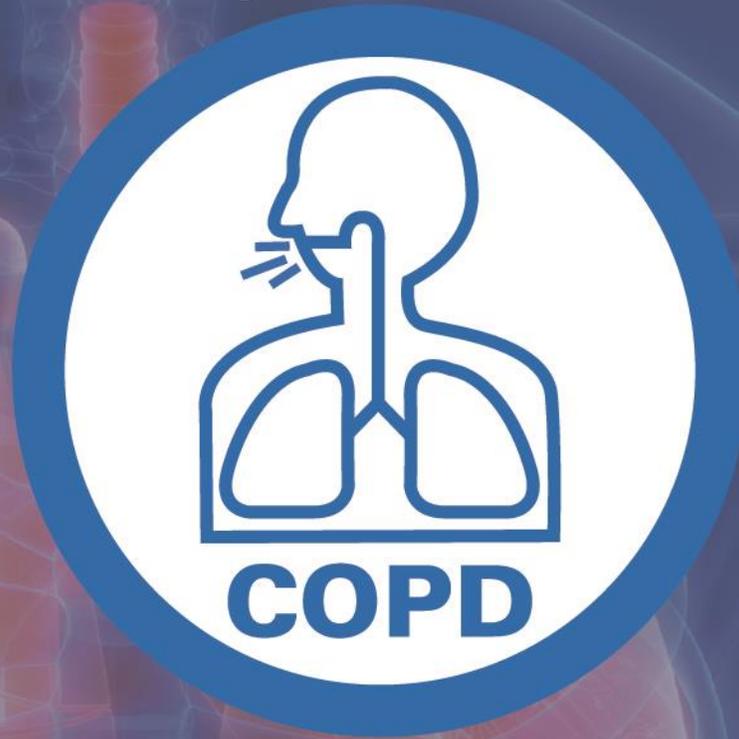


COPD Journal Club: A Pilot Program Delivered Via Twitter and Webinar



JOURNAL CLUB

Final Outcomes Summary: Live Webinar and Twitter Chat Journal Club
August – November, 2021

This educational program is supported in part by independent medical education grants from AstraZeneca Pharmaceuticals and Mylan Specialty L.P.



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Executive Summary

Final Report

Program Overview

This pilot COPD Journal Club program was delivered via Twitter, live webinar, and endured online. The multimedia COPD Journal Club sessions were developed and moderated by NJH faculty on a monthly basis, with downloadable article summaries that provide the key points of recently published articles in COPD and a group opinion developed by the National Jewish Health COPD Physicians Group. Each article summary issue is archived on a dedicated webpage. Every month, a thirty-minute live webinar led by expert NJH faculty provided a succinct article summary and engaged participants in academic and peer discussion. The recording of each live webinar is endured on VuMedi and made available for a year. A 30-minute structured Twitter chat based on the same article was also offered each month, providing another forum for live interaction with peers and expert faculty, as well as ongoing Tweet exchange for those that cannot attend the live portion.

Program Chair & Faculty



Jake Woodrow, MD
Assistant Professor
Division of
Pulmonary, Critical
Care & Sleep
Medicine
National Jewish
Health

Learning Objectives

- Apply critical thinking and research analysis in the review of research and guidelines in COPD.
- Increase awareness and understanding of research, evidence and best practices to inform clinical practice in COPD.
- Engage with an online community of practitioners to share key insights, latest research, and treatment strategies for patients with COPD.

Program Webpage

Launch Date: August 3, 2021

End Date: November 3, 2021

Activity Link:

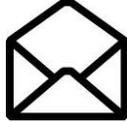
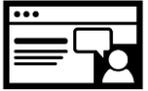
<https://www.nationaljewish.org/copdjournalclub>

Target Audience & Accreditation

Target Audience: Pulmonologists, Primary Care and Internal Medicine Physicians, Physician Assistants (PAs) and Nurse Practitioners (NPs) who treat patients with COPD.

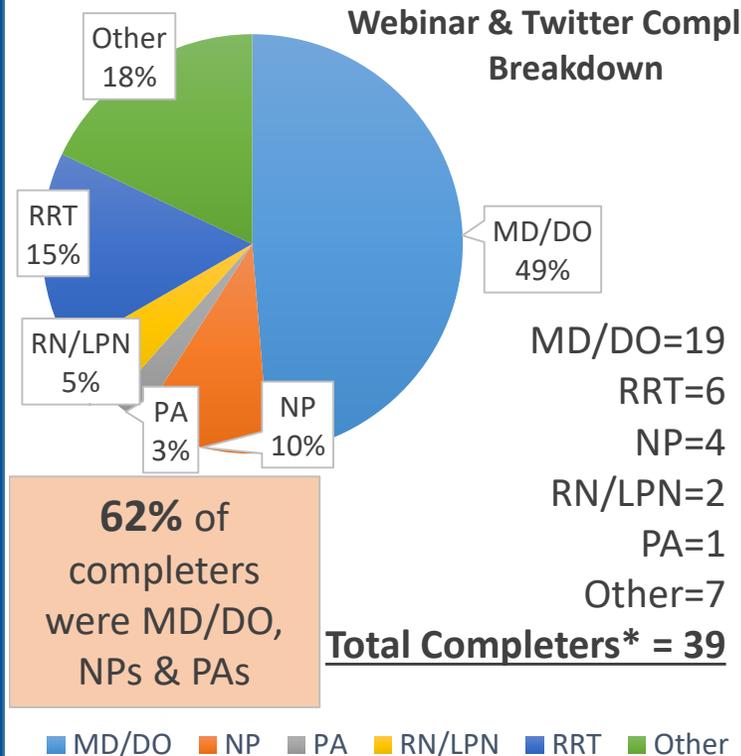
Accreditation: National Jewish Health is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. NJH designates each of the 4 live activities (4 live webinars, 4 live Twitter chats) for a maximum of 0.5 AMA PRA Category 1 Credit™.

National Jewish Health Monthly COPD Journal Club Activities

 Article Summary developed by NJH COPD experts endured on NJH Website	 Article Summary sent to target audience with registration links to Zoom and Twitter Journal Club	 Live Webinar Journal Club via Zoom 30-minute discussion led by NJH COPD expert (CME Credit)	 Twitter Journal Club via Tweet Chat (CME Credit)	 Webinars Endured on Vu-Medi
4 article summaries developed	247 article summary downloads	37 webinar completers (85 registrants)	15,249 impressions	1,198 views

Educational Impact Summary – Overall Program (Zoom and Twitter)

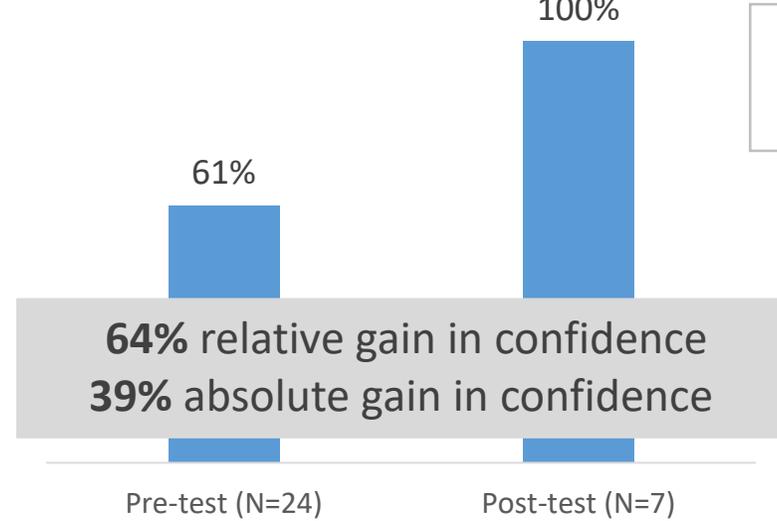
Final Report



***37 webinar completers (defined as attending the live activity) and 2 Twitter chat completers (defined as claiming credit for live participation)**

Potential Impact To
2,652
Patient Visits This Year

Webinar & Twitter evaluation respondents reported confidence pre-activity and post-activity*



***Twitter learners reported post-activity confidence only**

Twitter Chats

Calendar Adds	153
Tweets	148
Impressions	15,249
Hashtag Usage	162
Replies	65
Likes	116

Webinar & Twitter Evaluation (N=7)

100% of evaluation respondents stated the learning objectives were met

86% of evaluation respondents increased their knowledge of COPD

86% of evaluation respondents stated activity improved ability to treat or manage patients

86%
 N=6
 Evaluation respondents intend to make changes to practice as a result of the activity

- In this pilot program, we found that most participants are not seeking credit for webinars or Twitter chats, though they are engaging with the content.
- Article downloads and endured video views are relatively high, indicating high levels of participation in the educational content beyond the live activities.
- It appears not all Twitter chat participants are “active” in the live activity. However, based on data for engagements and likes, there are many viewers consuming the education presented without posting comments and actively contributing to the discussion.

“It is hard if not impossible to stay on top of all the latest research and be able to quickly tell quality from garbage. Vetting and presenting these studies is very valuable to busy practitioners who otherwise wouldn’t have time to comb through journals to find these pearls.

These meetings help standardize best practices within the institution so patients aren’t getting discrepant opinions between different subspecialties.”

