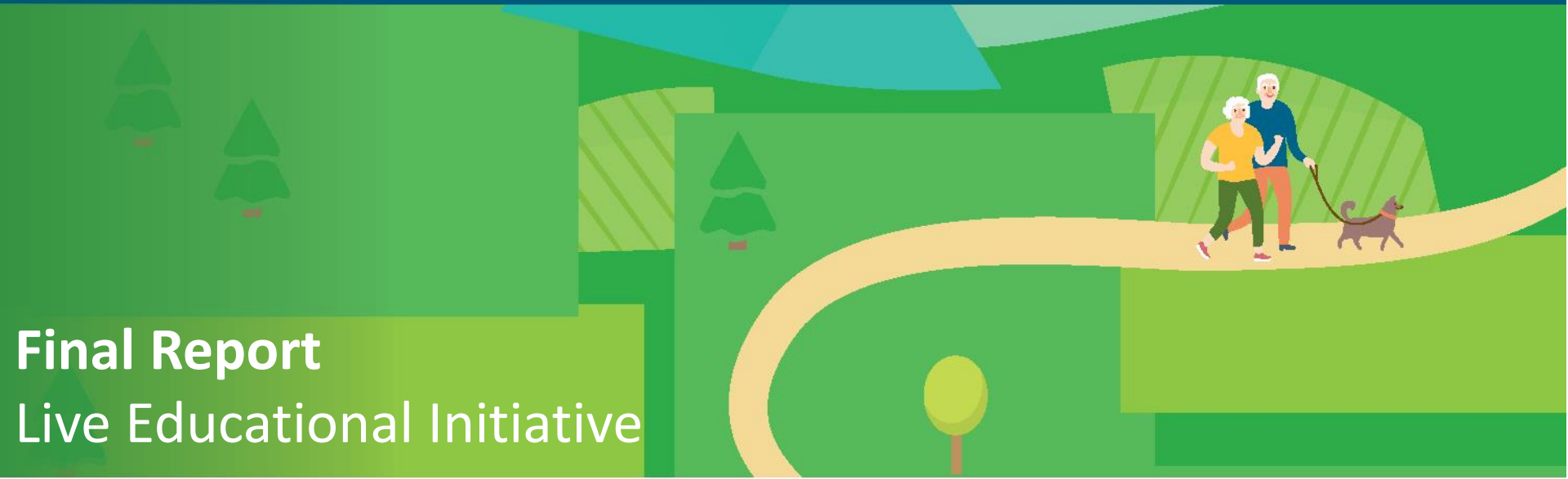
Pathways for Navigating ILD and IPF:

The Journey to Early Recognition, Diagnosis, and Patient-Centered Disease Management



Final Report

Live Educational Initiative

A free CME/CNE evening symposium

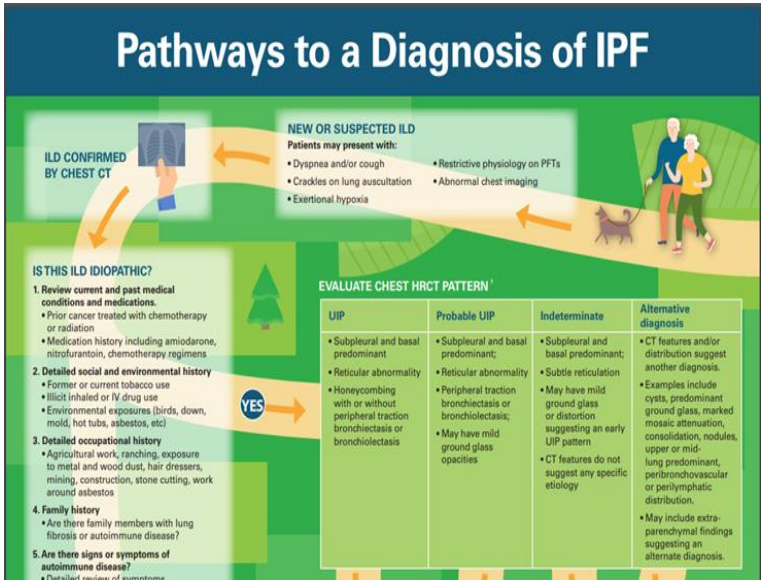
National Jewish Health®

Breathing Science is Life.®

Key Features of Program Design

Background

The **online enduring case-based simulations** was developed first and then **(4) live evening symposia** employed structure of the cases developed for the online simulation. Images and video components from the simulation engaged learners in the multi-media live presentations to include Audience Response System (ARS) and provision of an **infographic clinical reference aid**. Learners will step through decisions in **(3) case simulations** to test and reinforce their skills in diagnosis, treatment, and management of ILD/IPF as well as effective patient communication strategies.



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Accreditation, Audience and Outcomes Strategy

Accreditation Details: In support of improving patient care, NJH is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. NJH is also accredited by the Accreditation Council for Pharmacy Education (ACPE) and the California Board of Registered Nursing (CBRN) to provide continuing education for the healthcare team. ***NJH designated the online program for 2.5 AMA PRA Category 1 Credits and the live evening symposia for a maximum of 2.5 AMA PRA Category 1 Credits™*** **and 3.0 nursing contact hours.**

Target Audience: Pulmonologists, Radiologists, Pathologists along with Primary Care Physicians, Nurse Practitioners, and Physician Assistants who treat patients with Interstitial Lung Disease. Registered Nurses will be targeted for the live activities.

Educational Outcomes Strategy: Outcomes will be measured via participation totals, specialty, designation, pre-test, post-test, clinically-based decisions in case simulations, interactive polling questions, and evaluations. The metrics will demonstrate participation, satisfaction, engagement, and change in knowledge, competency, and performance to achieve Moore's Level 5 outcomes.

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Program Faculty

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Denver, CO

Jesse Roman, MD
CEO, Jane and Leonard Korman Respiratory Institute
Jefferson Health – National Jewish Health
Ludwig Kind Professor of Medicine and Pharmacology & Experimental Therapeutics
Enterprise Division Chief, Pulmonary, Allergy & Critical Care Medicine
Jefferson Health
Philadelphia, PA

Final Report: Program Overview

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Objectives

- Describe best practices for diagnosing IPF based on the most recent evidence-based guidelines.
- Differentiate IPF from other interstitial lung diseases through comprehensive assessment, diagnosis, and/or referral to ILD specialty centers.
- Apply recent clinical data and guidelines to the management and treatment selection of IPF.
- Determine appropriate communication strategies for addressing quality of life issues in patients with ILD.

Target Audience

Pulmonologists, Radiologists, Pathologists, Primary Care Physicians, Nurse Practitioners, Physician Assistants and Nurses who treat patients with Idiopathic Pulmonary Fibrosis

Format

- 4 live meetings consisting of interactive, case-based presentations and breakout workshops
- Online enduring activity featuring 3 patient cases

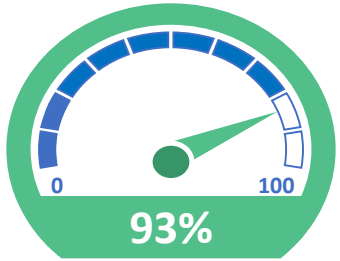
Reach (as of 10-18-19)

LIVE	Proposed	110-140	
	Actual	121	
		Participants (Page Views)	Completers (Test Takers)
ONLINE	Proposed	3500	1000
	Actual	9415	1147

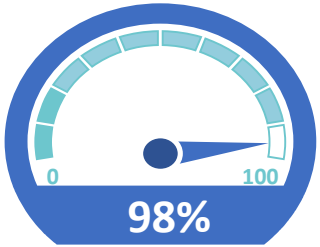
Final Report: Live Program Dashboard

National Jewish Health®

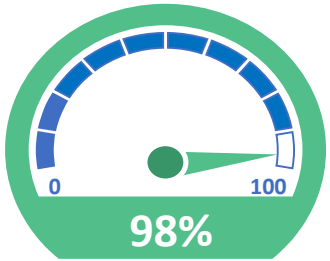
93% of respondents intend to make changes in practice as a result of the activity



98% of learners report activity met their educational needs



98% of learners report activity addressed overcoming barriers to optimal patient care



Estimated number of patients impacted per month: 2396

TOTAL LEARNERS

70% of learners were prescribers:

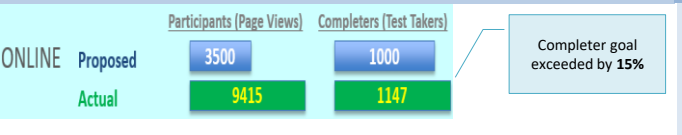
- MD/DO = 39% (N=47)
- NP/PA = 31% (N=38)
- RN = 20% (N=25)
- Other = 10% (N=11)

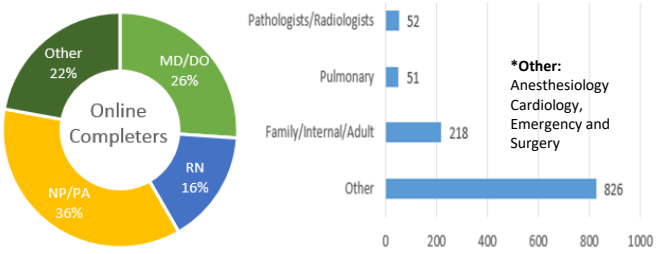
60% Overall relative knowledge gain from pre-to post-test for live series.

Final Report: Online Program Dashboard

National Jewish Health®

Participation





Learner Impact

116% overall relative gain in knowledge from pre to post test for live meetings

92% of learners indicated that they planned to make changes to practice as a result of the education provided.

