Can’t Miss Articles
The treatable trait of CRSwNP

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SEVERE ASTHMA PROGRAM

Disclosures of Conflicts of Interest

None

Treatable Traits

Chronic Rhinosinusitis with Nasal Polyposis:

- Dupilumab versus omalizumab in patients with chronic rhinosinusitis with nasal polyps and coexisting asthma (EVEREST): a multicentre, randomised, double-blind, head-to-head phase 4 trial – PubMed
- Tezepelumab in Adults with Severe Chronic Rhinosinusitis with Nasal Polyps - PubMed

Mucus Plugging:

- Tezepelumab and Mucus Plugs in Patients with Moderate-to-Severe Asthma
- Effect of dupilumab on exhaled nitric oxide, mucus plugs, and functional respiratory imaging in patients with type 2 asthma (VESTIGE): a randomised, double-blind, placebo-controlled, phase 4 trial - PubMed

EVEREST: Study Design

- RDBCT comparing efficacy and safety of **dupilumab** versus **omalizumab** in patients with severe CRSwNP and coexisting mild, mod, or severe asthma.
- >18, CRSwNP with score of 5 or more despite surgery or oral steroids. Active symptoms. Weight and IgE in Xolair dosing range. Excluded viral illness, acute sinusitis, suspected or known CF or EGPA, recent surgery (6 mos), recent biologic (5 ½ lives)
- Dupixent 300 mg every 2 weeks, Omalizumab up to 600 mg every 2-4 weeks. Followed for 24 weeks.

EVEREST Table 1

	Dupilumab group (n=181)	Omalizumab group (n=179)	Total (n=360)
Age, years	51 (13·3)	52 (12·9)	52 (13·1)
Sex			
Male	107 (59%)	91 (51%)	198 (55%)
Female	74 (41%)	88 (49%)	162 (45%)
Race			
American Indian or Alaska Native	0	2 (1%)	2/358 (1%)
Asian	1/179 (1%)	1 (1%)	2/358 (1%)
Black or African American	2/179 (1%)	1 (1%)	3/358 (1%)
White	171/179 (96%)	170 (95%)	341/358 (95%)
Multiple	0	1 (1%)	1/358 (<1%)
Not reported or unknown	5/179 (3%)	4 (2%)	9/358 (3%)
BMI (kg/m²)	27·43 (5·03)	26·85 (3·98)	27·14 (4·54)
CRSwNP duration, years	13·3 (9·64)	13·2 (9·91)	13·3 (9·76)
Previous endoscopic sinus surgery			
No previous surgeries	36 (20%)	34 (19%)	70 (19%)
One previous surgery	59 (33%)	61 (34%)	120 (33%)
Two previous surgeries	35 (19%)	33 (18%)	68 (19%)
Three or more previous surgeries	51 (28%)	51 (29%)	102 (28%)
Age of onset of asthma, years	34·9 (16·48)	36·1 (16·35)	35·5 (16·40)
NSAID-ERD	74 (41%)	71 (40%)	145 (40%)
Ongoing allergic rhinitis	83 (46%)	81 (45%)	164 (46%)
Ongoing seasonal allergic rhinitis	73 (40%)	66 (37%)	139 (39%)
Ongoing perennial allergic rhinitis	60 (33%)	46 (26%)	106 (29%)
Nasal polyp score (scale 0–8)*	6·11 (1·17)	6·15 (1·28)	6·13 (1·22)
Smell test (UPSIT) score (scale 0–40)†	11·10 (5·45)	11·00 (6·13)	11·10 (5·79)
Loss of smell score (scale 0–3)*	2·86 (0·40)	2·83 (0·44)	2·84 (0·42)
Nasal congestion score (scale 0–3)*	2·47 (0·56)	2·44 (0·63)	2·46 (0·59)
Total symptom score (scale 0–9)*	7·38 (1·27)	7·30 (1·49)	7·34 (1·38)
SNOT-22 total score (scale 0–110)*	64·80 (19·06)	66·20 (20·56)	65·50 (19·81)

(Table 1 continues on next page)