– Jake Woodrow, MD, COPD Journal Club Program Chair

247

article
downloads

JOURNAL CLUB
Article Summary by James Woodrow, MD

GROUP OPINION

COPD clinic providers discussed this and prior studies (IMPACT, TRILOGY, TRIBUTE Trials) that show benefit of triple over dual therapy for COPD patients in terms of exacerbation prevention. There is consensus that patients who continue to have exacerbations despite two maintenance controller medications should be started on triple therapy regardless of peripheral eosinophil count. There was no consensus regarding high versus low ICS dose. Secondary endpoints in the current study seem to favor high dose budesonide but the whole of the evidence is not definitive. There was also consensus that discrimination of ICS should be considered after a year without exacerbations. The ultimate decision whether the ICS should be made based on exacerbation severity, peripheral eosinophils, risk pneumonia, and patient preference / shared decision making.

JOURNAL CLUB
Article Summary by James Woodrow, MD

ARTICLE

Discriminative Accuracy of FEV1:FVC Thresholds for COPD-Related Hospitalization and Mortality
<https://jamanetwork.com/journals/jama/fullarticle/2726662>

CLINICAL QUESTION

When used as a diagnostic criterion for COPD, what FEV1/FVC cutoff is most accurate?

SUMMARY

Despite being common and associated with significant morbidity and mortality, there is much controversy and confusion surrounding the diagnosis of chronic obstructive pulmonary disease (COPD). A significant proportion of those suffering from COPD remain undiagnosed and at the same time many patients that have received a diagnosis of COPD do not meet established criteria. Multiple factors contribute to diagnostic uncertainty. The diagnosis of COPD requires demonstration of airflow limitation though there is a lack of consensus regarding how this should be accomplished. Post bronchodilator spirometry is the standard and many argue that a fixed FEV1:FVC threshold of 70% should be used to define airflow limitation. Others recommend using the lower limit of normal to avoid false positives and false negatives among older and younger populations respectively.

Bhatt et al studied 24,207 patients pooled from four US based studies that included spirometry and subsequent surveillance of COPD related clinical events. The primary outcome was a composite of COPD related mortality and first hospitalization. Events were defined "COPD related" by a committee or by ICD codes when a review was not available. The diagnostic accuracy of a fixed FEV1:FVC cutoff versus the lower limit of normal (LLN) was assessed. Prevalence of airflow limitation was 15% using lower limit of normal versus 26% using a fixed ratio threshold. Over a median 1.5-year period of subsequent surveillance incidence of COPD related events was inversely proportional to FEV1:FVC ratio. Participants with an FEV1:FVC > 0.77 were very unlikely to suffer COPD related events. However, below this ratio there was no inflection point identifying a dramatic difference in risk above or below a certain threshold. Predictive strength of each FEV1:FVC threshold was compared using an estimate of area under the curve for a receiver operator characteristic curve adjusted for censoring (Harrell C Statistic). Using this model, the fixed threshold model was more predictive of future COPD related events than the LLN (0.74 vs 0.66). The LLN threshold was more specific (89% versus 70%) but less sensitive (52% versus 66%).

JOURNAL CLUB
Article Summary by James Woodrow, MD

ARTICLE

Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe COPD (ETHOS Trial) N Engl J Med 2020; 383:35-48. <https://www.nmjm.org/doi/pdf/10.1016/j.nejm.2020.11.001>

CLINICAL QUESTION

Which COPD patients benefit from triple inhaled therapy?

SUMMARY

This was an international randomized, double blind, parallel group trial. Subjects had symptomatic COPD defined by CAT score ≥ 10 , FEV1/FVC < 70%, and Post Bronchodilator FEV1 25-45% predicted with at least a ten pack year smoking history. A history of exacerbations within the preceding year despite the use of at least two inhaled maintenance therapies, was required. Only one exacerbation was required if FEV1 was < 50%. Two moderate or one severe exacerbation was acceptable if FEV1 $\geq 50\%$. Study drugs included high dose budesonide (HD-ICS), low dose budesonide (LD-ICS), giacopronate (LAMA), and formoterol (LABA). Subjects were randomized into one of four groups: HD-ICS/LAMA/LABA, LD-ICS/LAMA/LABA, LAMA/LABA, and ICS/LABA. The primary end point of annual rate of exacerbation (moderate to severe). Data were collected over a 52-week period.

A total of 8573 patients underwent randomization and received a study drug. Annual rate of exacerbations was lower for both HD-ICS/LAMA/LABA and LD-ICS/LAMA/LABA (triple therapy) groups compared to either ICS/LABA or LAMA/LABA (dual therapy) groups. There was no difference between the high versus low dose triple therapy groups. The high dose triple therapy group outperformed dual therapy groups with regard to secondary endpoints including time to first exacerbation, rate of severe exacerbations, and mortality. Comparison between low dose ICS triple therapy groups and dual therapy groups with regard to these secondary endpoints was more equivocal. Incidence of pneumonia was 3.4-5.9% among subjects whose regimen included an ICS whereas incidence among patient receiving only bronchodilators was 2.3%. Benefits of triple therapy versus LAMA/LABA were significant regardless of eosinophil count (over/under 150cells/mc) but the benefit was more pronounced in the higher eosinophil group.

Comparison	Reduction in annual rate of exacerbations
HD triple v. LAMA/LAMA	24%
LD triple v. LAMA/LAMA	25%
HD triple v. ICS/LABA	13%
LD triple v. ICS/LABA	14%

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and discussed this and other similar articles. There was consensus on two flow obstruction exists on a spectrum and there is no single cutoff that can distinguish those with/without abnormal physiology. This is true whether a line is 70% ratio or the lower limit of normal based on reference values. As such, a ratio still be made (or excluded) even in the setting of discordant spirometry between the measured ratio and the diagnostic cutoff should, however, ability accordingly.

Clinical diagnosis and cannot be made based on spirometry alone. A diagnosis made in the setting of typical attributable symptoms and history of exposure factor for the disease. Spirometry is used to confirm abnormal physiology. The important is that an emphasis on the clinical diagnosis process over among patients with a physiologic FEV1:FVC < 70% which can be a normal finding. It similarly would prevent under diagnosis of COPD among younger patients with a FEV1:FVC that is above 70%. Finally, the group discussed reference data sets used to calculate the LLN that predispose certain diagnostic inaccuracy. This is especially true for ethnicities underrepresented in the group agreed that a fixed 70% FEV1:FVC ratio is a preferred spirometric LLN but should be used only in the appropriate clinical setting to diagnose in the setting of sufficiently high or low pretest probability, a diagnosis of false or excluded even in the presence of a discordant FEV1:FVC above or below the LLN.

<https://www.nmjm.org/doi/pdf/10.1016/j.nejm.2020.11.001>

August 2021 Article Summary: Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe COPD (ETHOS Trial) N Engl J Med 2020; 383:35-48. [View here.](https://www.nmjm.org/doi/pdf/10.1016/j.nejm.2020.11.001)

September 2021 Article Summary: Discriminative Accuracy of FEV1:FVC Thresholds for COPD-Related Hospitalization and Mortality, JAMA. 2019;321(24):2438-2447. doi:10.1001/jama.2019.7233. [View here.](https://doi.org/10.1001/jama.2019.7233)

October 2021 Article Summary: C-Reactive Protein Testing to Guide Antibiotic Prescribing for COPD Exacerbations, N Engl J Med 2019; 381:111-120, DOI: 10.1056/NEJMoa1803185. [View here.](https://doi.org/10.1056/NEJMoa1803185)

November 2021 Article Summary: Chronic Non-invasive Ventilation for Chronic Obstructive Pulmonary Disease. Cochrane Database of Systematic Reviews 2021, Issue 8. Art. No.: CD002878. DOI: 10.1002/14651858.CD002878.pub3. [View here.](https://doi.org/10.1002/14651858.CD002878.pub3)

Audience Generation

Final Report



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



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COPD JOURNAL CLUB

COPD Journal Club Format:

- **Article Summary:** [View here.](#)
 - Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe COPD (ETHOS: Trial N England J Med 2020; 383:38-48)
 - A succinct text-based summary with expert commentary that includes a clinical question, background and summary of the journal article, and group opinion through review and consensus of National Jewish Health faculty.
- **TONIGHT! Join the Twitter Chat** @NJHealthMedEd and earn CME credit
 - Add to calendar: [Google](#) [Outlook](#) [Yahoo](#)
 - Wednesday, August 4, 2021
 - 6:00 pm (PT) / 7:00 pm (MT) / 8:00 pm (CT) / 9:00 pm (ET)
 - 30-minutes, once a month
 - Moderated by a National Jewish Health faculty who will pose questions and encourage discourse via tweet chat among a community of physicians.
 - To join the discussion, go to Twitter, type in #COPDTwitterJC and click on the "Latest" tab
 - Please use this hashtag when posting: #COPDTwitterJC

A Zoom Webinar aired on Tuesday, August 3, 2021; the recorded session will be posted soon.