Persistent Gaps/Needs

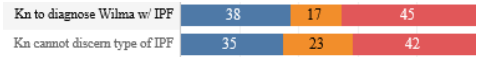
Identified by traditional pre-post assessment:

- Variable understanding existed related to making a diagnosis based on HRCT images

ProDoctor

Identified in case-simulation platform performance:

- Diagnosing IPF based on HRCT images
- Distinguishing IPF from other ILD's



Satisfaction

I loved this activity! First one of it's kind. Very interactive, very informative, and fun!

I enjoyed the interactive format!

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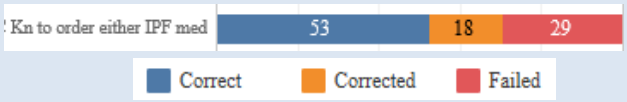
Performance

71% of prescribers could identify antifibrotic therapy as an appropriate IPF treatment option immediately after the initial education or upon remediation.



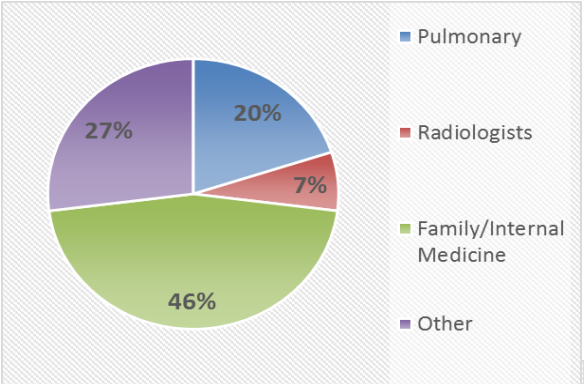
Level 1 Outcomes (Live)

National Jewish Health®

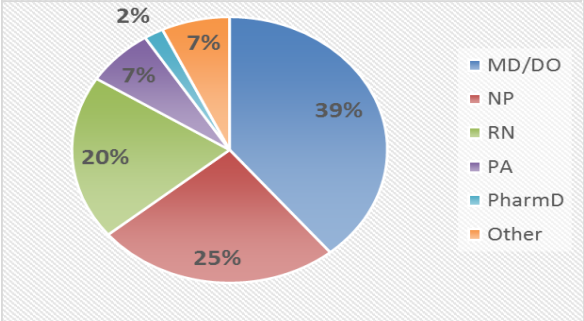
Level 1 Outcomes: Participation & Satisfaction

Participation by City	
Minneapolis, MN: 11/8/2018	14
Kansas City, MO: 11/13/2018	28
Philadelphia, PA: 2/27/2019	49
Los Angeles, CA: 3/14/2019	30
Total Live Participation	121

A majority of attendees were representative of the target audience



71% of attendees were prescribers



*Other: MA, CRT, Urgent Care, Occupational Medicine, Public Health, Pediatric, Oncology, Pain Management, Respiratory Therapy

Level 2 Outcomes (Live)

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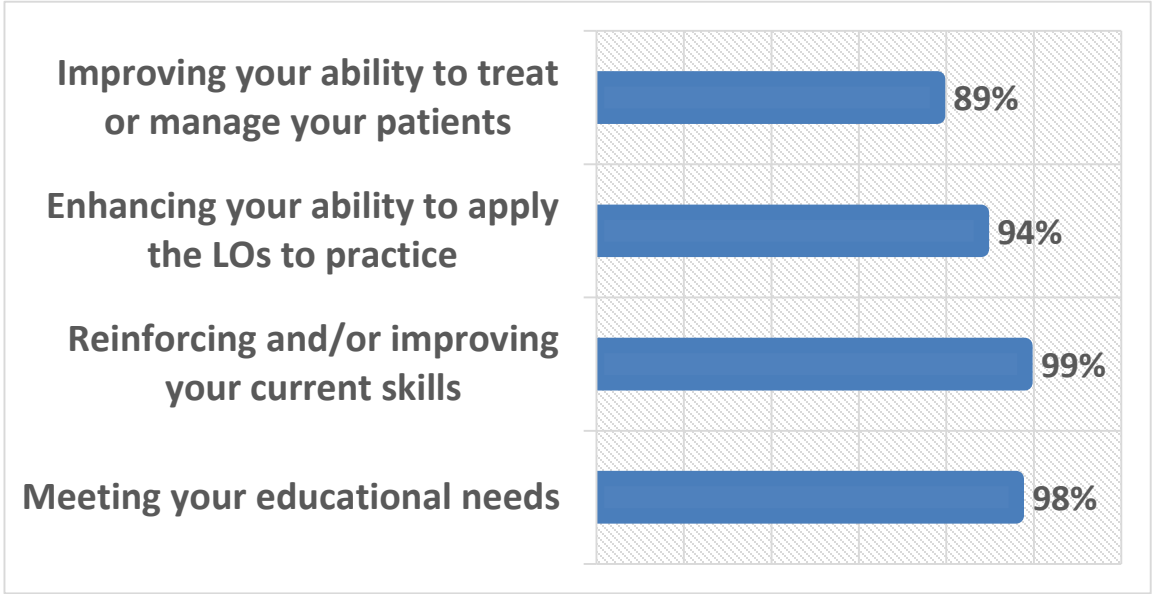
Level 2 Outcomes: Learning & Satisfaction

N=69

Participants report the activity was "Good" to "Excellent" at:



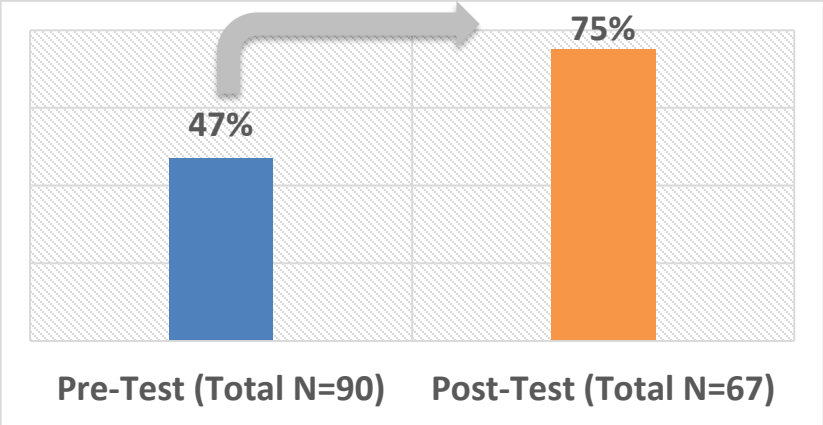
"Enjoyed this educational activity. Looking forward to more in the future."

"There is a need for more programs like this to reach healthcare teams (not just physicians) in the community."

"Wonderful speakers. Made information easy to understand."

Level 3 & 4 Outcomes (Live)

Level 3&4 Outcomes: Knowledge/Competence (Pre-Test/Post-Test)



Level 3 and 4 outcomes were measured by comparing pre-and post-test answers. Attendees' responses to these questions demonstrated that **participants gained knowledge as a result of the activity.**

Overall relative knowledge gain from pre- to post activities

60%

Pre/Post Comparison (Live)

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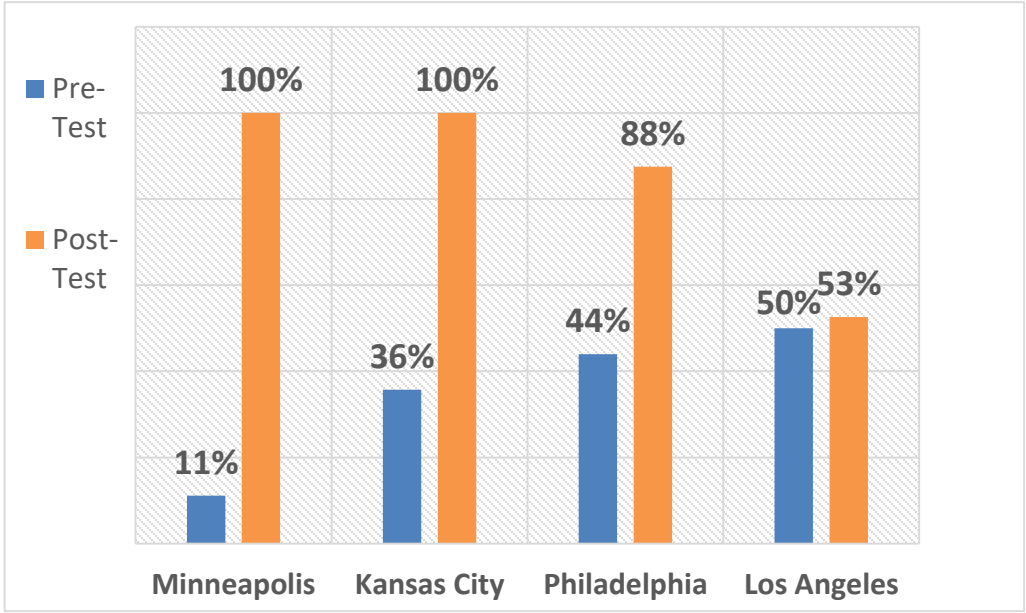
Level 3 Outcomes: Knowledge

Learning Objective: Apply recent clinical data and guidelines to the management and treatment selection of IPF

Q1: When should a patient with IPF be referred for lung transplant evaluation?