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EVEREST Table 1

	Dupilumab group (n=181)	Omalizumab group (n=179)	Total (n=360)
(Continued from previous page)			
Peak nasal inspiratory flow, L/min†	79·78 (50·16)	77·68 (59·44)	78·74 (54·89)
Rhinosinusitis disease severity (visual analogue scale, 0–10 cm)*	8·63 (1·50)	8·75 (1·41)	8·69 (1·45)
Pre-bronchodilator FEV_1, L	2·68 (0·92)	2·59 (0·82)	2·63 (0·87)
Pre-bronchodilator FEV_1, % predicted	77·4 (19·68)	77·9 (16·06)	77·6 (17·96)
ACQ-7 score (scale 0–6)*	2·82 (0·99)	2·69 (0·96)	2·76 (0·97)
Forced expiratory flow 25–75%, L/s	1·84 (1·11)	1·72 (0·91)	1·78 (1·02)
AQLQ (scale 1–7)*	4·13 (1·20)	4·23 (1·25)	4·18 (1·22)
Blood eosinophil count, cells per µL	562 (385)	550 (351)	556 (368)
Baseline serum total immunoglobulin E, IU/mL	212 (181)	220 (185)	216 (183)
FeNO (ppb)	54·30 (40·78)	54·60 (38·52)	54·40 (39·65)
Number of severe asthma exacerbations in the year before screening	0·6 (1·9)	0·9 (2·7)	0·7 (2·3)
Inhaled corticosteroid dose level‡			
Low	64 (35%)	63 (35%)	127 (35%)
Medium or high	117 (65%)	116 (65%)	233 (65%)
Systemic corticosteroid use in the previous 2 years	86 (48%)	90 (50%)	176 (49%)
Indication for previous systemic corticosteroid use			
CRSwNP	67/86 (78%)	77/90 (86%)	144/176 (82%)
Asthma	18/86 (21%)	15/90 (17%)	33/176 (19%)
Other	5/86 (6%)	5/90 (6%)	10/176 (6%)

Data are n (%), n/N (%), or mean (SD). Additional demographic data are presented in appendix 1 (p 5). CRSwNP=chronic rhinosinusitis with nasal polyps. NSAID-ERD=non-steroidal anti-inflammatory drug-exacerbated respiratory disease. SNOT-22=22-item Sino-Nasal Outcome Test. UPSIT=University of Pennsylvania Smell Identification Test. ACQ-7=asthma control questionnaire 7-item version. AQLQ=asthma quality of life questionnaire with standardised activities. FeNO=fractional exhaled nitric oxide. ppb=parts per billion. *Higher scores indicate greater disease severity. †Higher scores indicate lower disease severity. ‡According to The Global initiative for Asthma 2020 guidelines.

Table 1: **Baseline characteristics**

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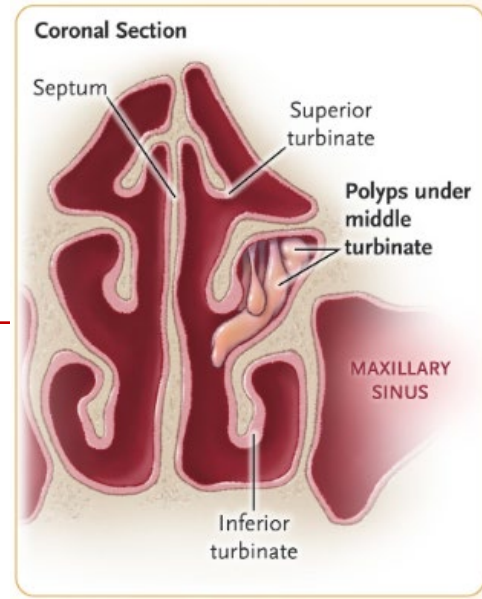
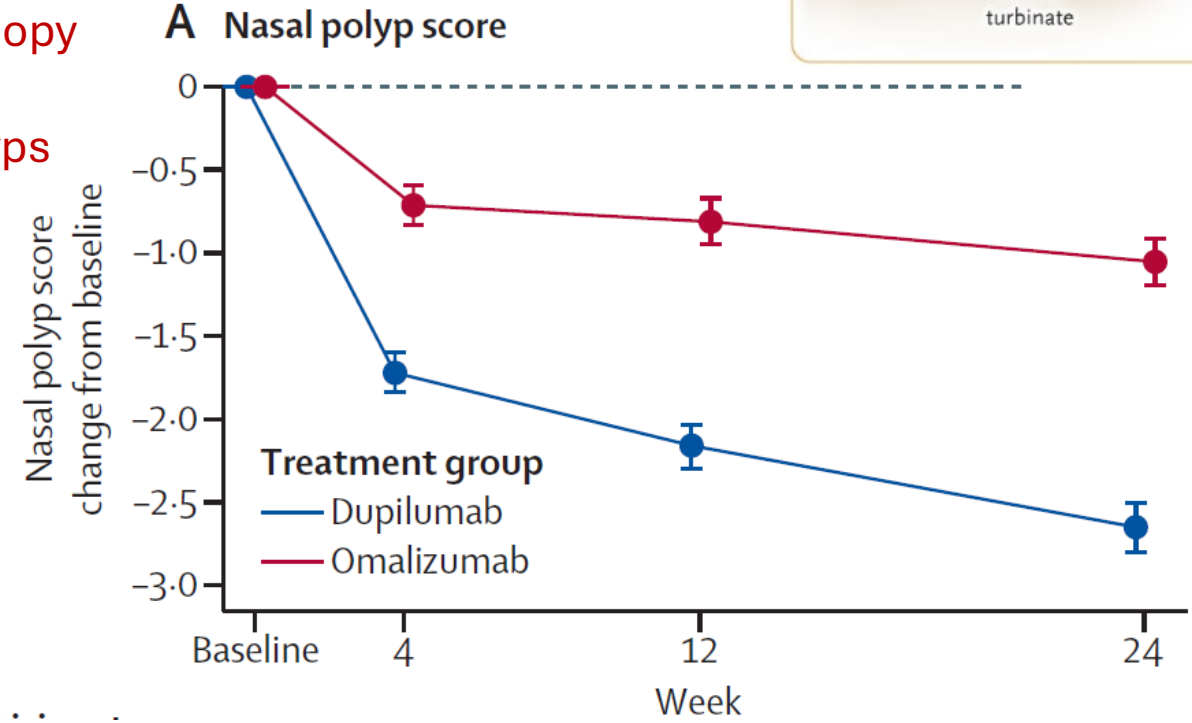
EVEREST: Polyp Size



