This program was supported by educational grants from AstraZeneca Pharmaceuticals, GlaxoSmithKline LLC, Insmed, Inc., Pfizer, Inc., Sanofi Genzyme and Regeneron Pharmaceuticals, and Vertex Pharmaceuticals, Inc.
February 5-8, 2020  Keystone, Colorado

The National Jewish Health 42nd Annual *The Pulmonary and Allergy Update* highlighted insights and recent advances in immunology, pulmonary medicine, asthma, and allergy presented by faculty from the leading respiratory hospital in the nation. Participants had the opportunity to network with colleagues and nationally recognized experts, and learn the latest updates on management and treatment options for patients.

**Features included:**
- Workshops that complimented lectures provided great opportunities to discuss key issues and apply learning with case reviews by National Jewish Health expert faculty
- Interactive didactic presentations
- Case-based learning
- Automated Response System (ARS)
Arash Babaei, MD  
Associate Professor of Medicine  
Division of Gastroenterology  
National Jewish Health

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Professor of Pediatrics  
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National Jewish Health  
University of Colorado School of Medicine

Russell P. Bowler, MD, PhD  
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Division of Pulmonary and Critical Care & Sleep Medicine  
National Jewish Health

Kanwaljit K. Brar, MD  
Assistant Professor of Pediatrics  
Division of Pediatric Allergy & Immunology  
National Jewish Health

Rebecca C. Keith, MD  
Assistant Professor of Medicine  
Division of Pulmonary and Critical Care & Sleep Medicine  
Interstitial Lung Disease Program  
National Jewish Health

Todd T. Kingdom, MD  
Professor of Otolaryngology & Ophthalmology  
Vice Chair of Clinical Affairs  
Division of Specialty Services  
National Jewish Health  
University of Colorado School of Medicine

Bruce Lanser, MD  
Assistant Professor of Pediatrics  
Director, Pediatric Food Allergy Program  
Associate Director, Pediatric Allergy Fellowship Program  
Division of Allergy & Clinical Immunology
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hara Levy, MD, MMSc</strong></td>
<td>Associate Professor and Head, Pulmonary Division</td>
<td>Department of Pediatrics</td>
<td>National Jewish Health</td>
</tr>
<tr>
<td><strong>Brian Modena, MD, MSc</strong></td>
<td>Assistant Professor of Medicine</td>
<td>Division of Allergy &amp; Clinical Immunology</td>
<td>National Jewish Health</td>
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<tr>
<td><strong>Steven E. Lommatzsch, MD</strong></td>
<td>Associate Professor of Medicine</td>
<td>Division of Pulmonary, Critical Care &amp; Sleep Medicine</td>
<td>National Jewish Health</td>
</tr>
<tr>
<td><strong>Harold Nelson, MD (Program Co-Chair)</strong></td>
<td>Professor of Medicine</td>
<td>Division of Allergy and Clinical Immunology</td>
<td>National Jewish Health</td>
</tr>
<tr>
<td><strong>David A. Lynch, MB</strong></td>
<td>Professor of Radiology</td>
<td></td>
<td>National Jewish Health</td>
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<tr>
<td><strong>Kanao Otsu, MD, MPH</strong></td>
<td>Assistant Professor of Medicine</td>
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<tr>
<td><strong>Laurie A. Manka, MD</strong></td>
<td>Assistant Professor of Medicine</td>
<td>Division of Pulmonary, Critical Care &amp; Sleep Medicine</td>
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</tr>
<tr>
<td><strong>Carah Santos, MD</strong></td>
<td>Assistant Professor of Pediatrics</td>
<td>Division of Pediatric Allergy &amp; Clinical Immunology</td>
<td>National Jewish Health</td>
</tr>
</tbody>
</table>
Amen Sergew, MD
Assistant Professor of Medicine
Division of Pulmonary and Critical Care & Sleep Medicine
Section of Critical Care Medicine
National Jewish Health

Michael Wechsler, MD, PhD (Program Co-Chair)
Director, The Cohen Family Asthma Institute
Professor of Medicine
Division of Pulmonary, Critical Care & Sleep Medicine
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Pamela Zeitlin, MD, PhD (Program Co-Chair)
Silverstein Chair
Professor of Pediatrics
National Jewish Health
"Treating GERD can help maintain and/or improve asthma control."