Social media ads and posts



National Jewish Health Medical Education @NJHealthMed... · Sep 7 ·
Do you see patients w/ #COPD? Read our faculty's article summary about FEV1:FVC thresholds for COPD-related hospitalization and mortality, then join the discussion w/ Dr. Woodrow on Zoom & Twitter 9/8. Info: fal.cn/3h1D3 #pulmtwitter #meded #COPDTwitterJC @JakeWoodrow3

National Jewish Health
7,564 followers
1mo ·

Do you treat patients with COPD? Our expert faculty summarized an article for you about "Discriminative Accuracy of FEV1:FVC Thresholds for COPD-Related Hospitalization and Mortality." Read it here: <https://fal.cn/3hX52> ...see more

COPD JOURNAL CLUB

Read the Article Summary Today:
NJHealth.org/COPDJournalClub
Zoom Discussion: Sept. 8, 2:30 p.m. EDT
Twitter Chat: Sept. 8, 9 p.m. EDT #COPDTwitterJC

James Woodrow, MD, Program Chair and Faculty Host

Personalized + Customized Intelligent Marketing Platform



Branded Channel on VuMedi

Results

- Randomized Patients: 8573
- Primary End Point
 - Triple Therapy vs Dual Therapy
 - High-Dose vs Low-Dose
- Mortality
 - HD Triple lower than Dual Therapy
 - LD Triple lower than Dual Therapy
- Postoperative
 - Group with HD: 3.3-4.0%
 - Group with LD: 2.3-3%
- Respiratory Event (under 150/min)
 - Same Qualitative Results
 - Consistently greater in High-Effort group

Triple Inhaled Therapy in COPD: Current Guidelines, Benefits/Risks, and ETHOS Trial Discussion
BY NATIONAL JEWISH HEALTH FEATURING JAMES P. WOODROW

2 Thumbs Up · Share · Save to · 578 views

James Woodrow, MD, of National Jewish Health, discusses the article "Triple inhaled Therapy at Two ... read more \



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National Jewish Health Medical Education @NJHealthMedEd · Sep 2
Attend our Journal Clubs for a virtual opportunity to earn CME credit, stay up to date on respiratory diseases, connect with peers, and interact with experts. Sign up now!

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Executive Summary – Live Webinars

Final Report



Webinar Date	Article Title	Faculty	Registrants	Completers
8/3/21	Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe COPD	Jake Woodrow, MD	31	8
9/8/21	Discriminative Accuracy of FEV1: FVC Thresholds for COPD-Related Hospitalization and Mortality	Jake Woodrow, MD	30	15
10/5/21	C-Reactive Protein Testing to Guide Antibiotic Prescribing for COPD Exacerbations	Ann Granchelli, MD	12	7
11/3/21	Chronic Non-invasive Ventilation for COPD	Jake Woodrow, MD	12	7
		Total	85	37



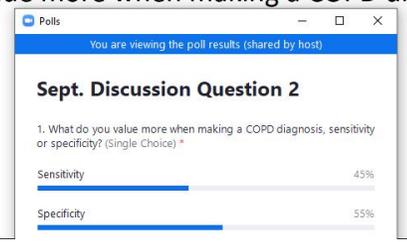
Executive Summary – Live Webinars

Final Report



Discussion Questions

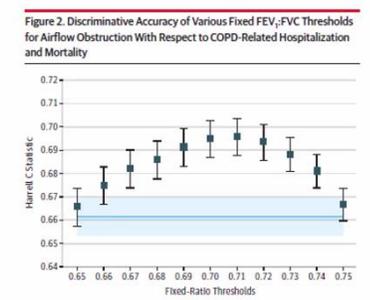
1. How important do you consider spirometry when making a COPD diagnosis?
2. What do you value more when making a COPD diagnosis, sensitivity or specificity?



Results

- Prevalence
 - LLN 15% vs FT (0.7) 26%
 - 99.5% of LLN patient met FT criteria
- COPD Related Events
 - Related to FEV1/FVC on point
 - Rate Ratio = 0.71
 - more accurate than
 - Specificity 89% vs FT (0.7) 79%
 - 52% vs FT (0.7) 66%

FEV ₁ /FVC	No. of Events	No. at Risk
<0.80	287	6079
0.79-0.80	82	1288
0.78-0.79	80	1345
0.77-0.78	115	1458
0.76-0.77	105	1404
0.75-0.76	130	1382
0.74-0.75	146	1333
0.73-0.74	145	1287
0.72-0.73	164	1187
0.71-0.72	157	1087
0.70-0.71	165	974
0.69-0.70	167	813
0.68-0.69	157	742
0.67-0.68	143	711
0.66-0.67	130	657
0.65-0.66	143	477
0.64-0.65	124	423
0.63-0.64	126	374
0.62-0.63	98	312
0.61-0.62	87	246
0.60-0.61	76	212
0.59-0.60	75	181
0.58-0.59	67	168
0.57-0.58	73	139
0.56-0.57	65	133
0.55-0.56	74	105
0.54-0.55	54	104
0.53-0.54	49	86
0.52-0.53	49	82
0.51-0.52	43	71
0.50-0.51	34	62
0.49-0.50	32	54
0.48-0.49	34	49
0.47-0.48	31	50
0.46-0.47	25	39
0.45-0.46	33	37
0.44-0.45	29	44
0.43-0.44	23	35
0.42-0.43	22	29
0.41-0.42	18	23
0.40-0.41	16	23
<0.40	114	165



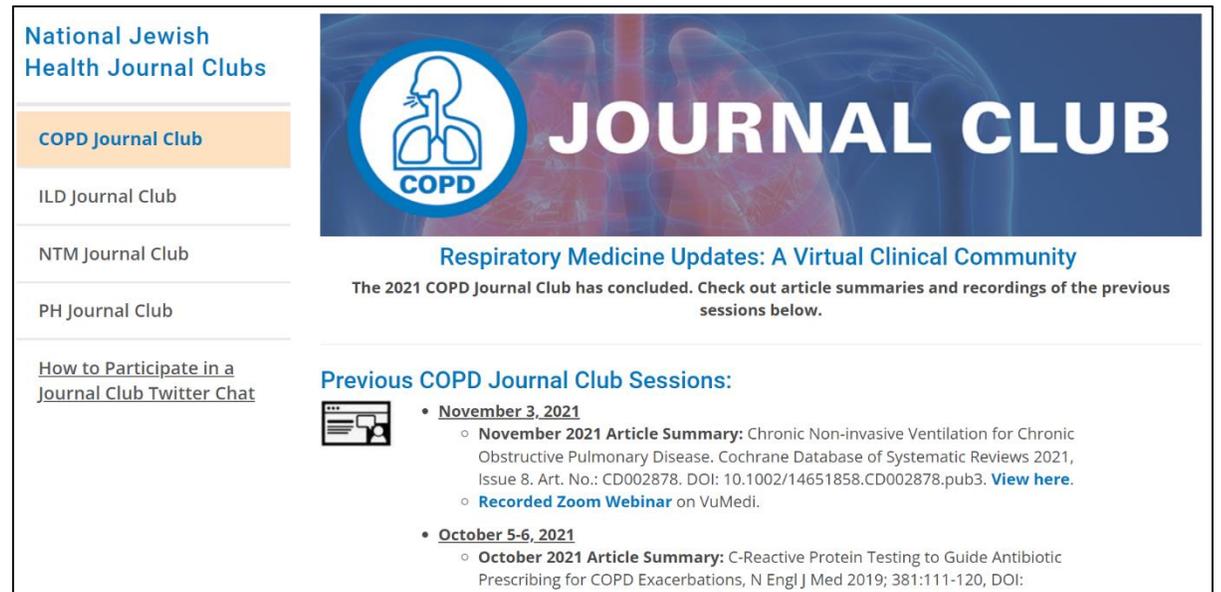
Discussion Questions

1. Do you consider point-of-care testing such as CRP when deciding to prescribe antibiotics for COPD exacerbations?
2. Do you think this is a practice that would be practical to integrate into your clinic practice?
3. Do you think this would help in discussions about antibiotic usage with patients?



COPD Journal Club Webpage

<https://www.nationaljewish.org/copdjournalclub>



National Jewish Health Journal Clubs

- COPD Journal Club**
- ILD Journal Club
- NTM Journal Club
- PH Journal Club

[How to Participate in a Journal Club Twitter Chat](#)

JOURNAL CLUB

Respiratory Medicine Updates: A Virtual Clinical Community

The 2021 COPD Journal Club has concluded. Check out article summaries and recordings of the previous sessions below.

Previous COPD Journal Club Sessions:

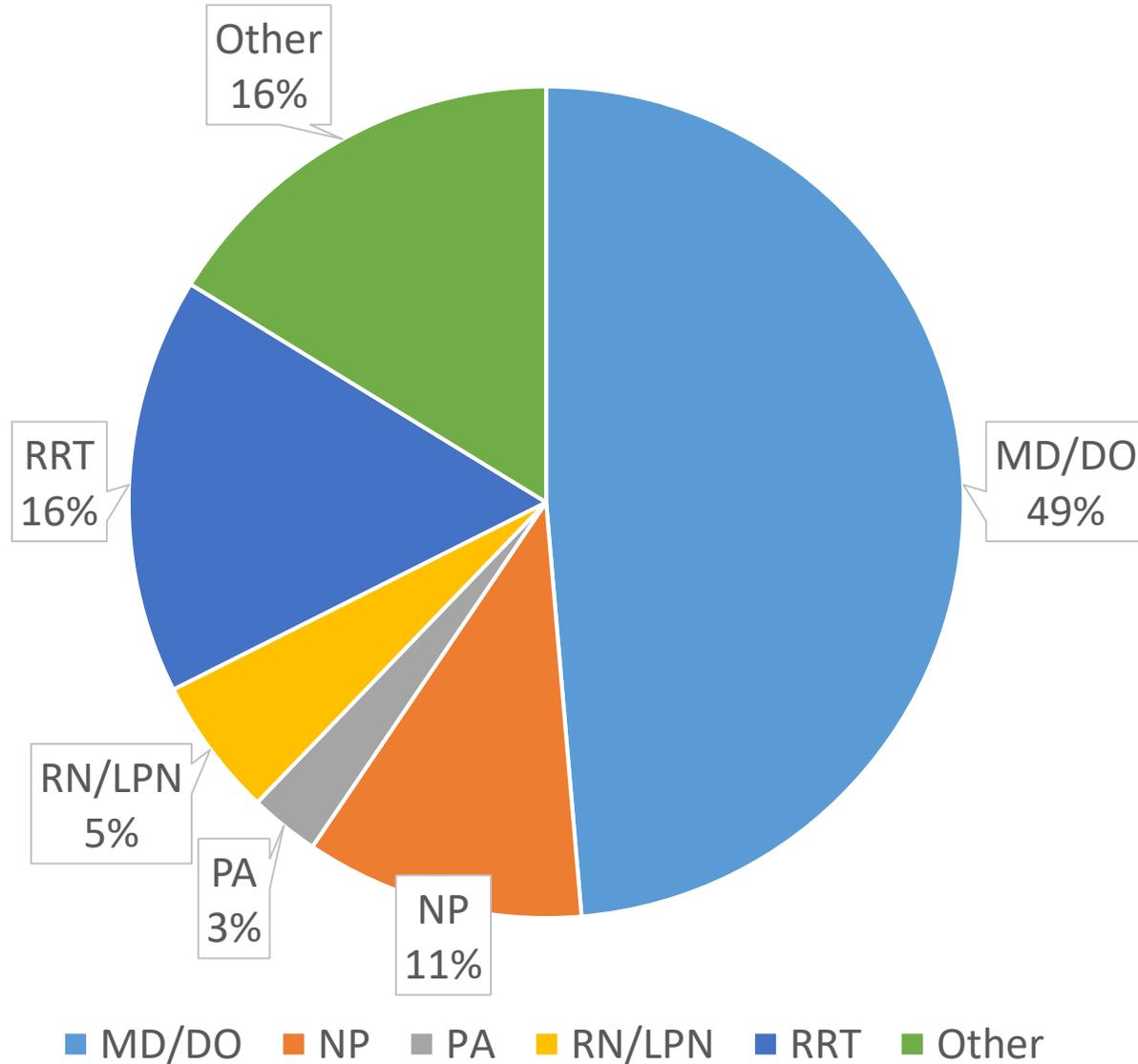
- November 3, 2021**
 - November 2021 Article Summary:** Chronic Non-invasive Ventilation for Chronic Obstructive Pulmonary Disease. Cochrane Database of Systematic Reviews 2021, Issue 8. Art. No.: CD002878. DOI: 10.1002/14651858.CD002878.pub3. [View here.](#)
 - [Recorded Zoom Webinar](#) on VuMedi.
- October 5-6, 2021**
 - October 2021 Article Summary:** C-Reactive Protein Testing to Guide Antibiotic Prescribing for COPD Exacerbations, N Engl J Med 2019; 381:111-120, DOI:

*Data from 7/1/21 – 12/31/21



Level (1) Outcomes: Live Webinars Participation: By Degree

Final Report

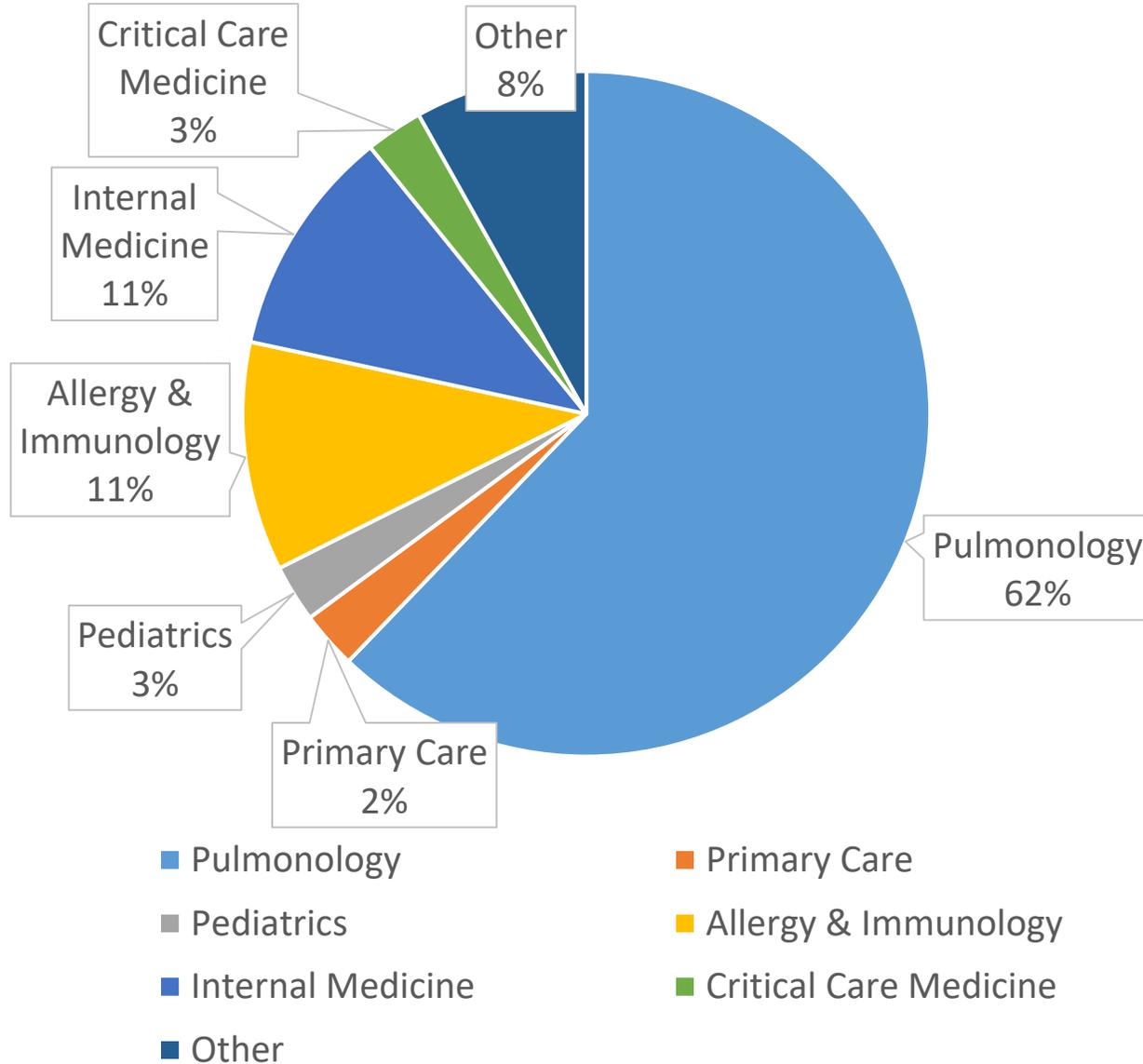


Degree	Completer #s
MD/DO	18
RRT	6
NP	4
RN/LPN	2
PA	1
Other	6
Total Completers	37