Total Nasal Polyp Score
Measures occlusion of the nasal passages on endoscopy
0 = no polyp
8 = bilateral occlusive polyps

Δ1 = Minimal Clinically Important Difference



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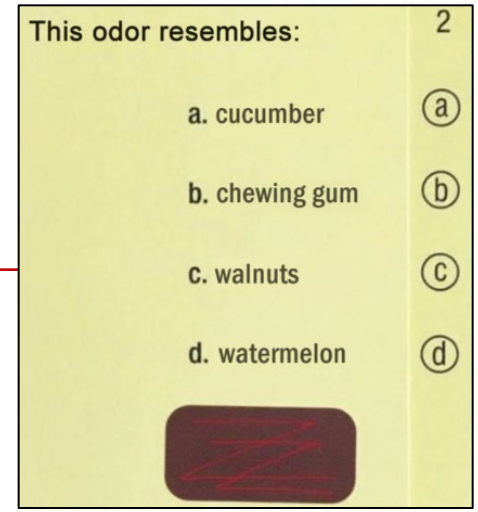
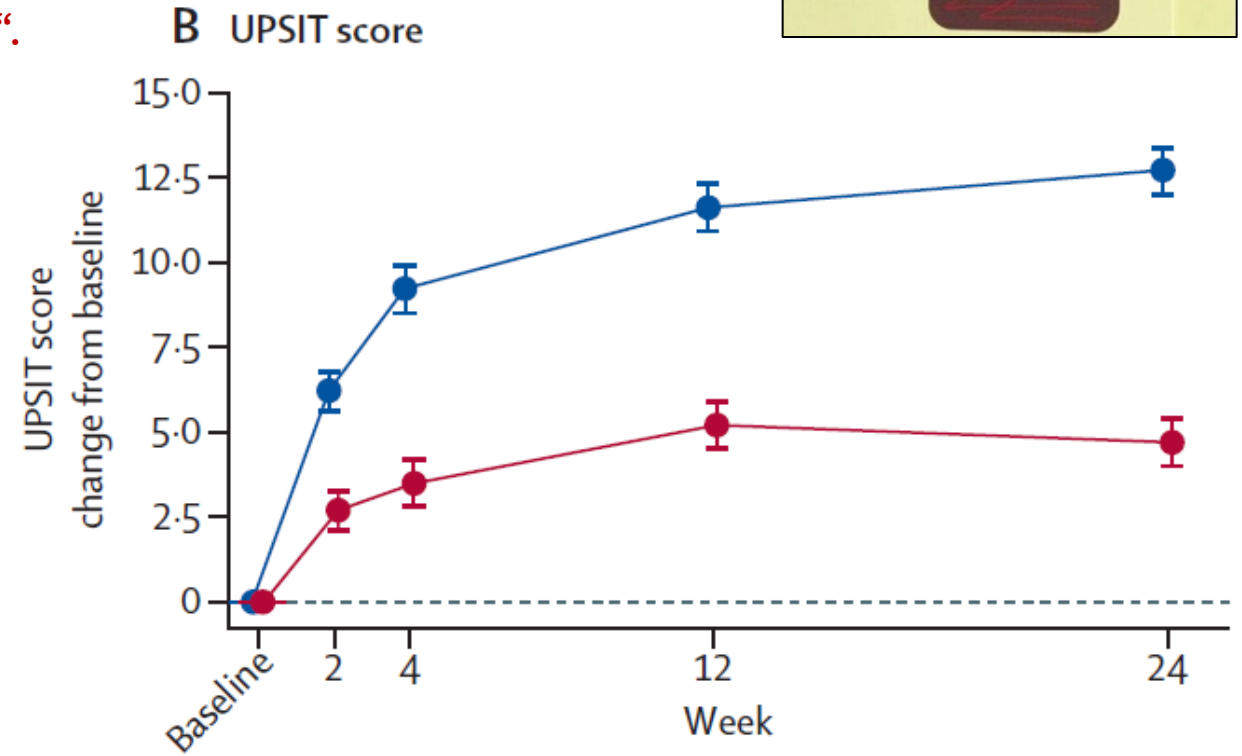
EVEREST: Smell



Upenn Smell Identification Test
measures sense of smell.
40-item, "scratch-and-sniff".
<18 = anosmia
>34 = normosmia
40 = perfect

Δ4 = Minimal Clinically Important Difference

Avg patient in omalizumab group was still anosmic.