"Continue looking for co-morbidities in the patient not responding as expected."

"Change my use of ICS in COPD and send people to pulm and allergy sooner if not improving to consider biologics."

"Improvement in H&P, utilization of team approach for diagnostic workup."

**Participation**

139 attendees from > 35 states

**Educational Impact**

43% overall relative gain in knowledge from pre to post activity.

51% overall increase in confidence across all learning objectives

98% of learners report that they are somewhat to extremely likely to make changes to their practice following the activity.

**Performance**
Overview: Self-Reported Performance (45 day survey results)

The top three changes respondents have made or intend to make (for those that had not seen any patients in that target therapeutic area within the 45-day time period) are:

1. Modify treatment plans
2. Incorporate different diagnostic strategies into patient evaluation
3. Change my screening/prevention practice

87% indicated their patients have benefited from the information learned

77% indicated they were provided new ideas or information they have used or are planning to use in practice
Evaluation Results: Attendee Feedback

Key Lessons Learned

- The importance of knowing exactly what you are treating so therapy can be better tailored
- Phenotyping/endotyping and direction the biologics will play not only in asthma, but other areas of medicine
- The new knowledge about the chemistry of allergy, COPD, asthma

What Attendees are Saying

“Enjoy the conference so much information in just 3 days. Relevant and updated subjects.”

“Great refresher on guidelines for diagnosing and treating COPD and asthma.”

“This was an exceptionally well run conference. I appreciated every presentation, the conference facilities, the communication, the food and the effort of all presenters to adhere to the schedule. I could not have asked for a better experience.”

Needs for Further Education

- Chest Imaging
- COPD
- Lung Nodules
- OIT
- Sarcoidosis
- Sleep Apnea
1. Review updates to best practices and guidelines in diagnosis and assessment of a variety of chronic diseases and conditions.
2. Discuss the latest treatments and key self-management strategies for a variety of chronic diseases and conditions.
3. Describe considerations and updates in treatment options for asthma, COPD and other respiratory and immunology-related diseases.
Learning Objectives: Asthma

1. Describe best practice approaches to the management of severe asthma.
2. Discuss the role of phenotypes and endotypes in the diagnosis and management of severe asthma.
3. Review current and emerging therapeutics in the treatment of severe and difficult to treat asthma.
Learning Objectives: COPD

1. Review current and emerging therapeutics in the treatment of COPD
2. Discuss best practice approaches for initial assessment and management of COPD to improve symptoms and prevent exacerbations.
3. Describe patient-centered strategies for creating personalized treatment plans for COPD
Learning Objectives: Nasal Polyps

1. Describe the underlying mechanisms of nasal polyp formation and connection with Type 2 inflammation
2. Discuss best practices for managing nasal polyps in clinical practice
3. Describe current and emerging medical treatments for nasal polyp
Learning Objectives: Atopic Dermatitis

1. Describe best practices for managing patients with atopic dermatitis in accordance with clinical guidelines and expert recommendations.
2. Identify barriers to the optimal treatment of patients with AD.
3. Review current and emerging therapies for the treatment of AD.
1. Review current clinical guidelines for the diagnosis and treatment of patients with CF.
2. Evaluate current and emerging therapies and pharmacodynamics and their impact on patients with CF.
Learning Objectives: Bronchiectasis and NTM

1. Summarize the etiology and evaluation of non-CF bronchiectasis
2. Discuss management of bronchiectasis and infections including Pseudomonas and NTM
3. Review current and emerging therapies for the treatment of bronchiectasis
Outcomes Strategies

Strategies to measure participants’ knowledge and competence:

- Pre-tests, post-tests
- ARS questions throughout the activity
- Evaluations
- 45-day follow up surveys
Level 1 Outcomes: Participation

Attendee Designation

- MD/DO: 81
- PA: 9
- NP: 24
- PharmD: 4
- RN: 6
- Other: 15

Specialty Breakdown

- Pulmonary: 49
- Allergy: 39
- Pediatrics: 17
- Family/IM/PC: 16
- Other: 18

Other: BA, BSC, PhD, RT

Other: Cardiorespiratory, Hospitalist, Medical Affairs, Research, Sleep

N = 139
**Level 2/3 Outcomes: Satisfaction/Learning**

**Analysis of participants responses related to educational needs**

**How well did:**

...the activity meet your educational needs?
- Fair: 3%
- Good: 43%
- Excellent: 56%