A. After first exacerbation
B. When the patient has shown a significant decline in FVC
C. Lung transplant is not beneficial in IPF
D. At time of diagnosis
E. After they have failed anti-fibrotic therapy

Average Pre-Test N=23
Average Post-Test N=17



Pre/Post Comparison (Live)

National Jewish Health®

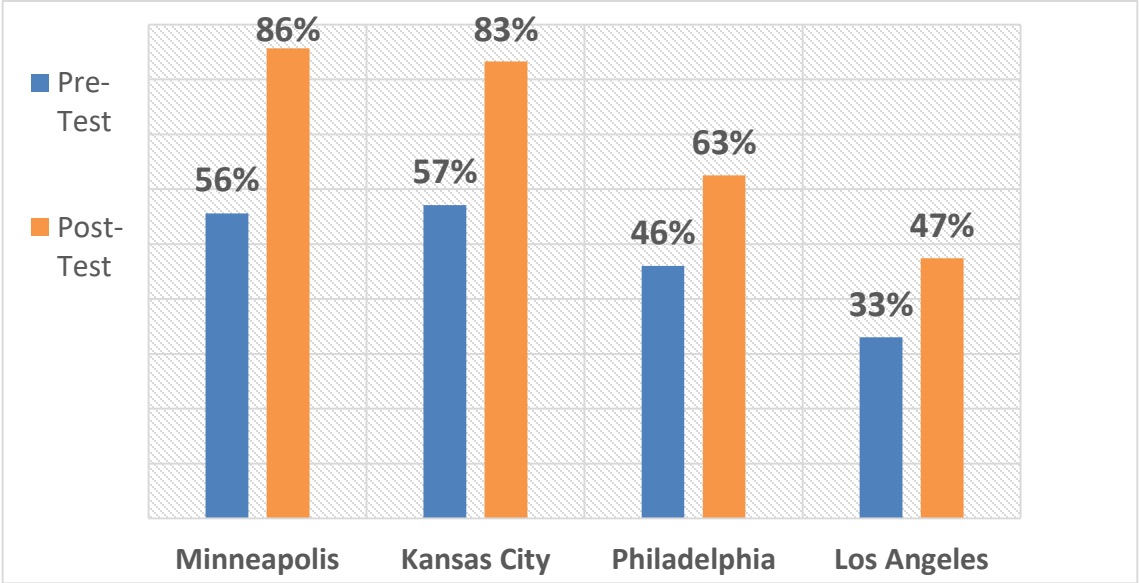
Level 3 Outcomes: Knowledge

Learning Objective: Describe best practices for diagnosing IPF based on the most recent evidence-based guidelines

Q4: Which histologic pattern is seen in the setting of idiopathic pulmonary fibrosis?

A. Usual interstitial pneumonia
B. Non-specific interstitial pneumonia
C. Lymphocytic interstitial pneumonia
D. Desquamative interstitial pneumonia
E. Diffuse alveolar damage

Average Pre-Test N=23
Average Post-Test N=17



Pre/Post Comparison (Live)

National Jewish Health®

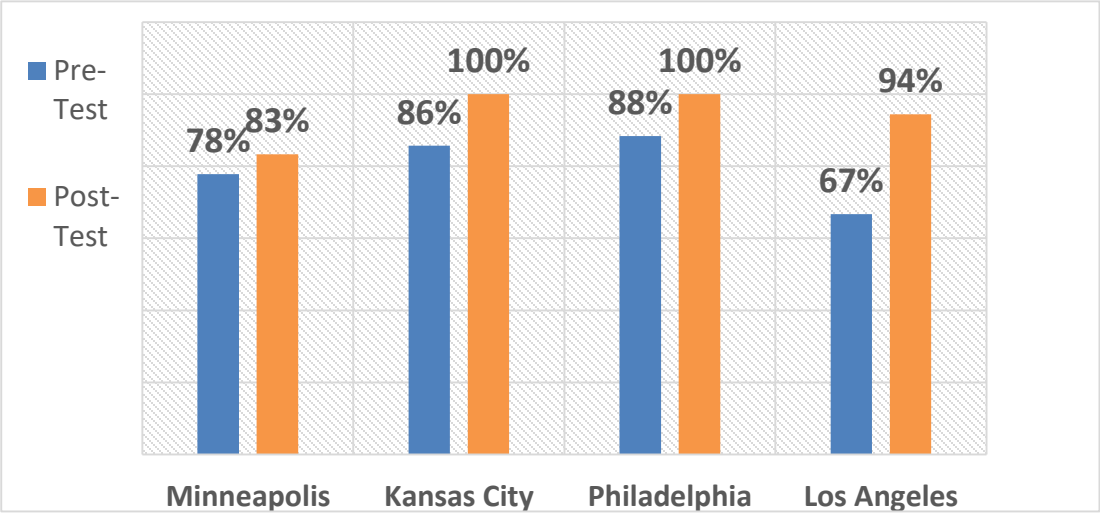
Level 3 Outcomes: Knowledge

Learning Objective: Determine appropriate communication strategies for addressing quality of life issues in patients with ILD.

Q10: What is the best approach to discussing IPF disease management with patients and caregivers?

A. Carefully review with patients and caregivers the data that shows IPF prognosis is approximately 2.5 years
B. Recommend antifibrotics and pulmonary rehabilitation
C. Ask patients and caregivers to conduct research online
D. Explain to patients that while IPF is an incurable disease, there are strategies that can be employed to enhance overall QOL

Average Pre-Test N=23
Average Post-Test N=17



Pre/Post Comparison (Live)

National Jewish Health®

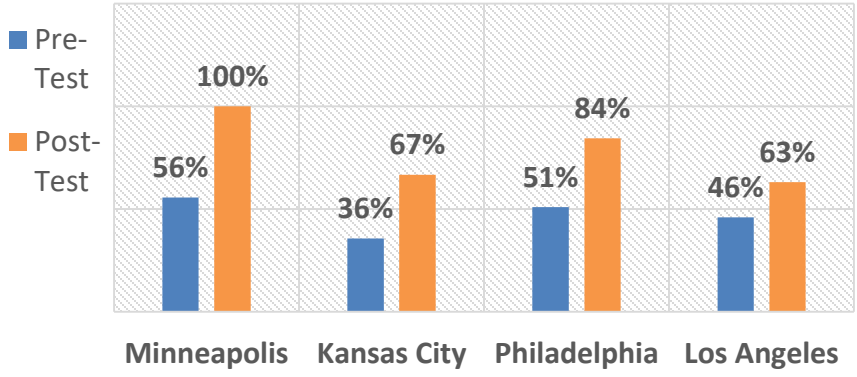
Level 4 Outcomes: Competence

*Learning Objectives: Apply recent clinical data and guidelines to the management and treatment selection of IPF **and** Differentiate IPF from other interstitial lung diseases through comprehensive assessment, diagnosis, and/or referral to ILD specialty centers.*

Q2: A 50 year old female presents with progressive shortness of breath and dry cough. She also notes arthralgias and joint swelling. On exam you note crackles in the bases bilaterally and she has ambulatory oxygen desaturation. A HRCT scan is done which reveals bibasilar reticulation and ground glass opacities. Lab testing reveals a positive anti-CCP antibody and hand x-rays reveal erosive arthritis. What is the next step in evaluation and management?

A. Start patient on anti-fibrotic medication
B. Refer for surgical lung biopsy
C. Perform bronchoscopy
D. Start immunosuppression for treatment of CTD-ILD
E. Close monitoring with serial CT imaging

Average Pre-Test N=23
Average Post-Test N=17



Evaluation Results (Live)

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Level 4 Outcomes: Evaluation Data

N=69

- **93%** of respondents report that they intend to make changes in practice as a result of the activity.
- **100%** of respondents report that the material was presented in an objective manner and free of commercial bias
- **98%** of respondents report that the activity addressed strategies for overcoming barriers to optimal patient care
- **99%** of respondents report that the content presented was evidence-based and clinically relevant

Level 4 Outcomes (Live)

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Self-Reported Performance

N=576

88%

of those in practice report that the activity provided new ideas or information they have used in practice

76%

report one or more of their patients have already benefitted from the information learned

75%

report that the infographic associated with this activity is a helpful guide for diagnosing IPF

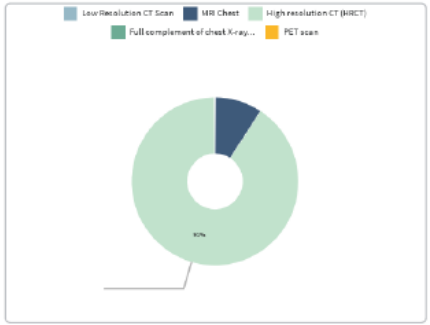
"The information was immediately used. The next day at work I spoke to 1 nurse and 3 patients diagnosed with ILD."

Audience Response System (Live)

National Jewish Health®

The four live meetings featured interactive case-based polling questions using Poll Everywhere. These questions are in addition to the pre/post-test and are asked throughout the lecture in a test and teach format. Patient charts and films were shown to answer the questions. The data allowed the presenter to understand the baseline knowledge, as well as to get more data from participants to help elucidate some of the findings in our preliminary analysis of the online enduring program data.

Which study would you like to order?



Response options	Count	Percentage
Low Resolution CT Scan	0	0%
MRI Chest	2	9%
High resolution CT (HRCT)	**20**	**91%**
Full complement of chest X-rays (PA, expiratory, decubitus, lordotic)	0	0%
PET scan	0	0%

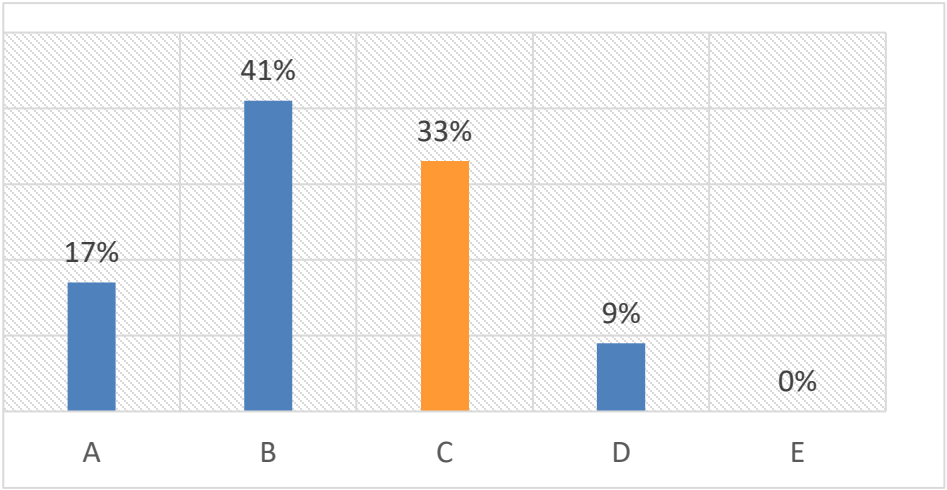
Audience Response System (Live)

National Jewish Health®

Case Study #1 (JACOB):
49 y.o. Caucasian male, married; Mild pulmonary hypertension (diagnosed 3 years ago); Progressive dyspnea; Raynaud's phenomenon; Hashimoto's thyroiditis; Hypertension; GERD

Given the HRCT findings (shown in presentation) what is your diagnosis?