Level (1) Outcomes: Live Webinars Participation: By Specialty

Final Report

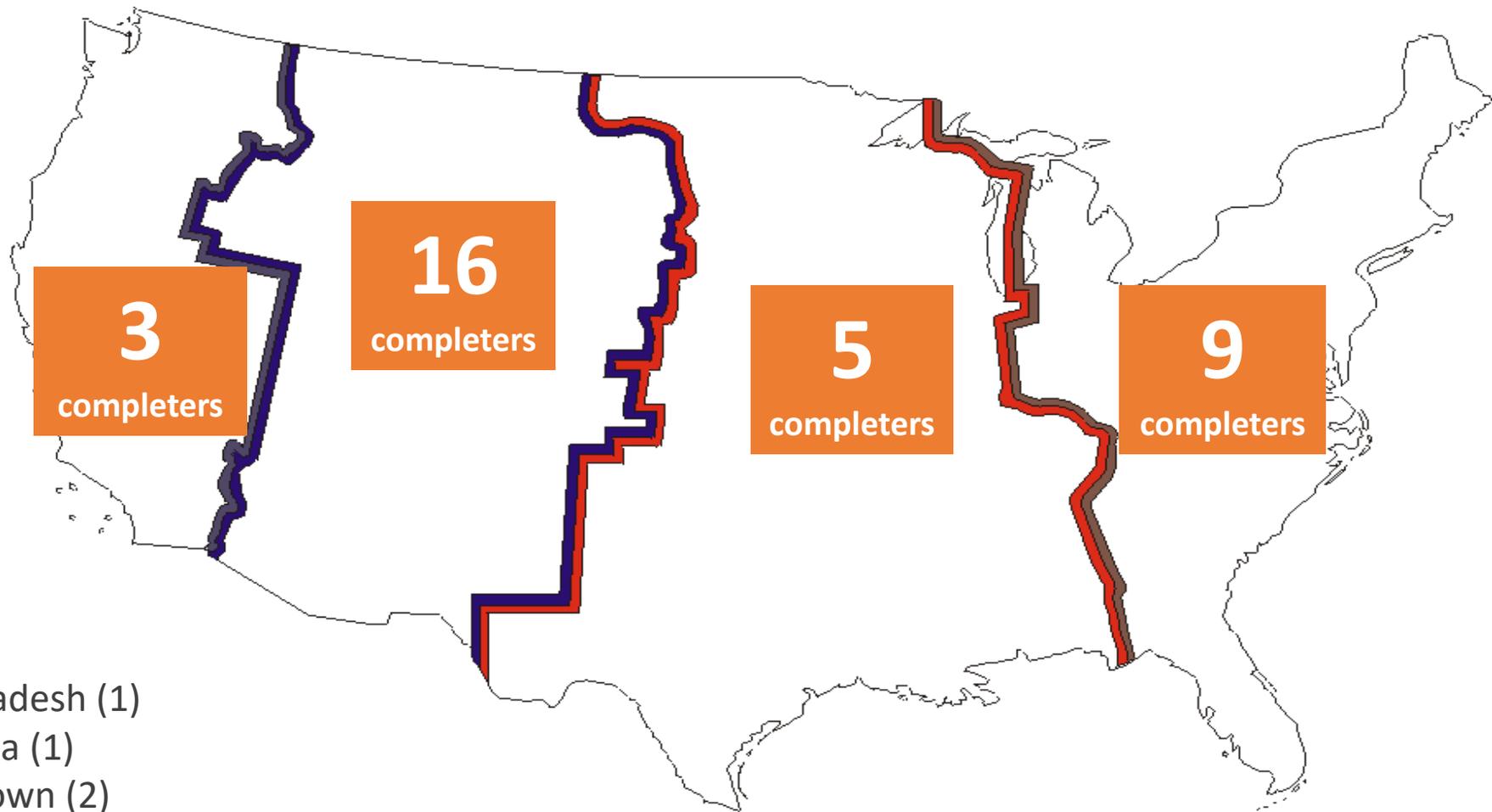


Specialty	Completer #s
Pulmonology	23
Allergy & Immunology	4
Internal Medicine	4
Primary Care	1
Pediatrics	1
Critical Care Medicine	1
Other	3
Total Completers	37



Level (1) Outcomes: Live Webinars Participation

Final Report



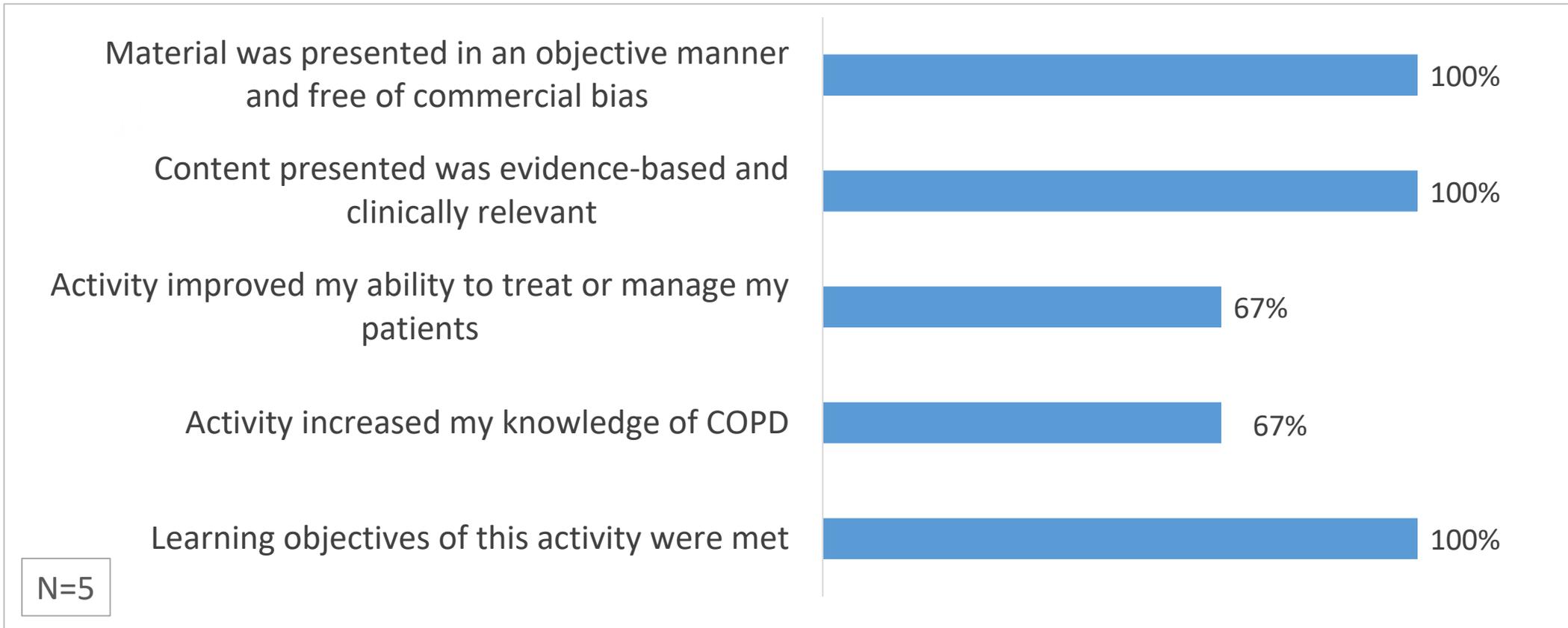
Other

- Bangladesh (1)
- Canada (1)
- Unknown (2)

N=37



Evaluation Respondents “Strongly Agree” or “Agree” that:

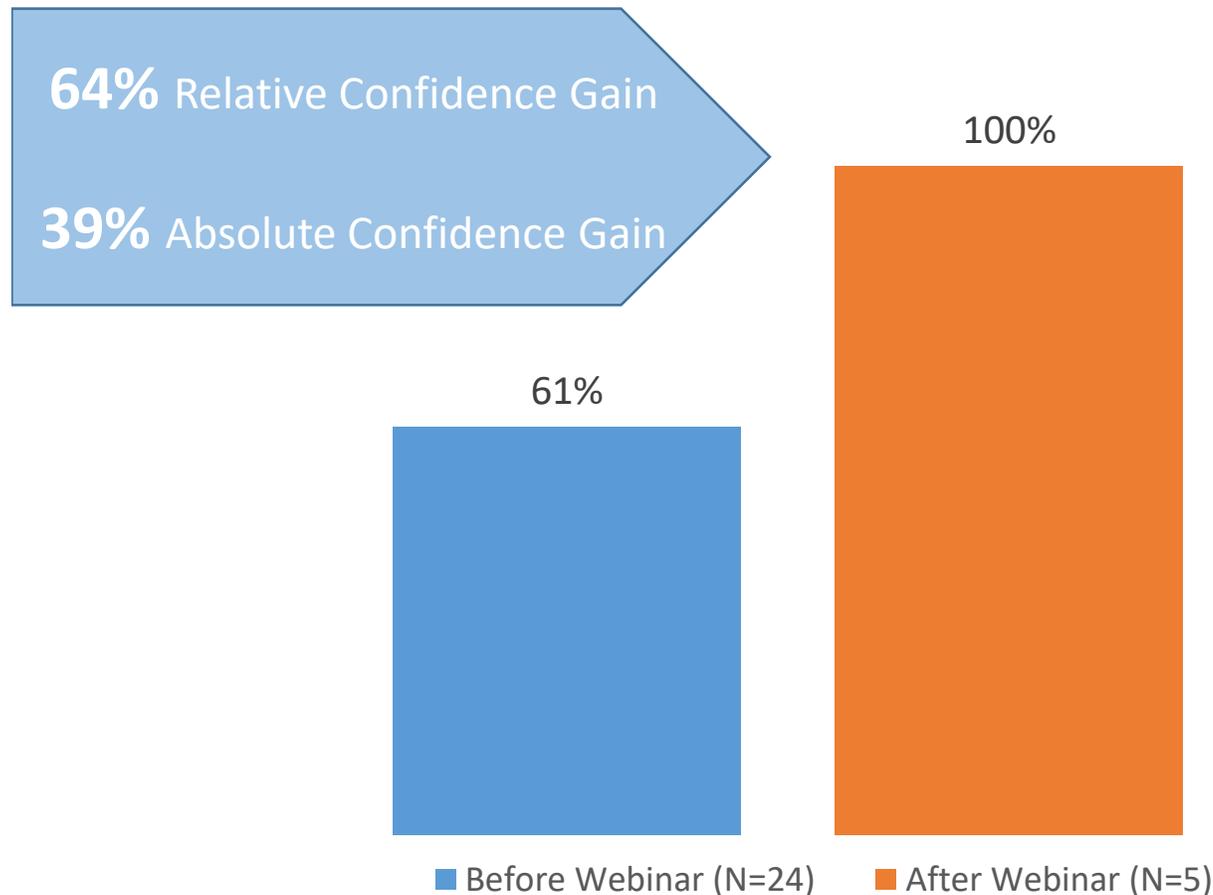




Level (4) Outcomes: Live Webinars Competence

Final Report

Evaluation respondents report they are “Very Confident” to “Somewhat Confident” in their ability to integrate the findings of the research article into clinical practice:





Level (4) Outcomes: Live Webinars Competence

Final Report

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

100%

N=4

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

Intended Changes by Activity

Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe COPD

- Increase consideration of triple therapy in more complicated patients with COPD
- Withdraw inhaled steroids in patients unlikely to benefit

Discriminative Accuracy of FEV1:FVC Thresholds for COPD-Related Hospitalization and Mortality

- Improve diagnostic accuracy

Chronic Non-invasive Ventilation for COPD

- Use AVAPS instead of Bipap



Outcomes: Live Webinars

Final Report

August: Triple Inhaled Therapy



Key Takeaways

- Effectiveness of triple therapy
- Dose in triple therapy arm did not matter in primary endpoint



Questions

- Did they screen for underlying bronchiectasis (HRCT) and secondarily, did they analyze by whether patients were taking daily azithromycin? In patients with COPD/chronic bronchitis/frequent exacerbations who are on daily macrolide antibiotic, does adding an inhaled ICS improve outcomes? My practice in these patients is to add azithromycin before adding ICS...