...the information presented reinforce and/or improve your current skills?
- Fair: 3%
- Good: 34%
- Excellent: 63%

...the activity enhance your ability to apply the learning objectives to your practice?
- Fair: 4%
- Good: 30%
- Excellent: 66%

...the activity improve your ability to treat or manage your patients?
- Fair: 3%
- Good: 37%
- Excellent: 60%

N=68
Level 2/3 Outcomes: Learning (Knowledge and Competence)

Level 3 and 4 outcomes were measured by comparing participants’ pre- and post-test answers. The attendees’ responses to these questions demonstrated that participants gained knowledge as a result of the activity.
A 74-year-old male with lifelong severe allergic asthma presents to you with uncontrolled asthma despite prescribed high dose ICS/LABA, leukotriene modifiers and tiotropium. He is hospitalized twice per year and requiring oral prednisone rescue courses 4x per year. The next step in his management is the following:
Pre/Post Test Comparison: Addresses Severe Asthma Learning Objective #1

Type 2 inflammation is associated with all of the following except:

- High exhaled nitric oxide
- High blood eosinophils
- High blood neutrophils
- Allergies

Average relative knowledge gain pre- to post-activity: 32%
Pre/Post Test Comparison: Addresses Severe Asthma Learning Objective #2

Average relative knowledge gain pre- to post-activity: 98%

Which of the following is not an asthma phenotype?

- Obesity associated asthma
- Adult onset asthma
- Aspirin exacerbated respiratory disease
- Eosinophilic asthma

Pre-Test (N=87) and Post-Test (N=56) results:
- Obesity associated asthma: Pre: 36%, Post: 19%
- Adult onset asthma: Pre: 31%, Post: 16%
- Aspirin exacerbated respiratory disease: Pre: 32%, Post: 12%
- Eosinophilic asthma: Pre: 1%, Post: 53%
For a severe asthma patient on ICS/LABA and tiotropium who is adherent to inhaler therapy and has eosinophil count of 300, IgE of 300, and exhaled nitric oxide level of 50, which is the most appropriate biologic therapy?
You have a patient with severe asthma with underlying chronic rhinosinusitis and nasal polyposis. Which add-on biologic therapy would be most appropriate?

Average relative knowledge gain pre- to post-activity: 39%
An 11 month old born in the United States in state that does IRT, DNA screening and reported had a normal newborn screen presents to pulmonary clinic with a several month history of cough, loose stools and weight loss falling off their growth chart.

IRT from NBS reportedly normal. The first next immediate diagnostic step for evaluation of this patient would be:
Pre/Post Test Comparison: Addresses Cystic Fibrosis Learning Objective #1

An 11 month old born in the United States in state that does IRT, DNA screening and reported had a normal newborn screen presents to pulmonary clinic with a several month history of cough, loose stools and weight loss falling off their growth chart. For patient described above, IRT was just below the cut off for that day, sweat chloride was 110 mEq/L and CFTR genotype delta F508, what would you next recommend:

- Starting salt supplementation and send home for follow up within the month: Pre-Test 6%, Post-Test 7%
- Starting oral antibiotics, and send home for follow up within the month awaiting culture results: Pre-Test 10%, Post-Test 7%
- Hospital admission and treatment for a bronchitic exacerbation: Pre-Test 37%, Post-Test 48%
- Starting airway clearance and send home for follow up within the month: Pre-Test 40%, Post-Test 33%
- Sending home on 5 day course of oral prednisone: Pre-Test 1%, Post-Test 3%
- Evaluate with a swallow study and start on anti-reflux medication before sending home: Pre-Test 6%, Post-Test 2%

Average relative knowledge gain pre- to post-activity: 30%
Pre/Post Test Comparison: Addresses Cystic Fibrosis Learning Objective #2

Which of the following is true related to recently approved (2019) triple combination therapy?:

- A knowledge gap exists related to the appropriate patient population for triple therapy
- It is approved for patients 12 years and under
- It is approved for patients with only two F508 mutations
- It is considered a corrector which helps chaperone to cell surface during protein folding
- It has no side effects
You are explaining Atopic Dermatitis to the parents of a 2 year old child. Which of the following is a true statement?