A. Idiopathic Pulmonary Fibrosis (IPF)
B. Connective tissue disease (CTD)-ILD
C. Need more information*
D. Non-specific interstitial pneumonia
E. Cryptogenic organization pneumonia



N=62

Audience Response System (Live)

National Jewish Health®

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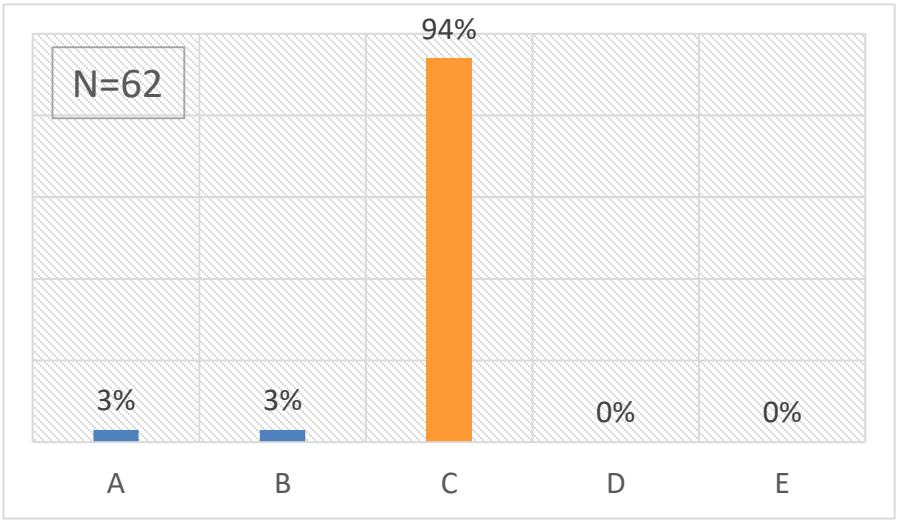
What is your diagnosis?

A. Idiopathic pulmonary fibrosis (IPF)
B. Need more information
C. Connective tissue disease (CTD)-ILD
D. Idiopathic non-specific interstitial pneumonia
E. Cryptogenic organization pneumonia



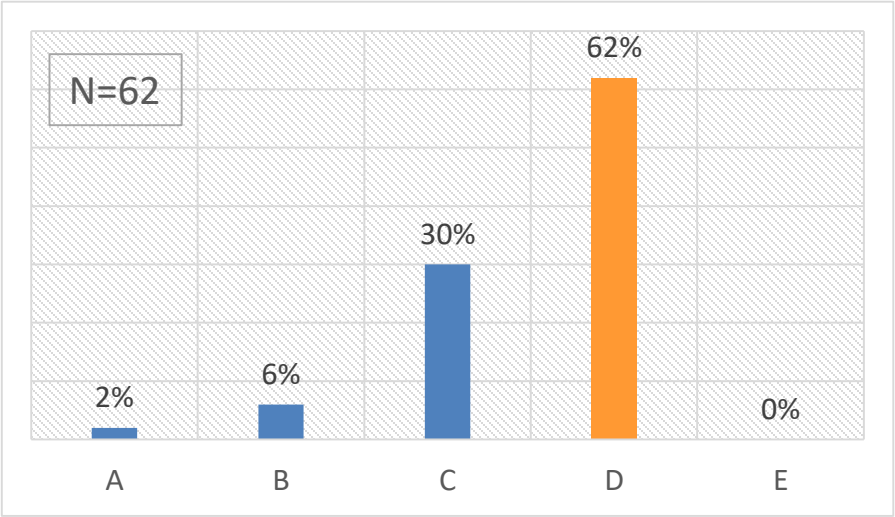
Audience Response System (Live)

National Jewish Health®

Case Study #1 (JACOB):
49 y.o. Caucasian male, married; Mild pulmonary hypertension (diagnosed 3 years ago); Progressive dyspnea; Raynaud's phenomenon; Hashimoto's thyroiditis; Hypertension; GERD

What medication will you order?

A. Nintedanib (over pirfenidone)
B. Pirfenidone (over nintedanib)
C. Either nintedanib or pirfenidone
D. **Prednisone and mycophenolatemofetil**
E. Warfarin

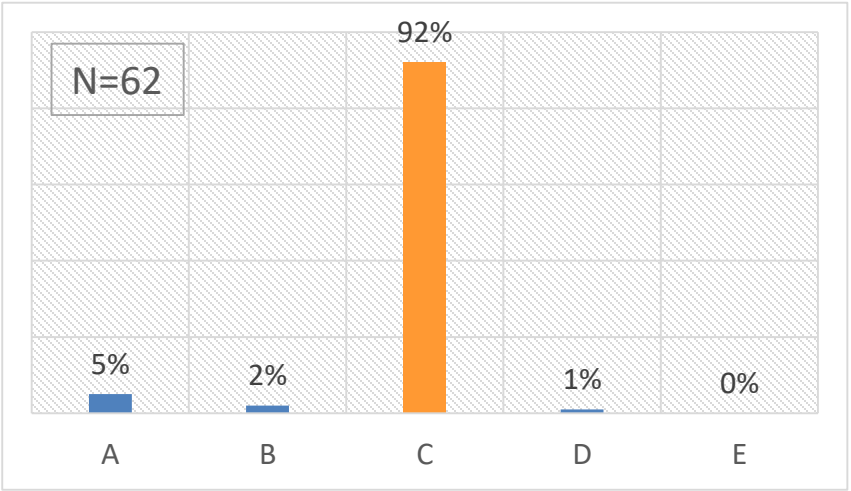


Audience Response System (Live)

Case Study #2 (RAYMOND):
74 y.o. Caucasian male; coronary artery disease; myocardial infarction 26 years ago; COPD; obstructive sleep apnea; GERD; Surgery (3-vessel CABG 20 years ago)

Which of the following studies should be performed next?

A. Bronchoscopy with bronchoalveolarlavage
B. Lung biopsy
C. **High Resolution CT Scan (HRCT)**
D. Exhaled Nitric Oxide
E. Standard CT without contrast



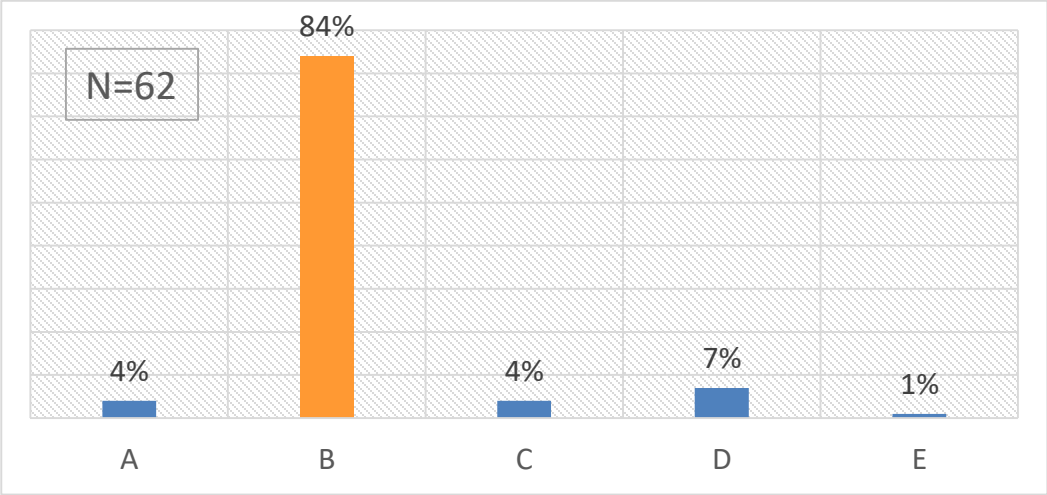
Audience Response System (Live)

National Jewish Health®

Case Study #2 (RAYMOND):
74 y.o. Caucasian male; coronary artery disease; myocardial infarction 26 years ago; COPD; obstructive sleep apnea; GERD; Surgery (3-vessel CABG 20 years ago)

What is Raymond's diagnosis?

A. Connective tissue disease ILD
B. Idiopathic pulmonary fibrosis
C. Desquamative interstitial pneumonia
D. Acute interstitial pneumonia
E. Cryptogenic organization pneumonia



Audience Response System (Live)

National Jewish Health®

Case Study #3 (WILMA):
68 y.o. African American female; chronic cough for past 12 months; post nasal drainage; GERD; Hypertension; Hypothyroidism

What is the best approach to discussing IPF disease management with patients and caregivers?