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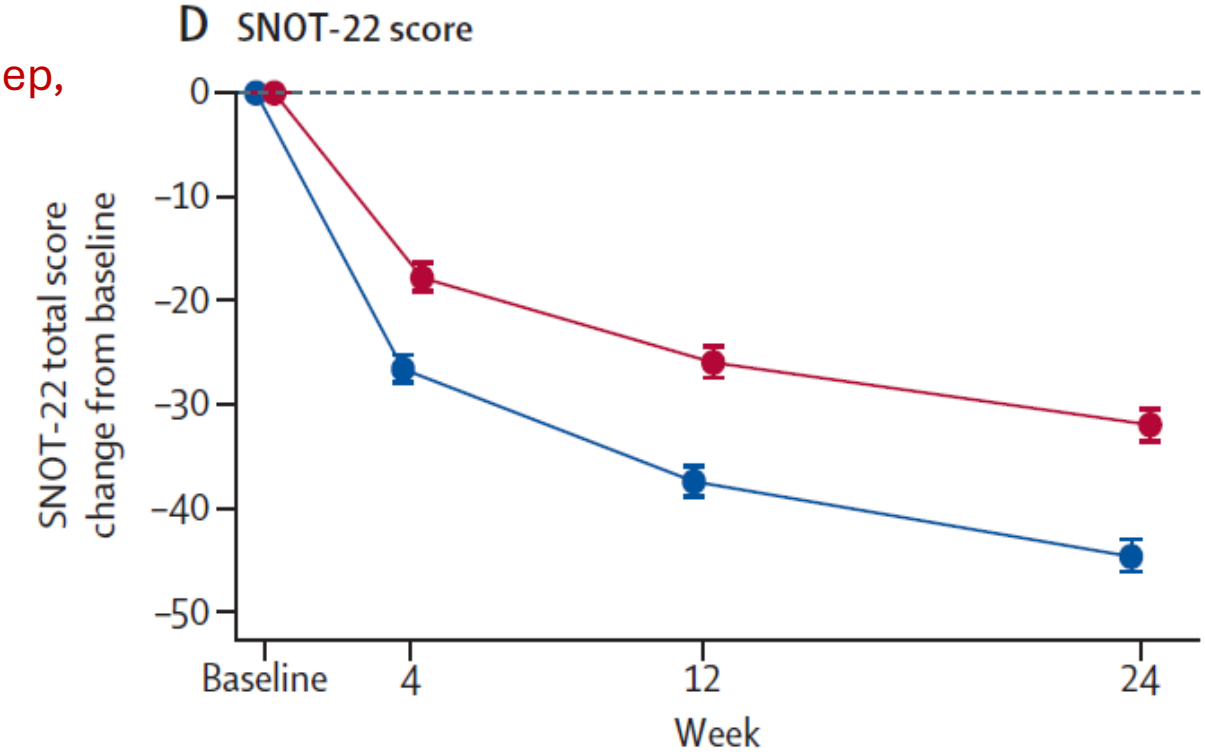
EVEREST: Disease Burden

Sinonasal outcome test
Questionaire to measures disease burden (nasal sx, sleep, well being)
0 = excellent
50 = severe impact
110 = worst