- Non-lesional skin in atopic dermatitis is not normal
- The majority of children with atopic dermatitis will go on to develop asthma as part of the atopic march
- Tape stripping is a minimally invasive test that can determine at what age a patient will outgrow atopic dermatitis
- Flares of atopic dermatitis are characterized by increase in microbial diversity

Average relative knowledge gain pre- to post-activity: 83%
A 23 year old male patient presents with a history of chronic relapsing atopic dermatitis that had been mild through childhood and teenage years, but has gotten significantly worse since he went away to college. Eczema now involves face, neck, lower back and all 4 extremities. In discussing burden of illness and barriers to treatment, the true statement is:

- It is unlikely that this patient currently has atopic dermatitis, since the eczema did not worsen until he was in his 20’s.
- Given his relapsing course, patient should be treated in a reactive manner.
- Atopic dermatitis worsening may be related to patient not wanting to apply ointment based topical anti-inflammatory medications.
- A good initial treatment plan would be to prescribe a mid-potency topical steroid cream in a 15 g tube twice daily to all areas of active eczema.
In discussing systemic immunosuppressive drugs with a medical writer preparing an article on managing severe atopic dermatitis in the United States, which would be the correct statement?

- Patients treated with cyclosporin A should receive daily folic acid supplementation.
- Metabolism of cyclosporin A is dependent on an individual’s thiopurine methyltransferase (TPMT) enzyme activity.
- Cyclosporin A is approved in patients 12 years and older with severe AD.
- Treatment with cyclosporin A may result in hypomagnesemia.

Average relative knowledge gain pre- to post-activity: 65%
Pre/Post Test Comparison: Addresses Atopic Dermatitis Learning Objective #3

A 43 year old male with severe atopic dermatitis has seen commercials for a JAK inhibitor for rheumatoid arthritis and would like to get more information regarding possible use in atopic dermatitis. Which of the following is a true statement?

Average relative knowledge gain
pre- to post-activity: **67%**

- JAK inhibitors are biologics currently being studied in severe atopic dermatitis.
- JAK inhibitors target interferons exclusively.
- JAK inhibitors currently carry a box warning for serious infections, malignancy and thrombosis.
- JAK inhibitors can be administered in oral, but not topical formulation.
With a peak at ~50 years of age, nasal polyps are more common in males than females.

Caucasians are more likely to have type-inflammatory as a driver for nasal polyps than Asians.

Greater than 80% of patients with asthma and NSAID allergy have nasal polyps.

Allergic rhinitis is strongly associated with CRSwNP.

CRS is defined as inflammation of nasal cavity and paranasal sinuses characterized by 12 weeks of persistent symptoms that include (1) congestion, (2) discharge, (3) pain or facial pressure, (4) impairment in sense of smell, and (5) fatigue.

Average relative knowledge gain pre- to post-activity: 255%
Polyps can be described as ‘fluid filled sacs’

Polyps are characterized by a thickened basement membrane surrounding edematous and fibrotic stroma

Eosinophils can make up over 60% of nasal polyps

There are increased numbers of degranulated mast cells present

Polyps typically originate in nasal cavity outside of the sinuses

Pre-Test (N=87) Post-Test (N=56)

Average relative knowledge gain pre- to post-activity: 170%
Pre/Post Test Comparison: Addresses Nasal Polyps Learning Objective #2

Which of the following is false?

- ~1/3 of patients with CRSwNP are not controlled with current standard of care approach
- It is recommended to give oral steroids must courses of 3 weeks or more
- CRSwNP subjects are less likely to respond to antibiotics and more likely to respond to corticosteroids
- Short courses of oral steroids are Grade A recommendation

Average relative knowledge gain pre- to post-activity: 52%
In general, a blood eosinophil count > 150 cell/microLiter and FeNO > 25 ppb are associated with elevated Type 2 inflammation in the airway.

Short courses of nasal steroids are generally recommended for the initial treatment of CRSwNP.

For most patients, newer biologics are preferable to sinus surgery for the initial treatment of polyps.