A. Carefully review with patients and caregivers the data that shows IPF prognosis is approximately 2.5 years
B. Recommend antifibrotics and pulmonary rehabilitation
C. Ask patients and caregivers to conduct research online
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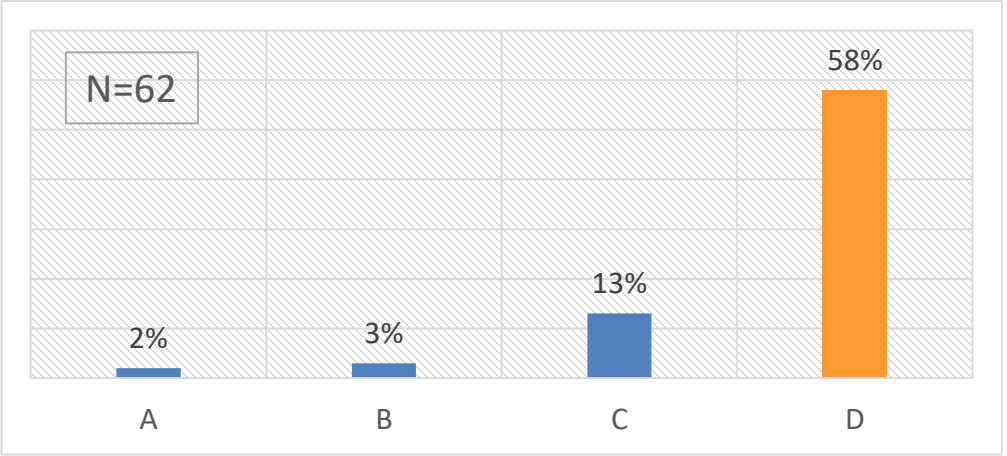
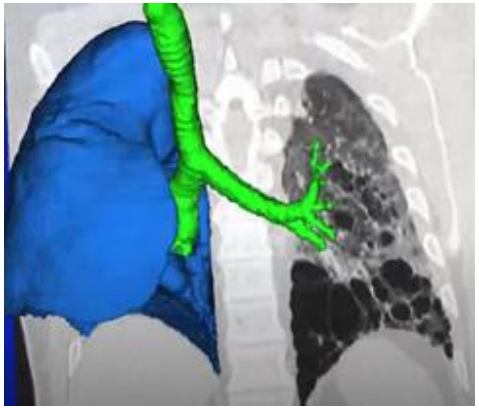


Online Activity: Final Status Report

National Jewish Health®



ProDoctor **Pathways for Navigating ILD and IPF: The Journey to Early Recognition, Diagnosis, and Patient-Centered Disease Management**

Launched October 19, 2018:

https://learning.freecme.com/a/30328PAgeVqR

Online Case Simulation Platform

National Jewish Health®

ProDoctor

The online activity uses ProDoctor's innovative simulation platform to highlight three patient cases (1 CTD-ILD and 2 IPF) each with accompanying HRCT images, HRCT reconstructions, 3D animations and radiology impression. Learners are challenged to make decisions regarding the workup, tests, and differential diagnosis of ILD in all three cases. Key learning points were reinforced with an infographic clinical reference aid developed for the use in both the live and online activity.

Final Report: Online Program Dashboard

National Jewish Health®

Participation

	Participants (Page Views)	Completers (Test Takers)
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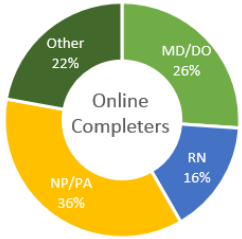
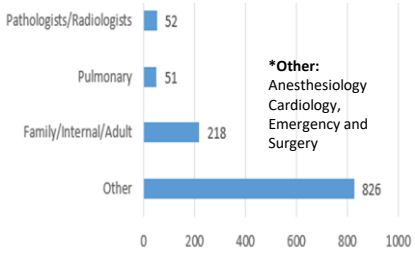
Actual	9415	1147

Completer goal exceeded by **15%**





***Other:** Anesthesiology Cardiology, Emergency and Surgery

Learner Impact

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ProDoctor

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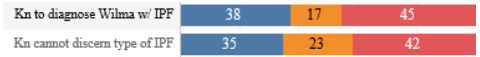

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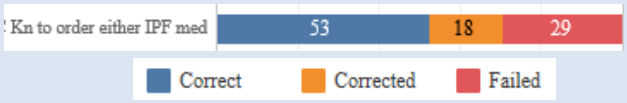


ProDoctor Heatmaps – Level 5 Outcomes

National Jewish Health®

Which of the following labs is most important to order in this case?

Answer Choices:

Select one

- 1) Serologies (e.g. ANA, anti-CCP, rheumatoid factor, etc.)
- 2) Coags
- 3) CMP
- 4) LFTs
- 5) BNP
- 6) CBC

Users make decisions on therapy choices, disease management, and many other competencies.

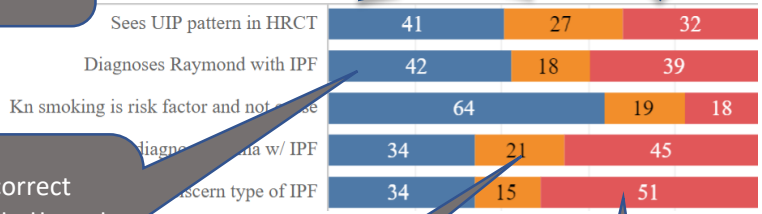
THAT IS INCORRECT

THAT IS CORRECT

If they make an incorrect choice they receive mentoring by Dr. Grey

Blue and **orange** represent learning or reinforcement.

Analyze **red** as ongoing gaps.



If they make a correct decision on the first attempt then they are in the blue section of the heatmap.

If they make a correct choice after mentoring they are in the yellow section of the heatmap.

If they make an incorrect choice after mentoring they are in the red section of the heatmap.

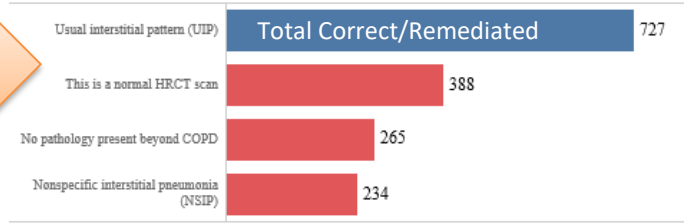
Level 5 Performance by Learning Objective

National Jewish Health®

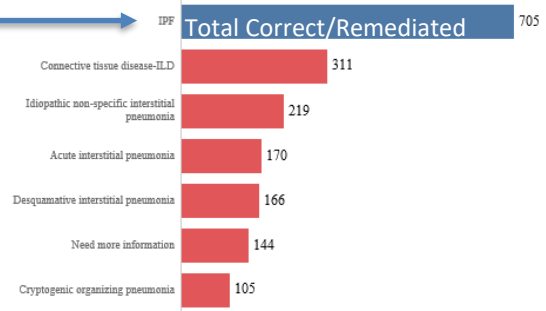
Learning Objective 1: Describe best practices for diagnosing IPF based on the most recent evidence-based guidelines.

ProDoctor Heatmap Data:

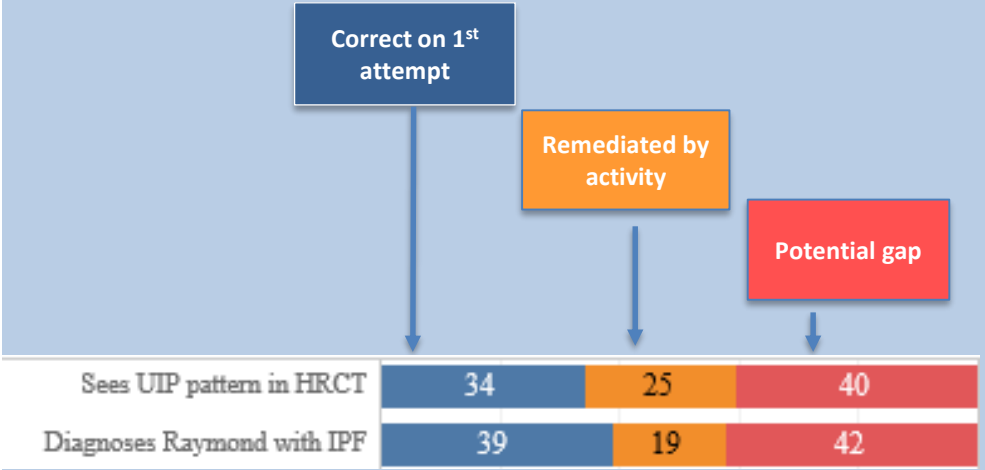
Able to identify UIP pattern on HRCT



Appropriately diagnose IPF in this case



Learner performance after viewing simulation:



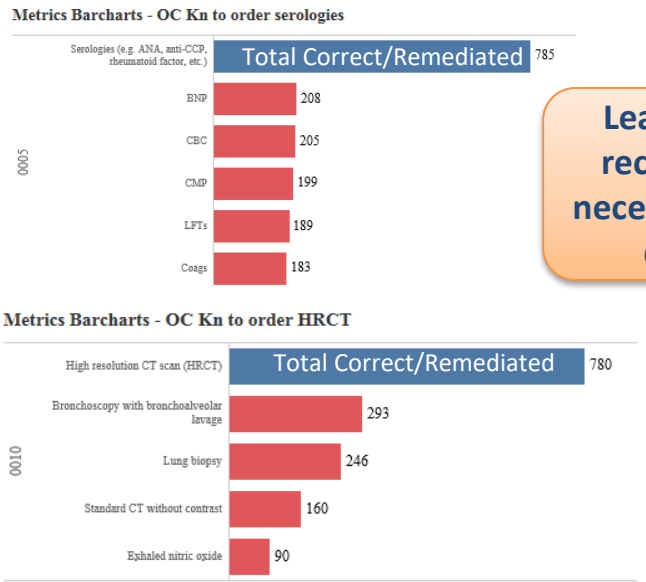
*Numbers represent percentages

Level 5 Performance by Learning Objective

National Jewish Health®

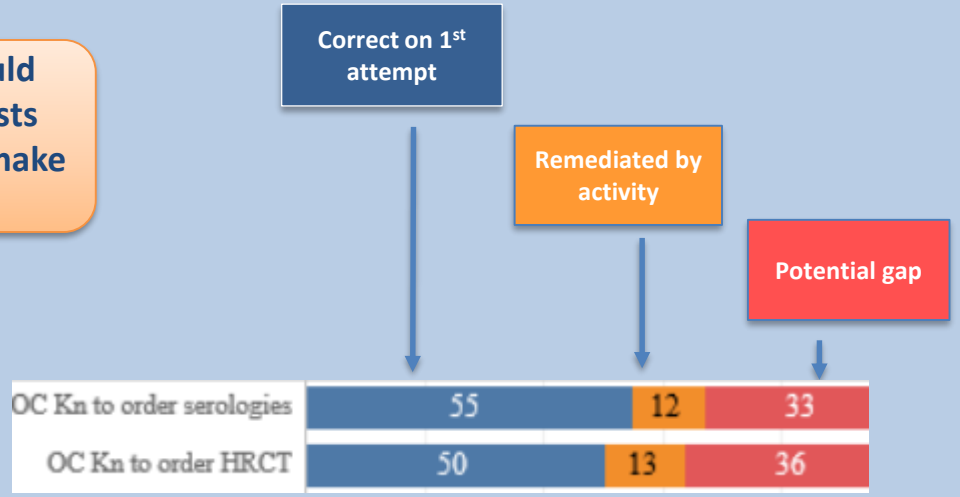
Learning Objective 2: Differentiate IPF from other interstitial lung diseases through comprehensive assessment, diagnosis, and/or referral to ILD specialty centers.

ProDoctor Heatmap Data:



Learners could recognize tests necessary to make diagnosis

Learner performance after viewing simulation:



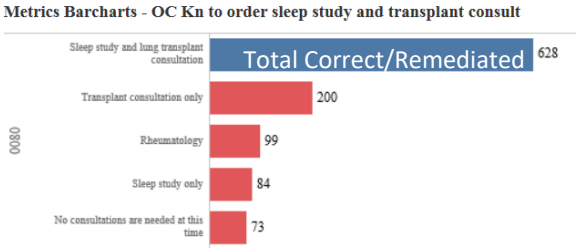
*Numbers represent percentages

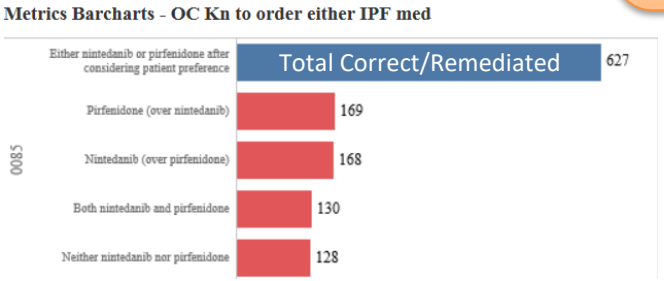
Level 5 Performance by Learning Objective

National Jewish Health®

Learning Objective 3: Apply recent clinical data and guidelines to the management and treatment selection of IPF.

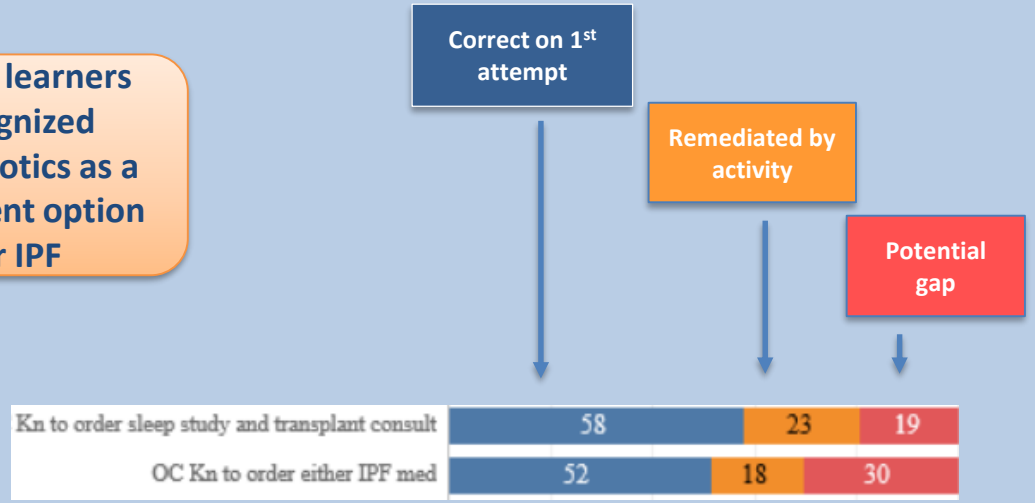
ProDoctor Heatmap Data:





70% of learners recognized antifibrotics as a treatment option for IPF

Learner performance after viewing simulation:



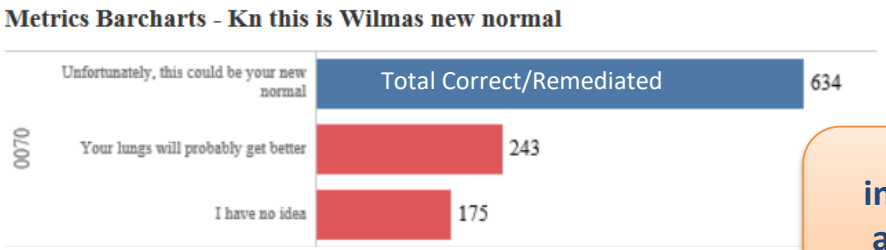
*Numbers represent percentages

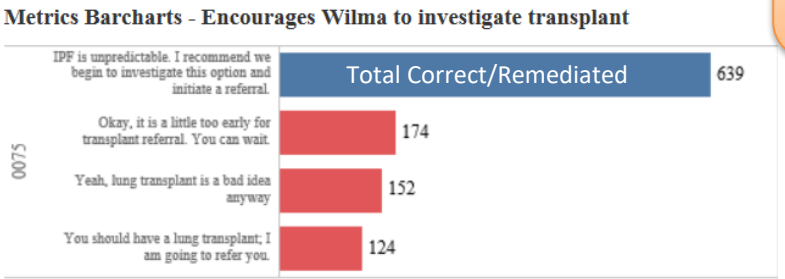
Level 5 Performance by Learning Objective

National Jewish Health®

Learning Objective 4: Determine appropriate communication strategies for addressing quality of life issues in patients with ILD.

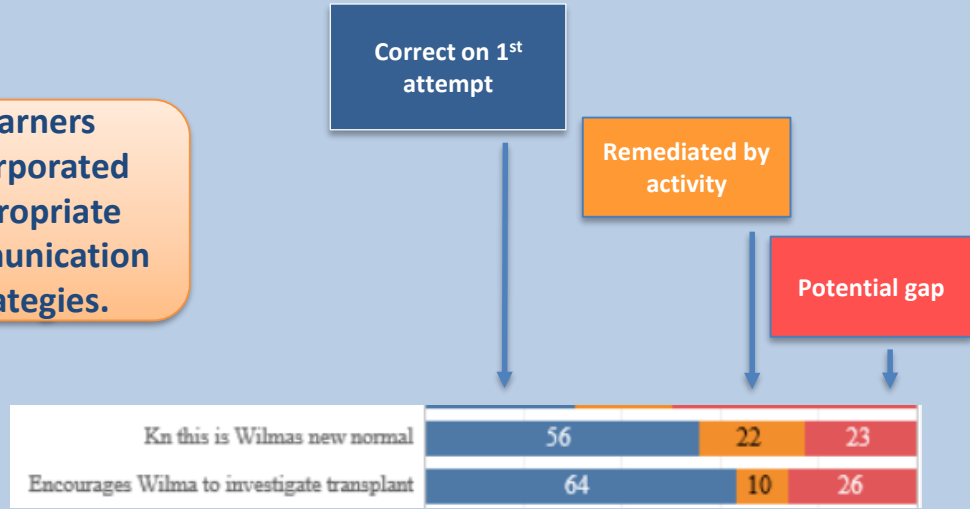
ProDoctor Heatmap Data:





Learners incorporated appropriate communication strategies.