Δ **9 points** is the Minimal Clinically Important Difference



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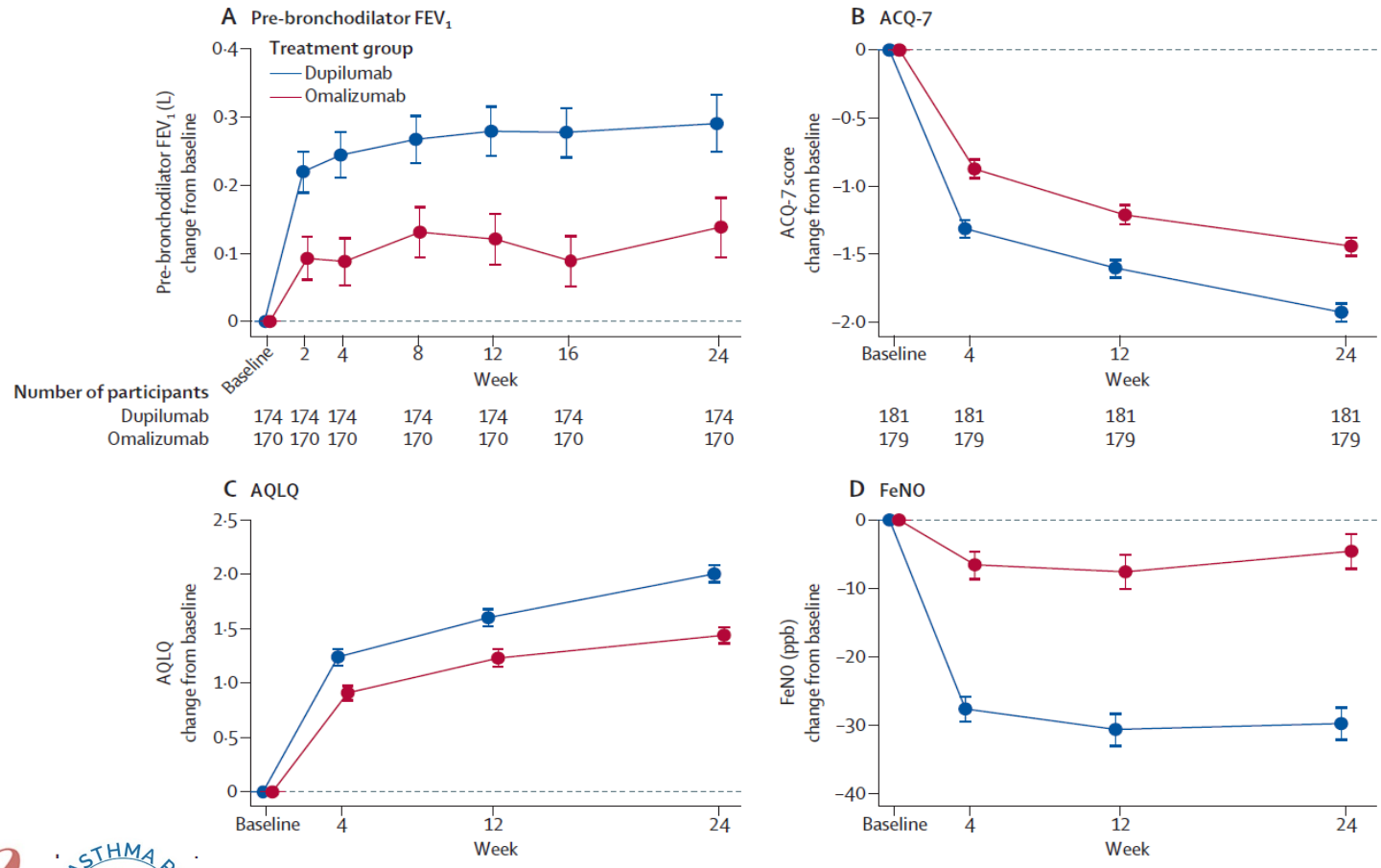
EVEREST: Asthma Outcomes



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EVEREST: Take Home

- Dupilumab was significantly better than Omalizumab in every primary and secondary outcome.
- In nearly all outcomes, the difference was > the minimal clinically important difference.
- Dupilumab was superior across age, sex, bodyweight, age of onset of asthma, smoking history.

EVEREST: Take Home

- Dupilumab was superior in patients of any severity/endotype: ICS level, NSAID-ERD, prior sinus surgery, asthma exacerbations in the year before the study, use of systemic OCS in the 2 years before the study.
- Dupilumab was superior in UPSIT but not total nasal polyp scores for patients with eos < 150 (9 patients) or eos <300 (70 patients).
- Dupilumab was superior irrespective of IgE level.
- There was no difference in adverse outcomes

WAYPOINT : Study Design

- RDBPCT of Tezspire for patients with CRSwNP.
- >18, CRSwNP with score of 5 or more. Active symptoms. SNOT22 ≥ 30. Prior surgery at any time and OCS in the past year.
- Excluded confounding conditions, very recent surgery (w/in 6 mos), recent biologic (5 ½ lives).
- No requirement for asthma, but ~65% of patients had co-morbid asthma.
- Tezspire 210 mg monthly or control. Followed for 52 weeks.