In Caucasians, AERD is most often a ‘Type 2 high’ condition.

Pre-Test (N=87)

Post-Test (N=56)

Which of the following is false?

Average relative knowledge gain pre- to post-activity: 235%
A 45yo female coming for an initial visit is diagnosed with multilobe bronchiectasis and is bothered by daily cough and mucus, but she has not been hospitalized and denies going on antibiotics for illnesses. What is the best first step of management?

Pre-Test (N=87)  Post-Test (N=56)

- Direct admit to the hospital for a 14 day course of IV antibiotics to decrease her bacterial burden: 0% to 3%
- Start her on inhaled tobramycin nebulization therapy: 8% to 3%
- Start her on nebulized bronchodilator treatment and airway clearance device: 78% to 84%
- Start her on daily oral azithromycin therapy: 14% to 9%

Average relative knowledge gain pre- to post-activity: 7%
A 45yo female with multilobe bronchiectasis who diligently engages in her airway clearance of albuterol neb, 7% hypertonic saline neb with airway clearance device, and wears her vest-type airway mobilization device 30min twice a day is continuing to have exacerbations. She was started on 250mg of daily azithromycin three months ago. What is the best next step of management?
Pre/Post Test Comparison: Addresses Bronchiectasis & NTM Learning Objective #3

A 25yo female diagnosed with lower lobe bronchiectasis who had pneumonia during her first month of life and has been plagued with recurrent ear and sinus infections is likely to possibly have?

Average relative knowledge gain pre- to post- activity: 52%
A 75yo female with multilobe bronchiectasis who has been using her flutter valve twice a day presents with worse bronchial thickening and mucus plugging on CT scan, lower lung function, and has had recurrent exacerbations the past year. She has a sputum culture now growing Mycobacterium avium complex (MAC) for first time. The next best step of management of the options below is?

- Continue flutter valve but add hypertonic saline nebulization (HTS)
- Continue flutter valve, add HTS, and add daily azithromycin therapy
- Start her on ethambutol, rifampin, and azithromycin MAC therapy
- Start her on ethambutol, rifampin, azithromycin, and inhaled amikacin MAC therapy

Average relative knowledge gain pre- to post- activity: 220%
A patient asks you the following question, "this tiotropium is expensive, why should I take it?"

LAMAs in COPD will do all of the above EXCEPT:
Pre/Post Test Comparison: Addresses COPD Learning Objective #1

Consider chronic azithromycin in those with recurrent exacerbations and all of the following EXCEPT:

- Eosinophils >2%
- Current smokers
- GOLD II and III
- Exacerbations that lead to hospitalizations
- Patients older than 65

Average relative knowledge gain pre- to post-activity: **110%**
Pre/Post Test Comparison: Addresses COPD Learning Objective #2

Bronchoscopic lung volume reduction can be considered in:

- Patients with large bullae: 50% Pre-Test (N=87), 39% Post-Test (N=56)
- Lower lobe disease: 13% Pre-Test, 9% Post-Test
- Heterogeneous disease and RV >175%: 22% Pre-Test, 39% Post-Test
- Recurrent exacerbations: 6% Pre-Test, 3% Post-Test
- DLCO <20%: 9% Pre-Test, 9% Post-Test

Average relative knowledge gain pre- to post-activity: 77%
Pre/Post Test Comparison: Addresses COPD

Learning Objective #2

Non Invasive ventilation in COPD:

<table>
<thead>
<tr>
<th>Considered in hypoxic patients</th>
<th>Considered if PCO2 is 45 and above</th>
<th>Should use VAPS technology</th>
<th>Should be set to IPAP &gt;18cmH2O</th>
<th>Consider on discharge from hospitalization for a severe acute exacerbation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Test (N=87)</td>
<td>Post-Test (N=56)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15%</td>
<td>50%</td>
<td>8%</td>
<td>8%</td>
<td>19%</td>
</tr>
<tr>
<td>0%</td>
<td>45%</td>
<td>9%</td>
<td>30%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Average relative knowledge gain pre- to post-activity: 275%
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**What therapy should be started?**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhaled corticosteroid (ICS; low dose)</td>
<td>24</td>
<td>69%</td>
</tr>
<tr>
<td>Long-acting beta agonist (LABA)</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>ICS/LABA combination</td>
<td>11</td>
<td>31%</td>
</tr>
<tr>
<td>Leukotriene modifier</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Theophylline</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**After the workup returns, What would you treat Tony with next?**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase ICS dose</td>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>Add zileuton</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Add omalizumab</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Add tiotropium</td>
<td>26</td>
<td>90%</td>
</tr>
</tbody>
</table>