Learner performance after viewing simulation:



*Numbers represent percentages

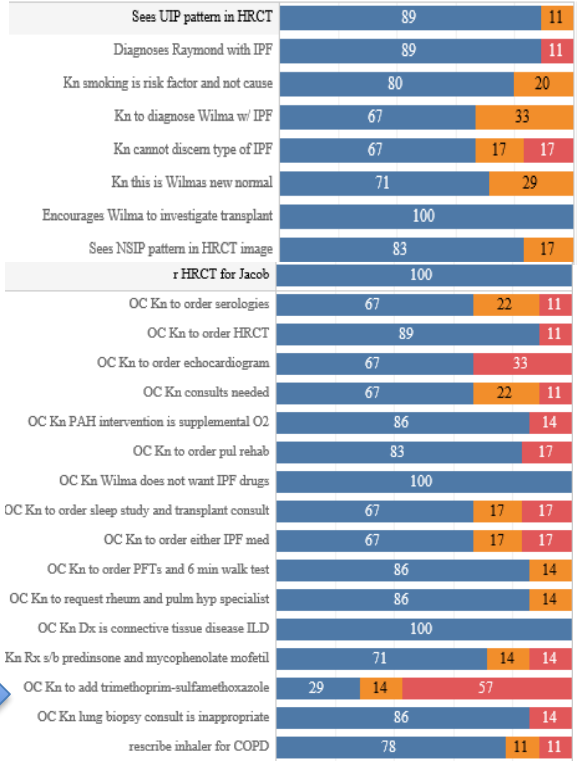
Performance Comparison

National Jewish Health®

Correct | Corrected | Failed

Pulmonary Prescribers (N=21)

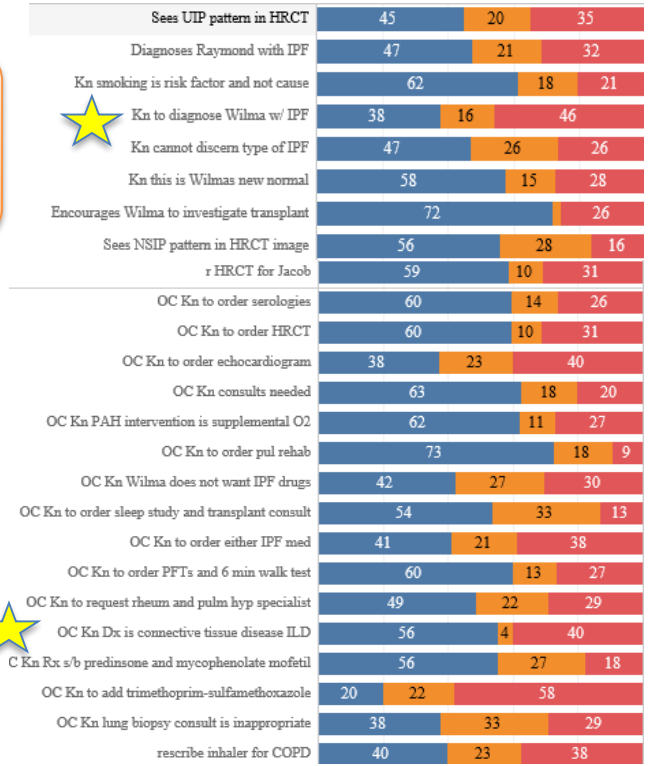
12% of pulmonary prescribers were correct on first attempt after the education. The remainder were effectively remediated by the education on 86% of topics.



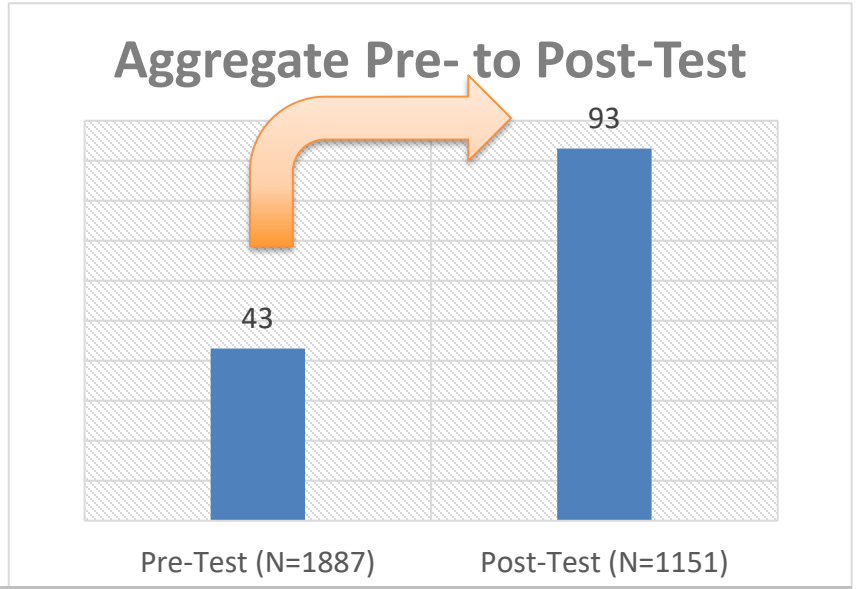
Both groups had difficulty with this question in Jacob's case.

Performance improved in all areas. The largest persistent gaps for primary care providers relate to making the diagnosis of IPF.

Primary Care Providers (N=134)



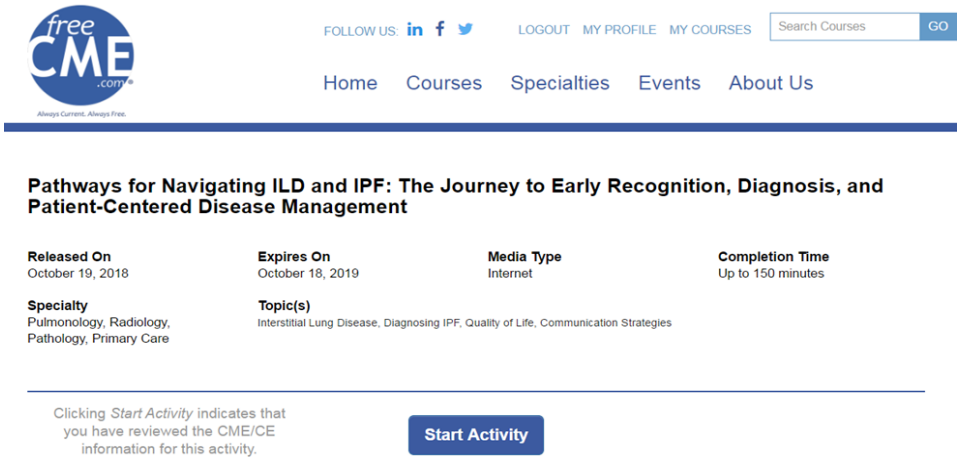
Online Enduring Metrics



Gain in Knowledge

Participants demonstrated a **116%** **relative gain in knowledge and competence** as a result of this activity.

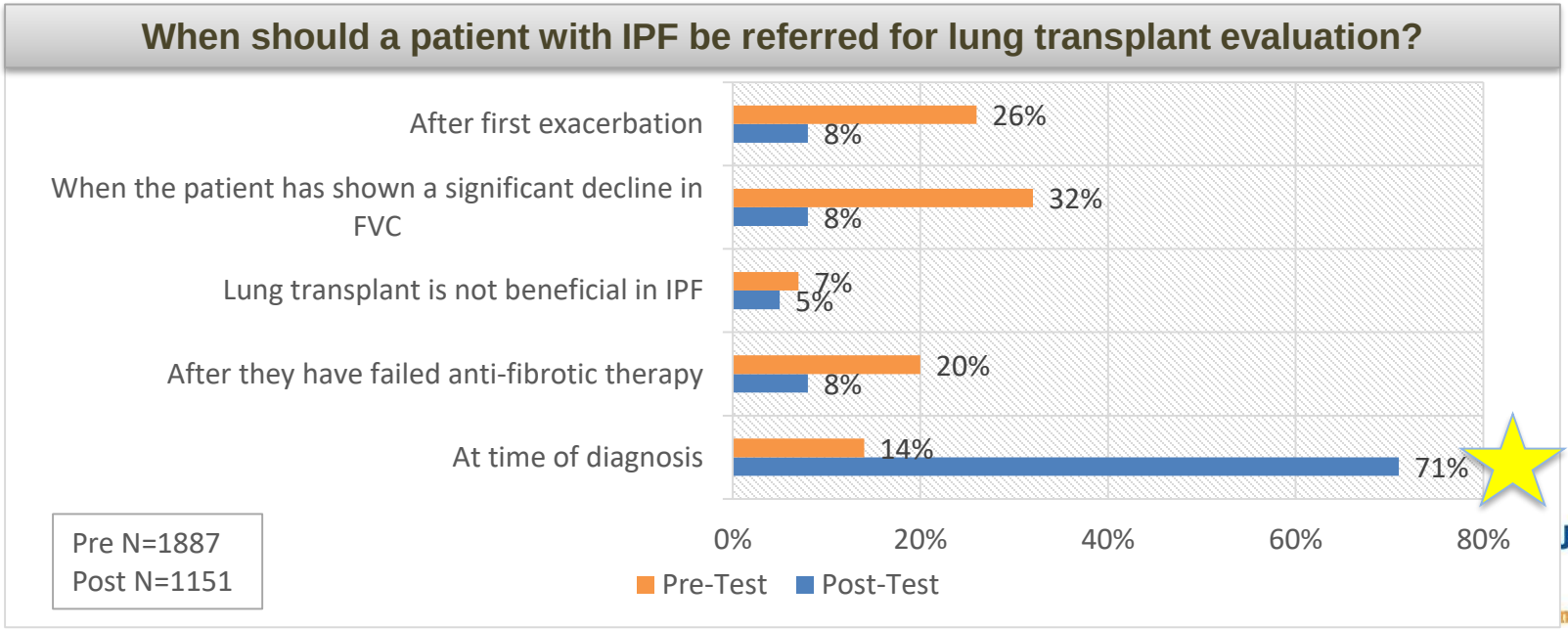
In addition to questions posed in the online simulations, a set of standard pre/post questions were presented to learners upon entry into the activity via FreeCME and after completion of the ProDoctor simulation.