September: Accuracy of FEV1:FVC



Key Takeaways

- COPD c/f are no less important



Future Topics

- Corticoid induced pneumonia
- Macrolides
- COPD
- Chronic bronchitis
- Bronchiectasis



October: C-Reactive Protein Testing to Guide Antibiotic Prescribing for COPD Exacerbations



Questions/Comments

- What was the clinical setting? Inpatient vs outpatient?
- I like the idea but tough to get labs quickly in outpatient clinical setting

November: Chronic Non-invasive Ventilation for COPD



Key Takeaways

- Importance of using NIV with COPD patients



Questions/Comments

- What are your thoughts on AVAPS as a better alternative to BIPAP for long-term management of chronic respiratory failure with hypercapnia and ESCOPD?
- Who is doing the blood gas post-discharge?
- Obesity Hypoventilation Syndrome?
- What about patient's baseline CO₂ as a guide?

National Jewish Health VuMedi Channel:

<https://www.vumedi.com/channel/national-jewish-health/tab/journal-club/>

Month	Impressions	Video Page Views	Unique Page Viewers	Starts	Unique Starts
Aug.	4131	603	378	314	243
Sept.	2544	188	154	81	71
Oct.	4455	209	160	92	82
Nov.	155	198	142	104	88
Total	11,285	1,198	834	591	484

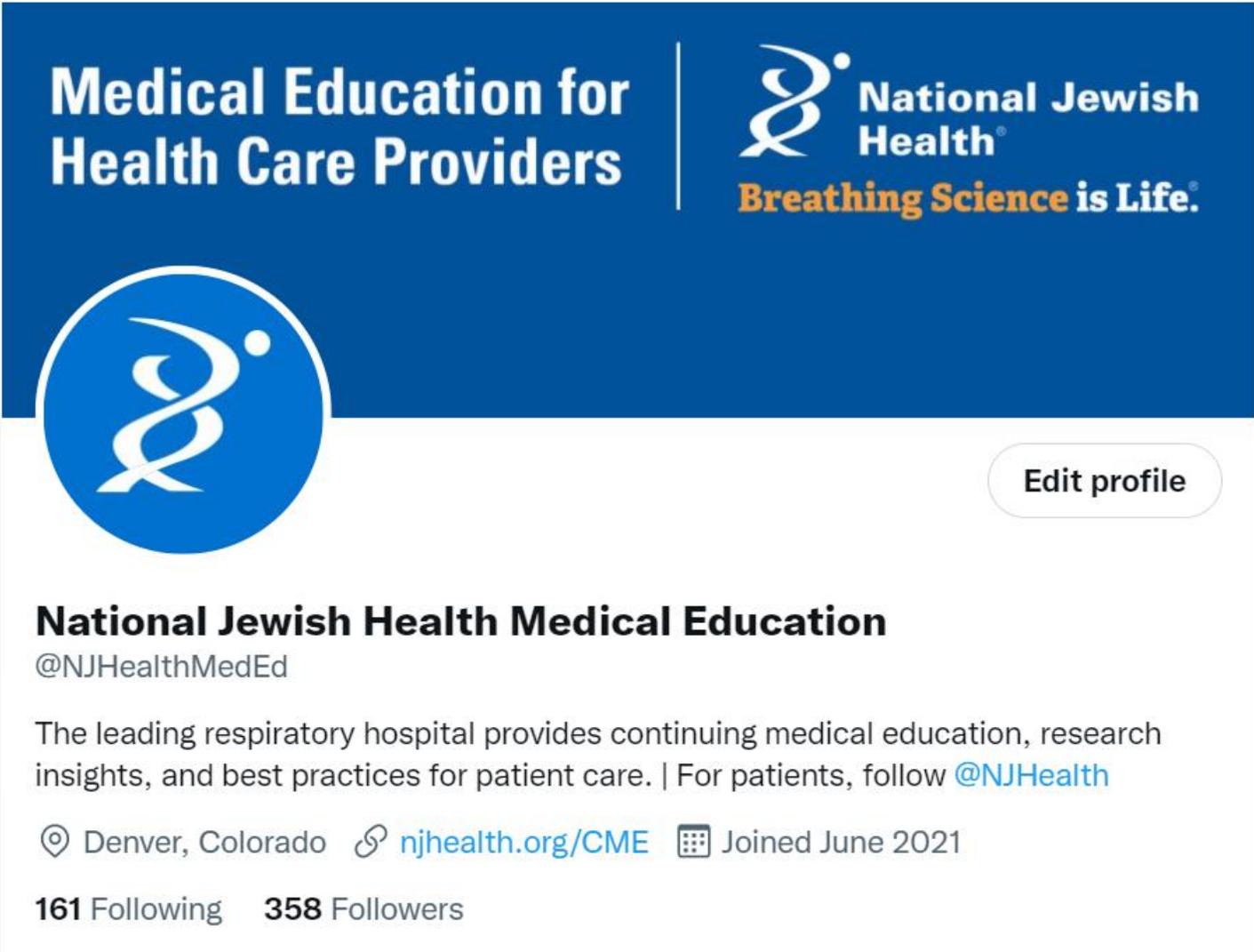
Data: 8/1/21-12/21/21

About VuMedi

- Nearly 14,000 registered pulmonary specialists and over 96,000 primary care physicians (over 600,000 total)
- Distribution of video content to reach a large physician audience
- Analytics dashboard that shows video views, impressions, geolocation of viewers



Note: Heat map encompasses all 4 NJH Journal Clubs from 8/1/21-11/30/21



Medical Education for Health Care Providers



National Jewish Health
Breathing Science is Life.



National Jewish Health Medical Education
@NJHealthMedEd

The leading respiratory hospital provides continuing medical education, research insights, and best practices for patient care. | For patients, follow [@NJHealth](#)

📍 Denver, Colorado [njhealth.org/CME](#) 📅 Joined June 2021

161 Following 358 Followers

Edit profile

**Twitter Handle:
@NJHealthMedEd**

**Hashtag:
#COPDTwitterJC**



Executive Summary – Twitter Chats

Final Report



Twitter Date	Article Title	Faculty	Calendar Adds	Tweets	Retweets	Likes	Hashtag Usage	Impressions	Engagements
8/4/21	Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe COPD	Jake Woodrow, MD	99	42	3	54	40	8266	203
9/8/21	Discriminative Accuracy of FEV1: FVC Thresholds for COPD-Related Hospitalization and Mortality	Jake Woodrow, MD	8	52	8	39	52	3632	143
10/6/21	C-Reactive Protein Testing to Guide Antibiotic Prescribing for COPD Exacerbations	Ann Granchelli, MD	40	27	3	22	43	2151	89
11/3/21	Chronic Non-invasive Ventilation for COPD	Jake Woodrow, MD	6	27	2	1	27	1200	20
		Total	153	148	16	116	162	15,249	455

Definitions:

Impressions - the number of impressions on a tweet sent in the selected date range. An impression is the number of times a tweet appears to users in either their timeline or search results

Engagements - the total number of times a user interacted with the tweets sent during the selected date range



COPD Journal Club August Twitter Highlights

Final Report



- Jake Woodrow** @JakeWoodrow3 · 26m
Pneumonia was more common (3.5-4.5% vs 2.3%) among groups containing ICS vs those w/out. Primary endpoint results were the same for all subgroups including high/low eosinophils, presence/absence of bronchodilator response, & history of ICS use prior to enrollment. #COPDTwitterJC
- Jake Woodrow** @JakeWoodrow3 · 27m
Exacerbations were less frequent among patients on triple therapy compared to both dual therapy groups. There was no diff. between low / high dose ICS triple therapy groups. All-cause mortality was lower when high dose group was compared to LAMA/LABA group. #COPDTwitterJC
- Jake Woodrow** @JakeWoodrow3 · 28m
ETHOS trial enrolled patients with COPD & frequent exacerbations despite use of 2 controller medications. They were randomized into 4 groups: triple therapy with high dose or low dose ICS, LAMA/LABA, and ICS/LABA. Primary endpoint was annual rate of exacerbations. #COPDTwitterJC
- Jake Woodrow** @JakeWoodrow3 · 29m
GOLD strategy recommendation is to use triple therapy only for COPD with persistent exacerbations despite use of long acting bronchodilators. The ETHOS trial was designed to help identify specific populations that may derive the greatest benefit and optimal dosing. #COPDTwitterJC
- Jake Woodrow** @JakeWoodrow3 · 30m

Jake Woodrow @JakeWoodrow3 · 54s
Thank you so much for the introduction! I'm excited to chat tonight about the ETHOS trial: Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate to Very Severe #COPD, Rabe K et al, NEJM 2020; 383: 35-48 nejm.org/doi/full/10.10... #COPDTwitterJC



nejm.org
Triple Inhaled Therapy at Two Glucocorticoid Doses...
Original Article from The New England Journal of Medicine — Triple Inhaled Therapy at Two ...