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**Severe asthma makes up about 10% of asthmatics but accounts for how much of asthma related health care costs?**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>3</td>
<td>13%</td>
</tr>
<tr>
<td>20%</td>
<td>2</td>
<td>9%</td>
</tr>
<tr>
<td>50%</td>
<td>4</td>
<td>17%</td>
</tr>
<tr>
<td>60%</td>
<td>14</td>
<td>61%</td>
</tr>
</tbody>
</table>

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Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**Risk factors for Non-eosinophilic asthma include:**

**Response options** | **Count** | **Percentage**
--- | --- | ---
Smoking history | 0 | 0%
Pollution exposure | 0 | 0%
Obesity | 0 | 0%
Work place exposures | 1 | 5%
All of the above | 19 | 95%

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**In patients with severe asthma, which antibiotic, when used M-W-F chronically as an add-on therapy, has been shown to reduce exacerbations and improve quality of life?**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>22</td>
<td>88%</td>
</tr>
<tr>
<td>Ertapenem</td>
<td>3</td>
<td>12%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

1) Which of the following is false?

<table>
<thead>
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<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>With a peak at ~50 years of age, nasal polyps are more common in males than females.</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Caucasians are more likely to have Type-2 inflammatory as a driver for nasal polyps than Asians.</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Greater than 80% of patients with asthma and NSAID allergy have nasal polyps.</td>
<td>3</td>
<td>16%</td>
</tr>
<tr>
<td>Allergic rhinitis is strongly associated with CRSwNP.</td>
<td>16</td>
<td>84%</td>
</tr>
<tr>
<td>CRS is defined as inflammation of nasal cavity and paranasal sinuses characterized by 12 weeks of persistent symptoms that include (1) congestion, (2) discharge, (3) pain or facial pressure, (4) impairment in sense of smell, and (5) fatigue.</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

What would you start?

- Response options:
  - ICS/LABA/LAMA: 8 (29%)
  - ICS/LABA: 4 (14%)
  - LABA: 1 (4%)
  - LAMA: 7 (25%)
  - LABA/LAMA: 8 (29%)

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**What would you do next? Add:**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional ICS</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Roflumilast</td>
<td>5</td>
<td>20%</td>
</tr>
<tr>
<td>Azithromycin</td>
<td>19</td>
<td>76%</td>
</tr>
<tr>
<td>Chronic Prednisone</td>
<td>1</td>
<td>4%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**What should be your first step in evaluating this patient's interstitial lung disease further?**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High resolution CT of chest, interstitial lung disease protocol</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Surgical lung biopsy</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>A detailed history and physical examination</strong></td>
<td>24</td>
<td>100%</td>
</tr>
<tr>
<td>Cryobiopsy involving two or more lobes</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Bronchoscopy and bronchoalveolar lavage</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

### What would be the next best diagnostic step?

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronchoscopy with bronchoalveolar lavage and transbronchial biopsy</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Laboratory serologic studies to evaluate for a connective tissue disease</td>
<td>25</td>
<td>96%</td>
</tr>
<tr>
<td>Cryobiopsy</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Surgical lung biopsy</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>None of the above, proceed to treatment</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

**What is your working diagnosis?**

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unclassifiable interstitial lung disease</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>Idiopathic pulmonary fibrosis</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Scleroderma associated interstitial lung disease</td>
<td>19</td>
<td>95%</td>
</tr>
<tr>
<td>Hypersensitivity pneumonitis</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Audience Response System (ARS) was implemented strategically throughout the conference to engage participants in the learning process, create an interactive method of learning and responding to questions, and encourage audience participation to elucidate problems and solutions.

What would be the next best treatment?