Online Pre-Post Test Question

Level 3: Outcomes: Knowledge

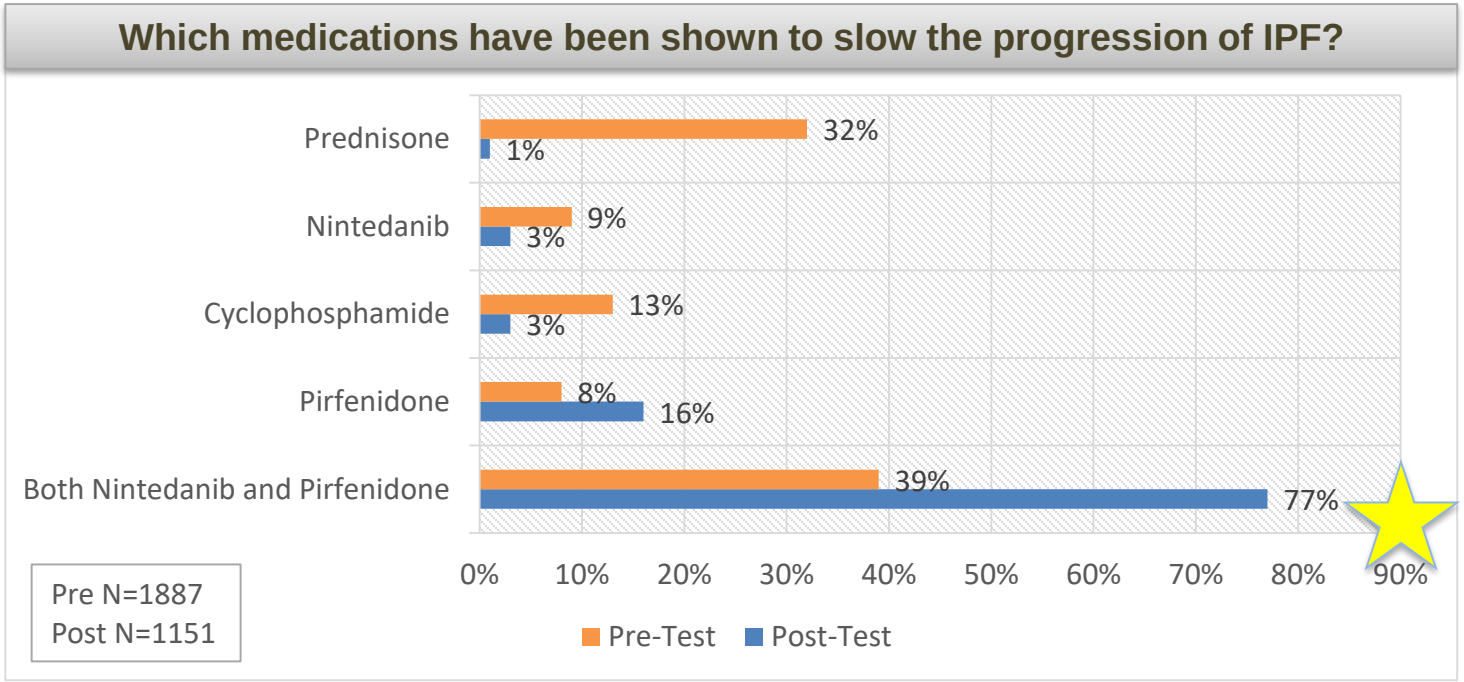
Learning Objective: Determine appropriate communication strategies for addressing quality of life issues in patients with ILD.



Online Pre-Post Test Question

Level 3 Outcomes: Knowledge

Learning Objective: Apply recent clinical data and guidelines to the management and treatment selection of IPF.

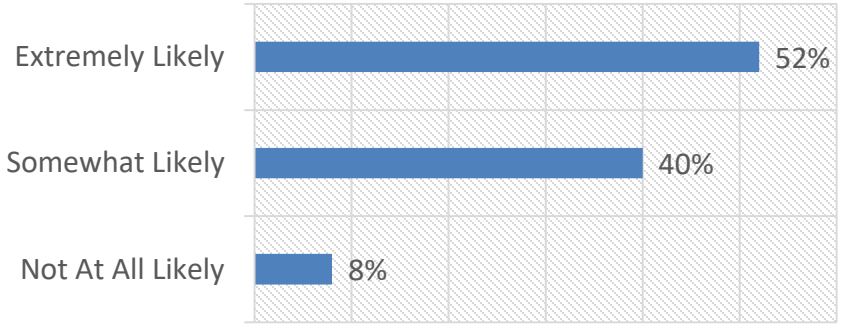


Online Enduring Evaluation Results

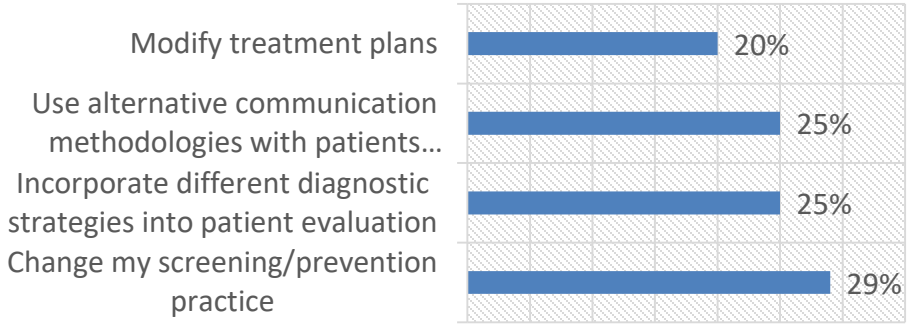
National Jewish Health®

Level 4 Outcomes: Competence (Evaluation Results)

As a result of what I learned, I intend to make changes in my practice:



As a result of what I learned, I intend to make the following changes in my practice:



N=1122

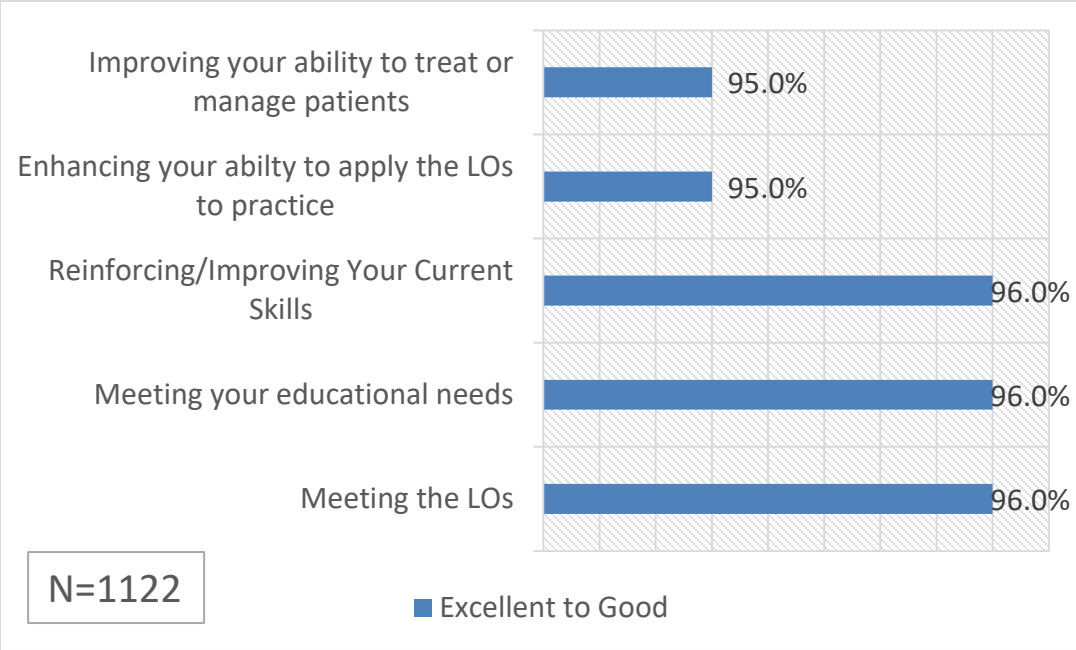
Note: 92% of Participants reported that they were somewhat or extremely likely to make a change in their practice

Online Enduring Evaluation Results

National Jewish Health®

Level 4 Outcomes: Competence (Evaluation Results)

Participants report the activity was "Excellent" to "Good" at:



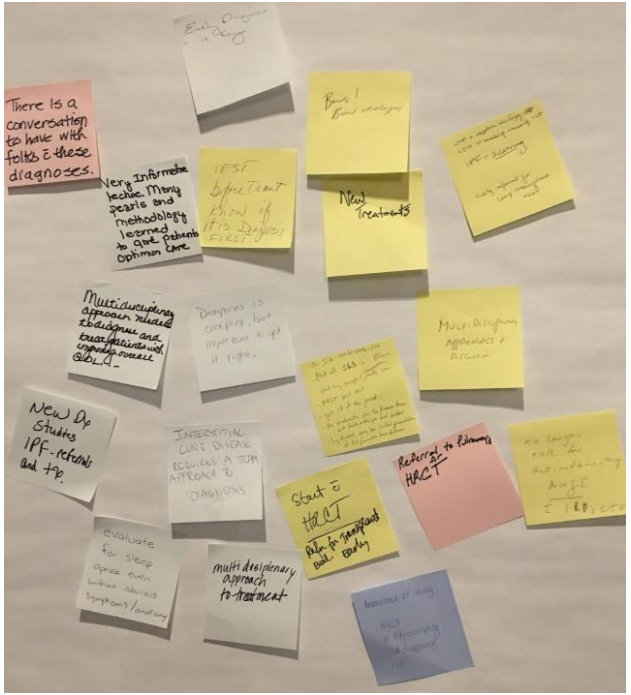
Evaluation

- ✓ **94%** reported the material was presented without commercial bias
- ✓ **97%** reported the content presented was evidence-based and clinically relevant

Key Take-Aways

Four overarching themes emerged from live/online data:

1) Early intervention and diagnosis
   - “Early intervention is key”
   - “Differentiating IPF from other ILD’s”
2) Communicating with patients
   - “Discussing long term disease management”
   - “Being upfront with patients”
3) Appropriate referrals
   - “Refer to lung transplant early”
   - “Refer to specialty centers”
4) Selecting the appropriate treatment
   - “Multidisciplinary approach to treatment”
   - “When to start treatment”



Participants in the live session reflected on key lessons learned

Recommendations for Future Education

National Jewish Health®

- Asthma Management
- Pulmonary Hypertension
- Lung Transplant
- More details on the anti-fibrotic meds and how they low the progression of IDF
- Management of difficult to treat patients
- Targets of investigational agents