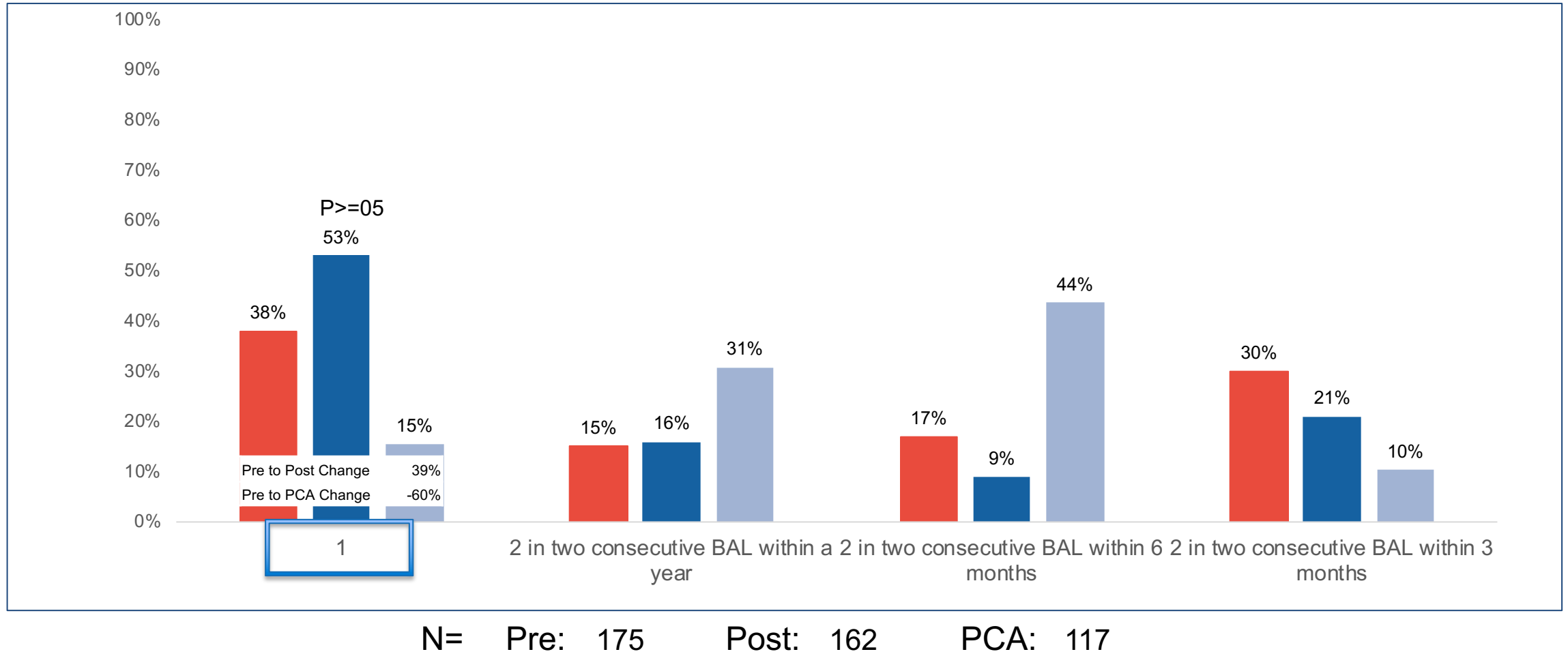
# A Quantiferon-TB Gold test may be false positive in which of the following NTM infections? (Learning Objective 2)





# How many times does NTM need to be isolated from a BAL (Bronchoalveolar Lavage) specimen to the meet diagnostic criteria for pulmonary NTM?