WAYPOINT Table 1

Lower than other study →
Lower than other study →
Lower than other study →

Similar to other study →

Similar to other study →

Similar to other study →

Table 1. Demographic and Clinical Characteristics of the Patients at Baseline.*

Characteristic	Tezepelumab (N=203)	Placebo (N=205)	Overall (N=408)
Age — yr	50.1±13.6	49.4±13.7	49.7±13.6
Male sex — no. (%)	126 (62.1)	140 (68.3)	266 (65.2)
Time since diagnosis of CRS with nasal polyps — yr	12.71±10.43	12.80±10.34	12.75±10.37
Previous nasal-polyp surgery — no. (%)	144 (70.9)	147 (71.7)	291 (71.3)
Time since last nasal-polyp surgery — yr†	7.71±6.54	7.68±6.24	7.70±6.38
Previous systemic glucocorticoid treatment for CRS with nasal polyps — no. (%)	130 (64.0)	137 (66.8)	267 (65.4)
Coexisting asthma — no. (%)‡	122 (60.1)	126 (61.5)	248 (60.8)
Coexisting NSAID-exacerbated respiratory disease — no. (%)	34 (16.7)	37 (18.0)	71 (17.4)
Blood eosinophil count			
Mean — cells/μl	357±229	359±248	358±238
Distribution — no. (%)§			
<150 cells/μl	26 (12.8)	25 (12.2)	51 (12.5)
150 to <300 cells/μl	63 (31.0)	72 (35.1)	135 (33.1)
≥300 cells/μl	112 (55.2)	106 (51.7)	218 (53.4)
Total serum IgE level — IU/ml	171.2±259.3	181.2±308.5	176.2±284.7
Endoscopic nasal-polyp score¶	6.1±1.2	6.1±1.3	6.1±1.2
Nasal-congestion score‖	2.59±0.47	2.55±0.54	2.57±0.51
Loss-of-smell score‖	2.9±0.4	2.8±0.4	2.9±0.4
SNOT-22 total score**	68.2±18.4	69.2±18.4	68.7±18.4
Lund–Mackay score††	18.9±3.7	18.5±3.9	18.7±3.8
NPSD total symptom score‡‡	16.3±4.1	16.4±4.5	16.3±4.3
Prebronchodilator FEV_1 — liters§§	2.87±0.93	2.92±0.85	2.89±0.89
Prebronchodilator FEV_1 — % of predicted normal value§§	87.2±16.7	84.4±16.1	85.8±16.4
UPSIT score¶¶	13.1±7.3	11.9±5.9	12.5±6.6
ACQ-6 score§§‖‖	1.85±1.23	1.80±1.10	1.82±1.16

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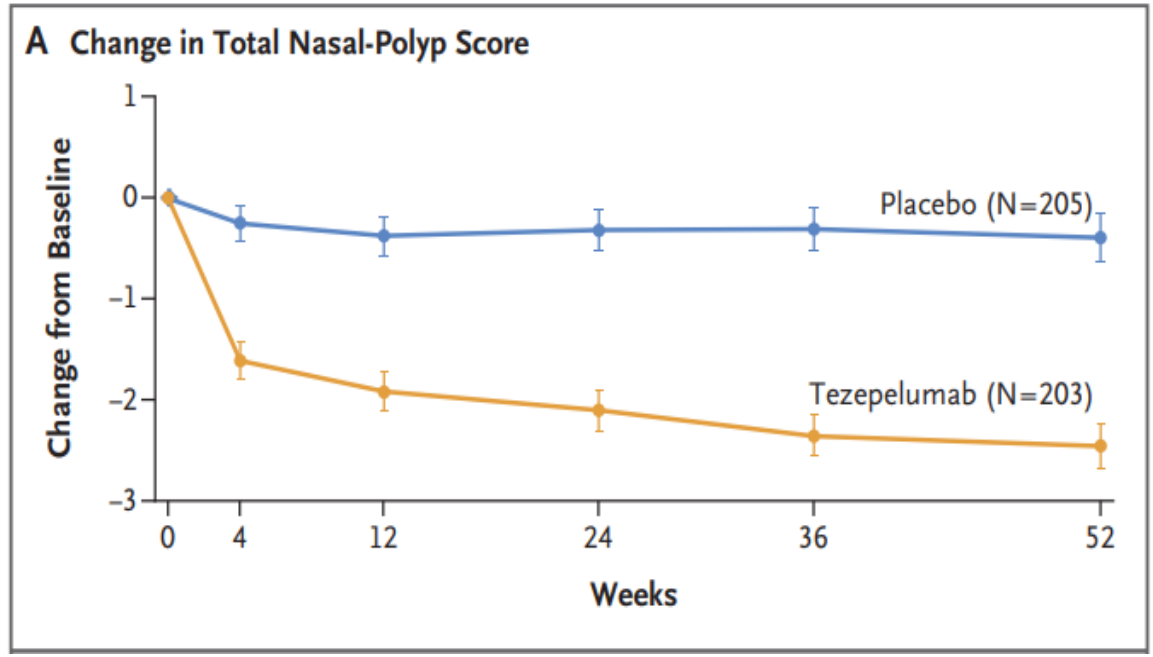
WAYPOINT: Polyp Size

Total Nasal Polyp Score
Measures occlusion of the nasal passages (endoscopy)
0 = no polyp
8 = bilateral occlusive polyps