National Jewish Health Medical Education @NJHealthMedEd · 3m
And now we'll get started and turn it over to tonight's host, Dr. James Woodrow, Assistant Prof, Div of Pulm, Critical Care & Sleep Med at @NJHealth nationaljewish.org/doctors-depart... @JakeWoodrow3 #COPDTwitterJC



54 Likes on Tweets

8,266 Impressions

Jake Woodrow @JakeWoodrow3 · 1m
Replying to @NJHealthMedEd
I do counsel patients especially regarding increased risk of pneumonia. I also mention bone health and ocular disease as unlikely but possible adverse effects. #COPDTwitterJC

National Jewish Health Medical Education @NJHealthMedEd · 5m
Q3: Do you counsel patients about potential adverse reactions from inhaled steroids prior to starting an ICS? #COPDTwitterJC

Yes

No

4 votes · 23 hours left

Jake Woodrow @JakeWoodrow3 · 7m
Replying to @NJHealthMedEd
I have trouble deciding on a dose. I will generally start with the higher dose based on the ETHOS trial unless the patient is at high risk for side effects. #COPDTwitterJC



COPD Journal Club September Twitter Highlights

Final Report



Q3: If you make a diagnosis of COPD and then spirometry improves to normal, is the diagnosis still accurate? #COPDTwitterJC



4 votes · 6 days left
7:24 PM · Sep 8, 2021 · Twitter Web App

||| View Tweet activity



National Jewish Health Medical Education @NJHealthMedEd · 13h

Replying to @NJHealthMedEd
For those who answered, could participants share why or why not for the discussion? #COPDTwitterJC



Add another Tweet

Jake Woodrow @JakeWoodrow3 · 13h

Replying to @NJHealthMedEd
A3 This is a tough question but I think if spirometry becomes normal then airways disease is reversible and not consistent with COPD. #COPDTwitterJC



Patricia George, MD @PGeorgeMD · 13h

A3. Question about this: what if they had abnormal spirometry and DLCO, and the spirometry improved to > 0.70 but DLCO still abnml, and they have emphysema on CT scan. Could you label them as COPD? Or emphysema with an reactive airways component? #COPDTwitterJC



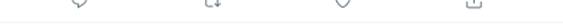
Jake Woodrow @JakeWoodrow3 · 13h

I have had patients like this and I don't think we should be afraid to diagnose people with Asthma + Emphysema. #COPDTwitterJC



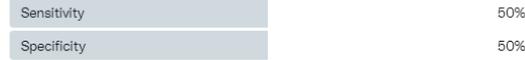
Patricia George, MD @PGeorgeMD · 13h

Thank you!



National Jewish Health Medical Education @NJHealthMedEd

Q2: What do you value more when making a COPD diagnosis, sensitivity or specificity? #COPDTwitterJC



4 votes · 6 days left
7:22 PM · Sep 8, 2021 · Twitter Web App

||| View Tweet activity



Jake Woodrow @JakeWoodrow3 · 13h

Replying to @NJHealthMedEd
A2 Also if you are careful about diagnosing COPD only in the correct clinical context then over-diagnosis can be minimized. #COPDTwitterJC



Jake Woodrow @JakeWoodrow3 · 13h

Replying to @NJHealthMedEd
A2 I think sensitivity is more important which is why I use the fixed ratio a opposed to LLN. I think there is more harm in underdiagnosis than over. #COPDTwitterJC



143 Engagements

National Jewish Health Medical Education @NJHealthMedEd

How important do you consider spirometry when making a COPD diagnosis? #COPDTwitterJC



5 votes · 6 days left
7:17 PM · Sep 8, 2021 · Twitter Web App

||| View Tweet activity



Jake Woodrow @JakeWoodrow3 · 13h

Replying to @NJHealthMedEd
A1 In my opinion and based on the GOLD strategy is required to confirm a diagnosis of COPD but should only be used in the appropriate clinical context (typical symptoms, risk factors). #COPDTwitterJC



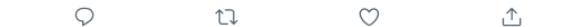
3,632 Impressions

National Jewish Health Medical Education @NJHealthMedEd

Q4: How would you diagnose a patient with emphysema and normal spirometry? Type your response starting with A4 and use #COPDTwitterJC

7:26 PM · Sep 8, 2021 · Twitter Web App

||| View Tweet activity



Jake Woodrow @JakeWoodrow3 · 13h

Replying to @NJHealthMedEd
A4 There is controversy here but in my opinion emphysema by itself without demonstrable airflow limitation is not COPD. Important because these patients are not enrolled in COPD trials so I don't know if they benefit from therapies or not. #COPDTwitterJC



Patricia George, MD @PGeorgeMD · 13h

Ah this makes sense. I appreciate your thoughts. #COPDTwitterJC





COPD Journal Club October Twitter Highlights

Final Report



National Jewish Health Medical Education
@NJHealthMedEd

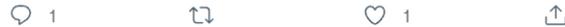
Q1: What do you use to determine which patients are treated with antibiotics for COPD exacerbation? Type your response starting with A1 and use #COPDTwitterJC

7:20 PM · Oct 6, 2021 · Twitter Web App

||| View Tweet activity



Jake Woodrow @JakeWoodrow3 · Oct 6
Replying to @NJHealthMedEd
A1 I still use change in sputum character/volume along with other signs of infection (wbc , fever , etc)



Patricia George, MD @PGeorgeMD · Oct 6
A1. Agree with @JakeWoodrow3



Q3: Do you use CRP in clinic when considering antibiotics for COPD exacerbations? #COPDTwitterJC



3 votes · 1 day left

7:25 PM · Oct 6, 2021 · Twitter Web App

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Q4: Would you consider adopting this practice in your clinic in order to decrease antibiotic use?

#COPDTwitterJC



3 votes · 1 day left

7:28 PM · Oct 6, 2021 · Twitter Web App

||| View Tweet activity



National Jewish Health Medical Education
Replying to @NJHealthMedEd
Please comment why or why not... with A4 and use #COPDTwitterJC



Jake Woodrow @JakeWoodrow3 · Oct 6
Replying to @NJHealthMedEd
A4 I would use POC testing acutely but I'm not sure CRP is the right lab #COPDTwitterJC



89 Engagements

2,151 Impressions

Q2: How often are point of care labs used in acute care visits? Would this be a limiting factor to applying this study? Type your response starting with A2 and use #COPDTwitterJC

7:23 PM · Oct 6, 2021 · Twitter Web App

||| View Tweet activity



Jake Woodrow @JakeWoodrow3 · Oct 6
Replying to @NJHealthMedEd
A2 I don't know that we have POC CRP or any other labs available in clinic. I would use it #COPDTwitterJC



Patricia George, MD @PGeorgeMD · Oct 6
Replying to @NJHealthMedEd
A2. And a question to those who treat more COPD - do you ever use procalcitonin? @JakeWoodrow3 @Denverlungdoc



Ann Granchelli @Denverlungdoc · Oct 6
Not routinely outpatient. Time delay with lab would be biggest barrier. Inpatient I use frequently. Would not be unreasonable to obtain especially for patients with frequent exacerbations when trying to determine bacterial vs non. #COPDTwitterJC



Patricia George, MD @PGeorgeMD · Oct 6
Thank you!





COPD Journal Club November Twitter Highlights

Final Report

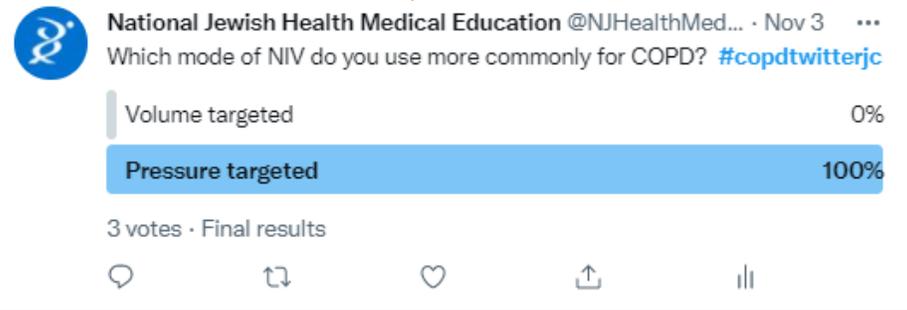


Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 IPAP should be started at 15-18 and then increased to at least > 18 and ideally to reduced PaCO2 by 20% (or even to normal if possible) [#COPDTwitterJC](#)

National Jewish Health Medical Education @NJHealthMed... · Nov 3 ...
 What settings do you use to initiate NIV? How do you subsequently titrate the settings? Type your response starting with A3 and use [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 I find it easier to titrate BiPAP (pressure targeted) . There is no evidence that volume targeted modes are superior [#COPDTwitterJC](#)

1,200 Impressions



Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 I recommend NIV for patients with COPD and HyperCO2. I use PaCO2 of 52 as a cutoff based on CMS criteria and this review. [#COPDTwitterJC](#)

National Jewish Health Medical Education @NJHealthMed... · Nov 3 ·
 Which COPD patients do you think benefit most from NIV? Type your response starting with A1 and use [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ·
 All patients treated with NIV should have IPAP increased to at least 18mmHg and higher as tolerated to achieve a 20% reduction or even normalization of PaCO2. Whether or not volume targeted vent modes are superior to pressure targeted mode (BiPAP) is not clear [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ·
 This review and prior studies support the use of NIV for patients with stable COPD and chronic hypercapnia (PaCO2 > 52). Patients post hospitalization for COPD exacerbation should also be treated with NIV if PaCO2 remains elevated 2-4 weeks after discharge. [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ·
 Post exacerbation patients treated with NIV also had a significantly reduced PaCO2 at 3/12 mo (3.0/3.9 mmHg mean reduction). Admission free survival was reduced but not overall exacerbation rate or all cause mortality, suggesting a delayed time to readmission. [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 Stable COPD patients treated with NIV had a significantly lower PaCO2 at 3 / 12mo (4.5 / 3.5mmHg mean reduction). All cause mortality was also reduced in the NIV group (HR 0.78, 95% CI 0.58-0.97). Effect was limited to high IPAP and high baseline PaCO2 groups [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 This Cochrane Analysis included RCTs that enrolled patients with COPD and hypercapnia and compared NIV (min 5 hr/night) to standard of care. Studies were divided by patients with stable COPD and patients post COPD exacerbation requiring hospitalization. [#COPDTwitterJC](#)