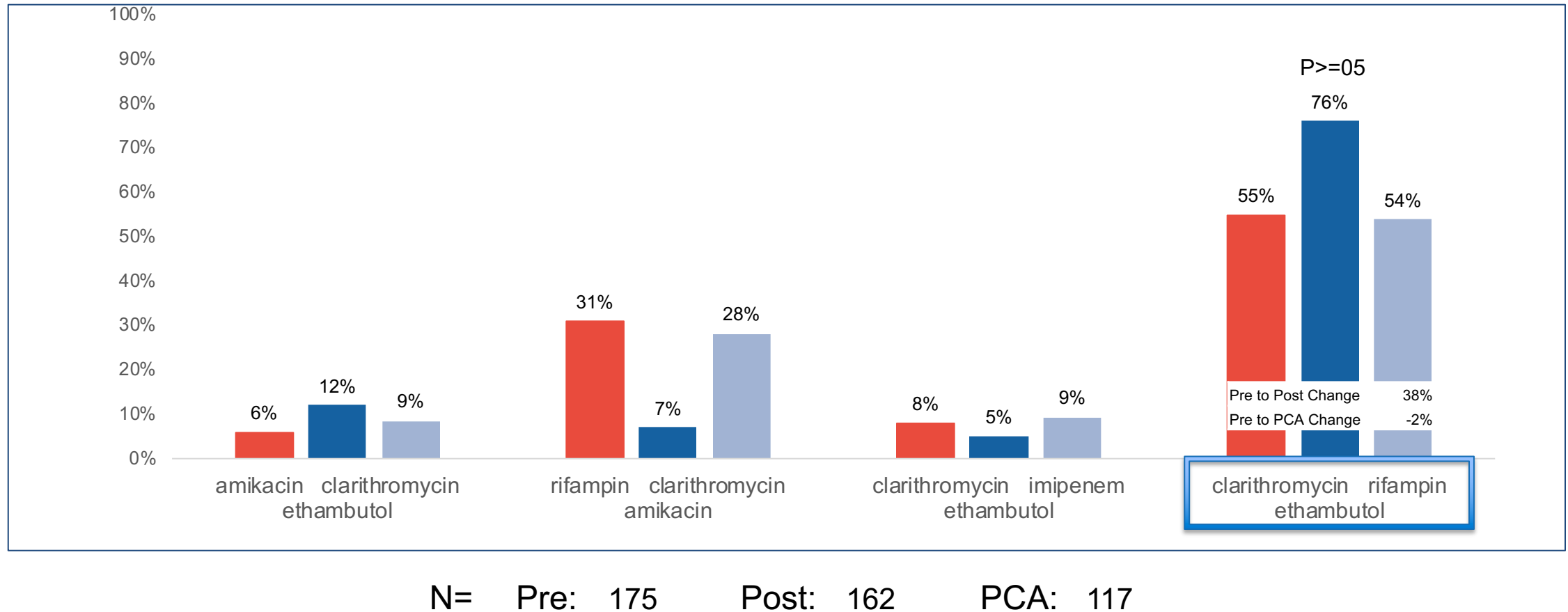
(Learning Objective 2)