Δ1 = Minimal Clinically Important Difference



Very similar to Dupixent

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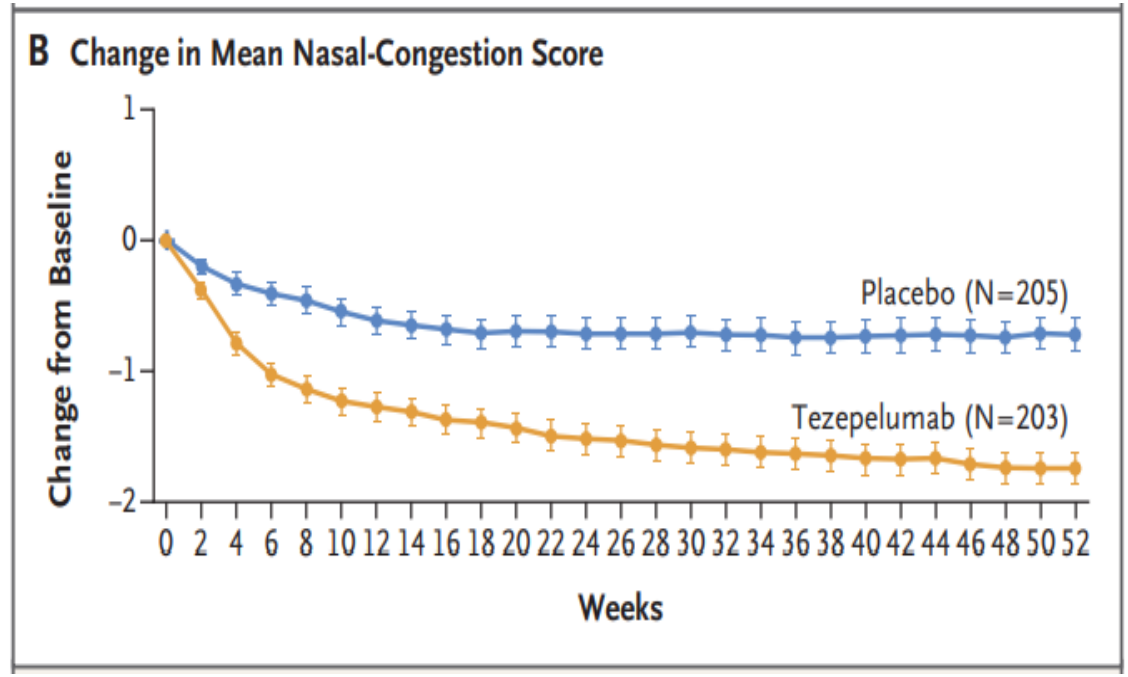
WAYPOINT: Congestion Score

Nasal Congestion Score
Symptom score over 2 wks.
Scale: 0 to 3
0 = no symptoms
3 = severe symptoms
(interfere with activities or sleep)

Δ1 = Minimal Clinically Important Difference



Very similar to Dupixent

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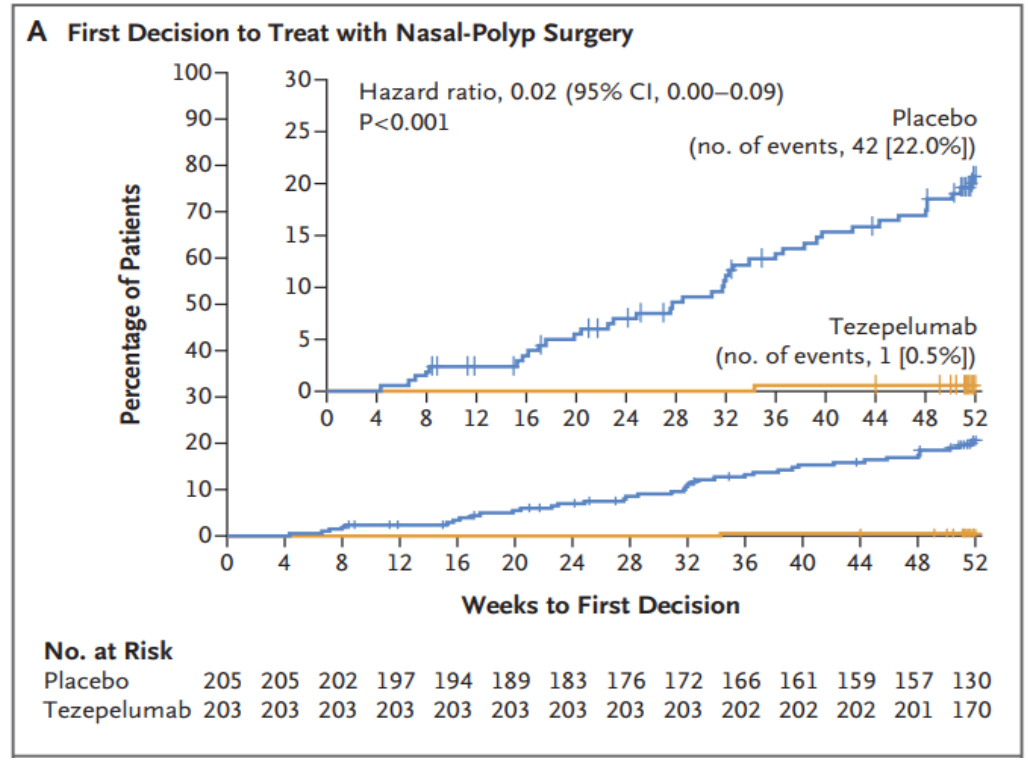
WAYPOINT: Time to Surgery