<table>
<thead>
<tr>
<th>Response options</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisone 1mg/kg with slow taper, continue mycophenolate</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Rituximab, continue mycophenolate</td>
<td>1</td>
<td>4%</td>
</tr>
<tr>
<td>Change to Cyclophosphamide</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Nintedanib BID, continue mycophenolate</strong></td>
<td>25</td>
<td>89%</td>
</tr>
<tr>
<td>Pirfenidone TID, continue mycophenolate</td>
<td>2</td>
<td>7%</td>
</tr>
</tbody>
</table>

*The bolded response indicates the answer that was selected by the most participants.*
Level 4 Outcomes: Competence

Learners’ Average Years in practice

- Less than 5 years: 17%
- 5-10 years: 11%
- 11-15 years: 20%
- 16-20 years: 16%
- More than 20 years: 36%

Average number of years in practice: **13**

Average # of patients learner treats per week with conditions discussed in this activity

- Less than 5 patients: 13%
- 5-10 patients: 9%
- 11-20 patients: 19%
- More than 20 patients: 52%

Estimated number of patients impacted per month: **3700+**
98% of respondents report they **intend to make changes to practice** as a result of the activity. The changes I **intend to make** in my practice include:

- Starting inhaled tobramycin earlier; patient education on vaping; importance of supraesophageal GERD and referral to GI for EGD
- Inhaled tobramycin, importance of biologic agents in asthma
- Work on de-escalating inhaler therapy when appropriate
- I work in Pediatrics, so some of the practices are not relevant but I certainly will be able to better discuss vaping/marijuana with my adolescents.
- Reconsider some patients in our clinic previously diagnosed with COPD as possible non-eosinophilic asthma patients and better-control comorbidities
- I will incorporate the knowledge I’ve learned to help educate patients on what to possibly expect when being referred to a specialist for their condition
Evaluation Results

- 100% of respondents report the content was evidence based and clinically relevant.
- 98% of respondents report they intend to make changes to practice as a result of the activity.
- 52% of respondents report the activity addressed strategies for overcoming barriers to optimal patient care.
- 97% of respondents report that the information presented reinforced and/or improved their current skills.
- 97% of respondents report that the educational activity improved their ability to treat or manage patients.
- 96% of respondents report that the activity enhanced their ability to apply the learning objectives to their practice.
- 99% of respondents report that the activity meet their educational needs.
Overall Activity Impact

Based on the educational content delivered at the *Pulmonary and Allergy Update*, participants demonstrated a **43% increase in knowledge and competence**. Additionally, participants report that they have **changed their screening and prevention practices (23%)**, have **incorporated different diagnostic strategies into patient evaluation (46%)**, have **modified treatment plans (69%)** and are **using alternative communication methods (7%)** with their pulmonary, allergy, and immunology patients as a result of the activity.

The *Pulmonary and Allergy Update* fulfills National Quality Strategy Priorities in making care safer for patients with asthma, COPD and other pulmonary and allergy conditions, as well as promoting the most effective treatment and prevention practices for these disease states.

![Survey Results](image)
@njhealth atopicdermatitis has a huge impact on the quality of life for patients. Expert Dr. Boguniewicz explains emerging treatments and best core practices for AD patients at the Pulmonary & Allergy Update. njhealthedu njhkeystone2020 eczema fal.cn/36q5i

@NJHealth quantitative lung imaging may guide treatment for patients w/ asthma & small airways diseases. Dr. Lynch explains why, & the diagnostic role imaging plays for clinicians. Pulmonary & Allergy Update opens today. njhealthedu njhkeystone2020 fal.cn/36ct8
Accreditation

National Jewish Health is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians and by the California Board of Registered Nursing to provide nursing contact hours for nurses.

National Jewish Health designated this live activity for a maximum of 14.75 AMA PRA Category 1 Credits™ and a maximum of 14.75 nursing contact hours.
The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) ranks National Jewish Health in the top 1 percent of hospitals in the nation.

National Jewish Health has been ranked by U.S. News & World Report as the #1 or #2 Respiratory Hospital for 23 years.

U.S. News & World Report rated National Jewish Health COPD (chronic obstructive pulmonary disease) care and Lung Cancer Surgery program as “high performing,” the highest rating available.

National Jewish Health is in the top 8 percent of institutions in the country funded by the National Institutes of Health.

National Jewish Health has the largest pulmonary division in the nation and is the only hospital whose principal focus is pulmonary disease.