Competence Assessment

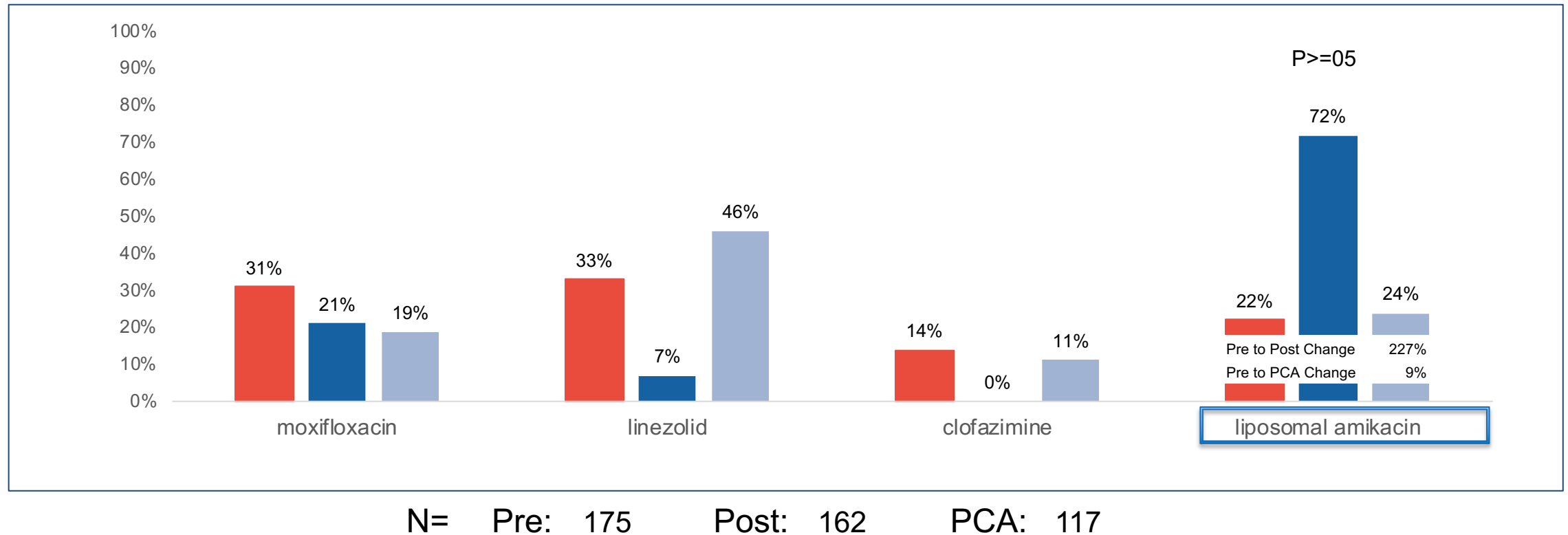
68 y/o female with history of bronchiectasis presents with a persistent cough productive of tan sputum, fatigue, increased dyspnea and night sweats. A BAL culture yields MAC. What would you recommend as the best initial treatment option for this patient?

(Learning Objective 3)



**62 y/o male with history of COPD presents for MAC treatment. He had 3 COPD exacerbations in the last 6 months. MAC was diagnosed after bronchoscopy and treatment has initiated with macrolide, rifampin, and ethambutol for 7 months. He still is symptomatic and MAC has been recurrently isolated from sputum in the last month. What would you recommend as the best additional treatment option for this patient?**