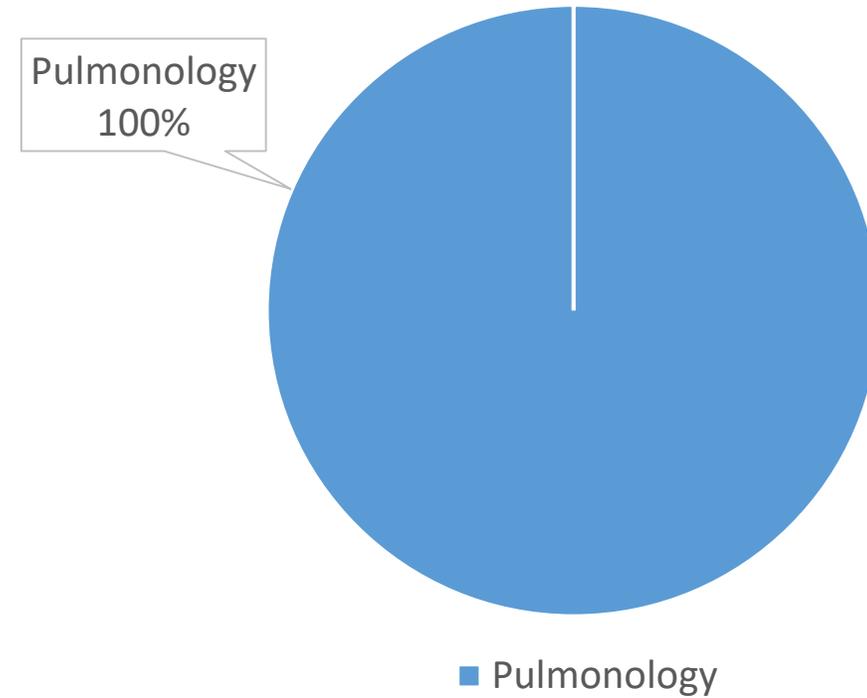
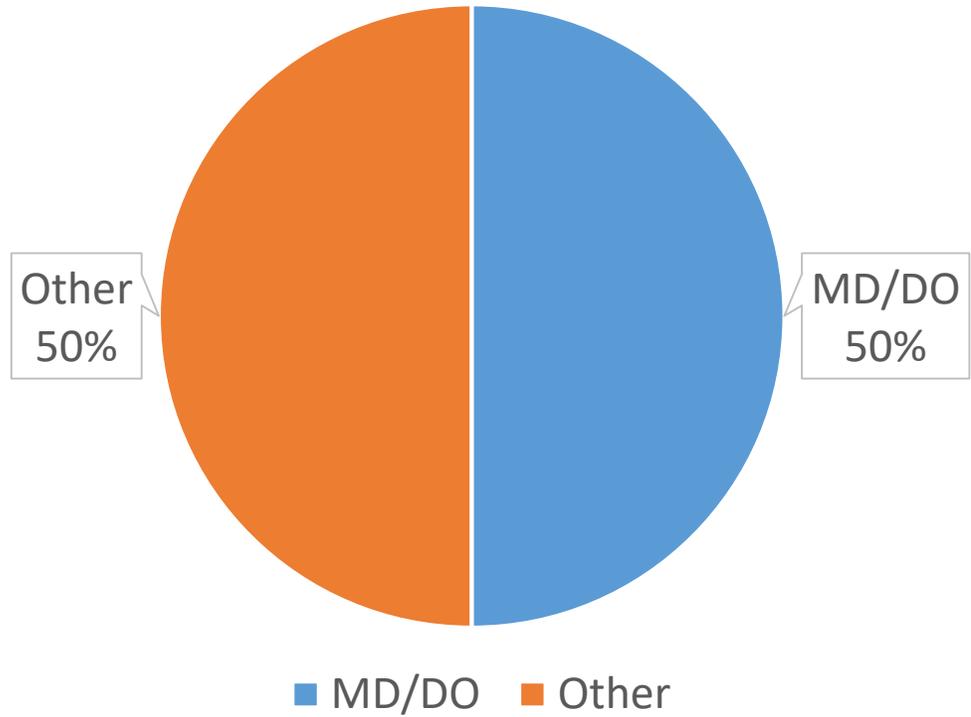
Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 COPD pathophysiology predisposes to retention of CO2. Morbidity/mortality is high for this subset of patients. Non-invasive ventilation (NIV) is often used in this setting but data regarding efficacy is conflicting and practice patterns are variable. [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 First, I will touch on the high points of the article and then @NJHealthMedEd will pose some discussion questions about clinical implications of the article [#COPDTwitterJC](#)

Jake Woodrow @JakeWoodrow3 · Nov 3 ...
 Thank you so much for the introduction! I'm excited to chat tonight about discussing Chronic Non-invasive Ventilation for Chronic Obstructive Pulmonary Disease. DOI: 10.1002/14651858.CD002878.pub3. [#COPDTwitterJC](#)



Level (1) Outcomes: Twitter Chats Participation By Degree and Specialty Final Report



Degree	Completer #s
MD/DO	1
Other	1
Total Completers	2

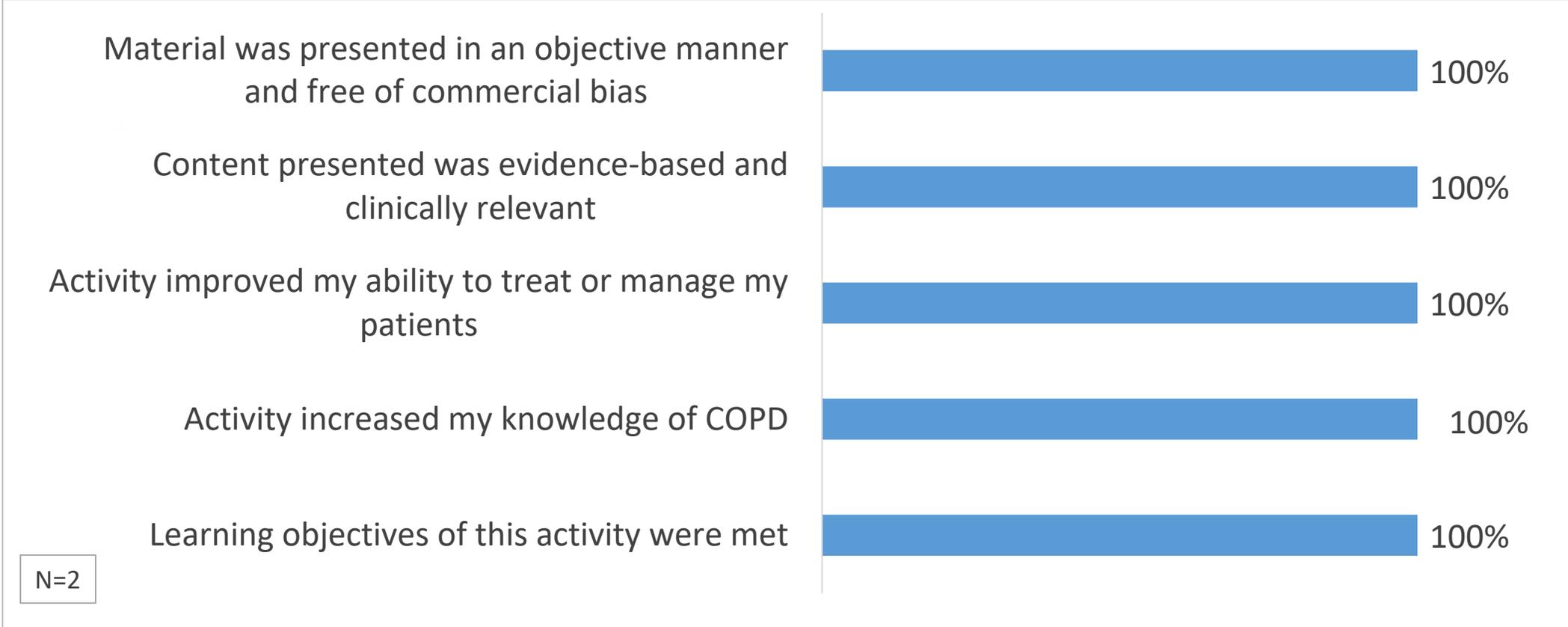
Specialty	Completer #s
Pulmonology	2
Total Completers	2



Level (2) Outcomes: Twitter Chats Satisfaction

Final Report

Completers report they “Strongly Agree” or “Agree” that:





Level (4) Outcomes: Twitter Chats Competence

Final Report

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

100%

N=2

Completers intend to make changes in practice as a result of the activity



Intended Changes

- Antibiotic stewardship



Key Takeaways

- Unless symptoms suggestive, CRP can rationalize antibiotics



100% of completers reported they are “Very Confident” to “Somewhat Confident” in their ability to integrate the findings of the research article into clinical practice after the activity

N=2

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Live Twitter Chats

National Jewish Health designates each Other activity (social media discussion) for a maximum of 0.5 *AMA PRA Category 1 Credit*[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