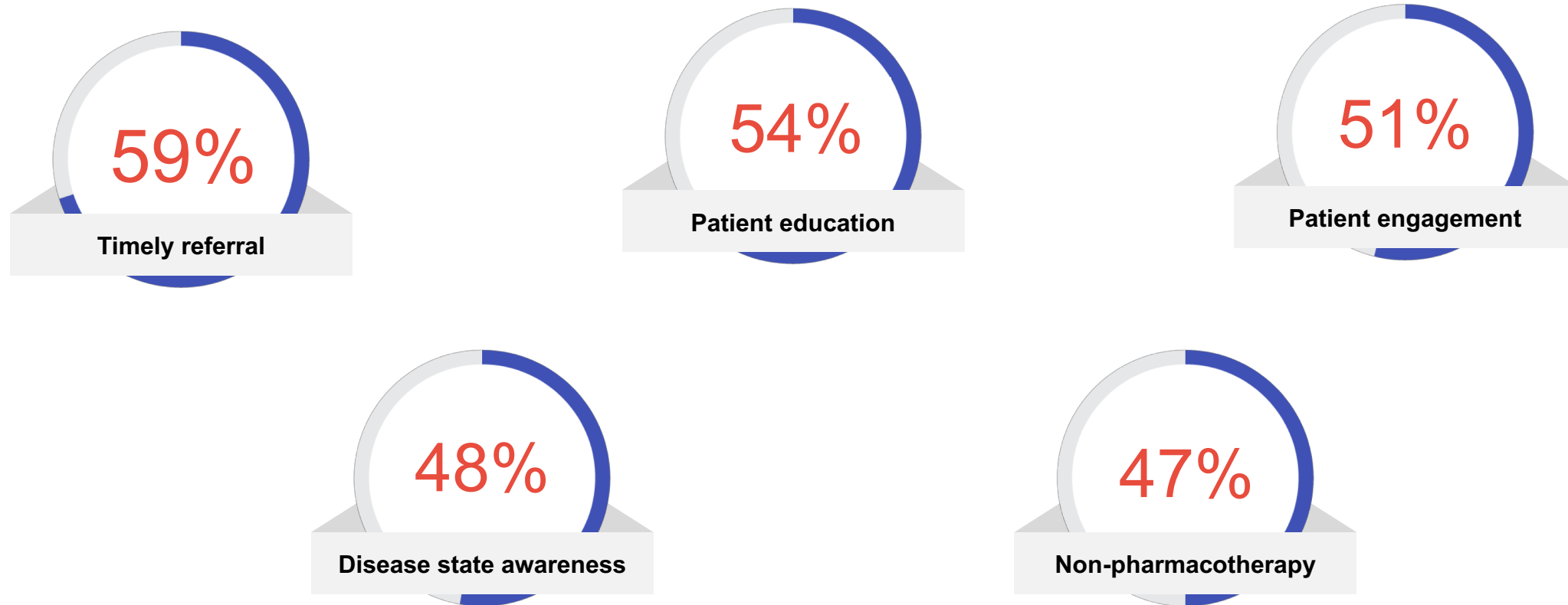
**(Learning Objective 4)**



(4-week Post Assessment)

**Please select the specific areas of *skills, or practice behaviors*, you have improved regarding the screening, diagnosis and treatment of NTM-LD since this CME activity. (Select all that apply.)**

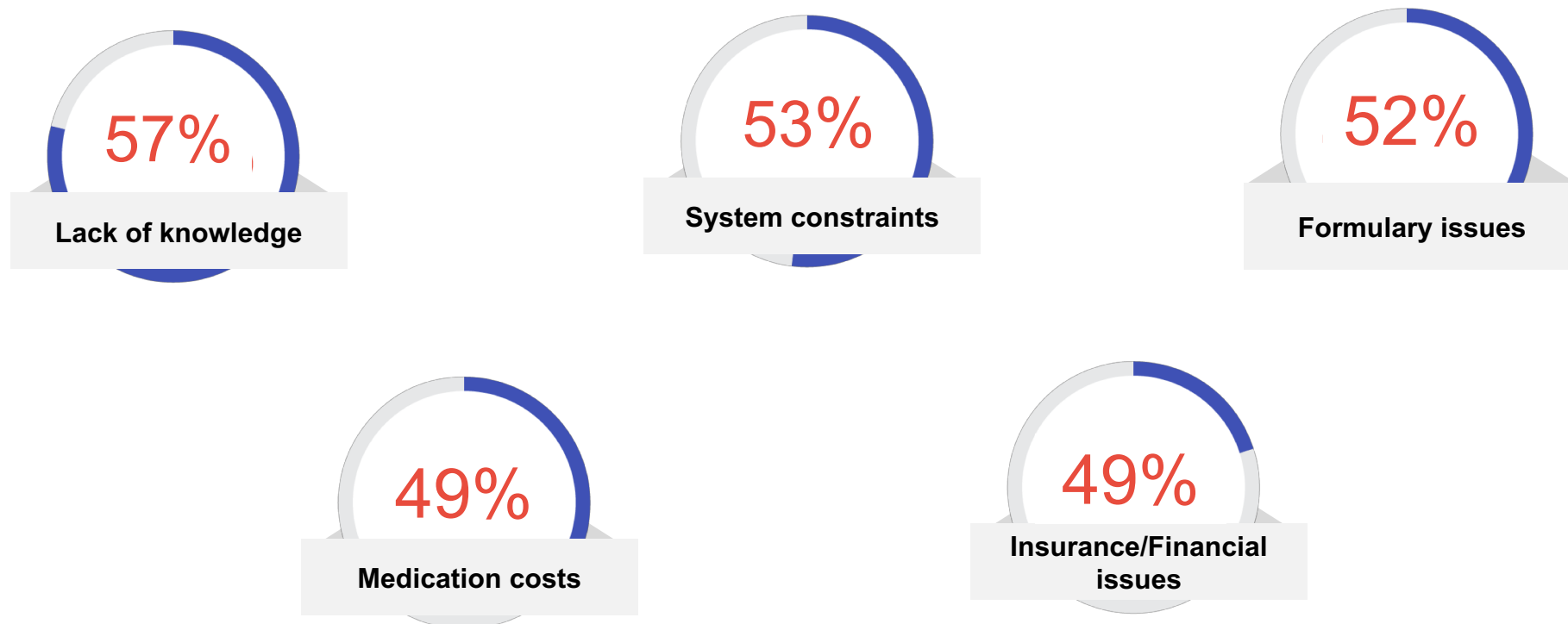
N=117



(4-week Post Assessment)

**What specific *barriers* have you encountered that may have prevented you from successfully implementing screening, diagnosis and treatment of NTM-LD since this CME activity? (Select all that apply)**

N=117



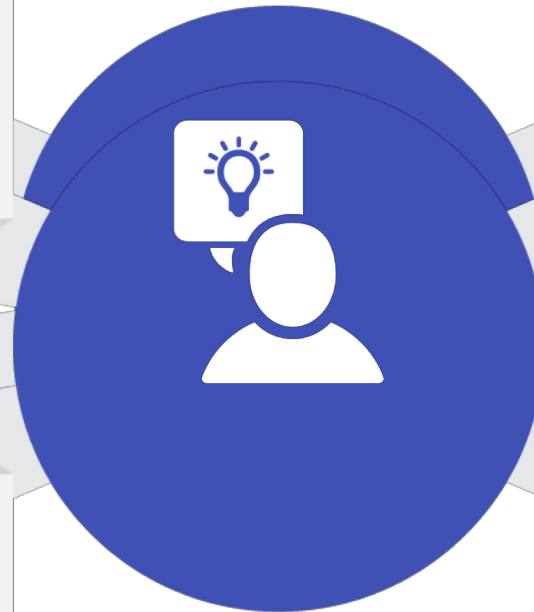
# Participant Educational Gains

650% increase in awareness of the usefulness of Quantiferon-TB Gold in diagnosing NTM infections

38% more competent in prescribing appropriate initial therapy for a patient with Mycobacterium avium complex infection

39% increase in awareness of the number of isolates from a BAL (Bronchoalveolar Lavage) specimen is required to meet diagnostic criteria for pulmonary NTM

227% increased recognition of the role of liposomal amikacin in the treatment of recurrent MAC





# Persistent Educational Gaps After 4 Weeks

Common isolates and risk factors for NTM-LD

Diagnostic evaluation and laboratory testing for NTM-LD

Initial pharmacotherapy recommendations for NTM-LD

Treatment strategies for NTM recurrence and reinfection



# Key Take-home Points

Increased familiarity with the most common isolates of Non-Tuberculous Mycobacterial infections though this did not achieve statistical significance

Improved confidence in ability to manage patients with Nontuberculous Mycobacterial Lung Disease



After 4 weeks, the following improved skills were reported regarding the **screening, diagnosis and treatment of NTM-LD** : 59% timely referral, 54% patient education and 51% patient engagement

Gains were seen across all learning domains after the activity but score slippage after 4 weeks reinforces the need for continued education on the diagnosis and management of NTM-LD.