Time to elective surgery in the scope of usual clinical care.

Nasal Polyp Score ≥ 5
Nasal Congestion Score = 3



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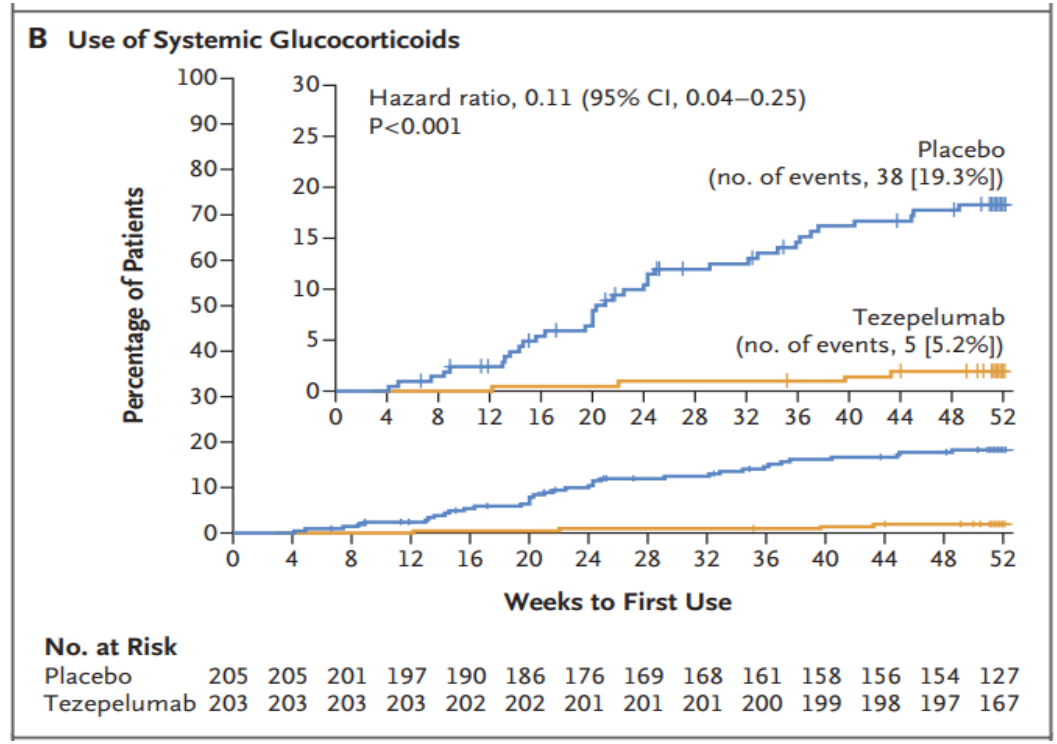
WAYPOINT: Time to Steroids

Time to elective use of oral corticosteroids in the scope of usual clinical care.

Nasal Polyp Score ≥ 5
Nasal Congestion Score = 3



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WAYPOINT: Take Home

- Tezspire reduced polyp size, nasal congestion and all other scores (loss-of-smell score, SNOT-22 total score, and total symptom score).
- Improvements were greater than the minimal clinically important difference.
- Tezspire led to > 85% reductions in surgery and oral steroids.
- Improvements were seen in all prespecified subgroups that were assessed, including in patients with a blood eos < 150.

WAYPOINT: Take Home

- Among patients with coexisting asthma, there was no apparent difference between the tezepelumab and placebo groups in the change from baseline in prebronchodilator FEV1 at week 52.
- The mean percent predicted prebronchodilator FEV1 was 87.3% in the tezepelumab group and 84.4% in the placebo group, which potentially limited improvement in prebronchodilator FEV1.

Can’t Miss Articles
Mucus Plugs

Benjamin Medoff, MD
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Disclosures of Conflicts of Interest

I have received research funding from Sanofi and Regeneron, the makers of dupilumab

Severe Asthma Pathology – Mucus Obstruction

DEATH IN ASTHMATICS

BY

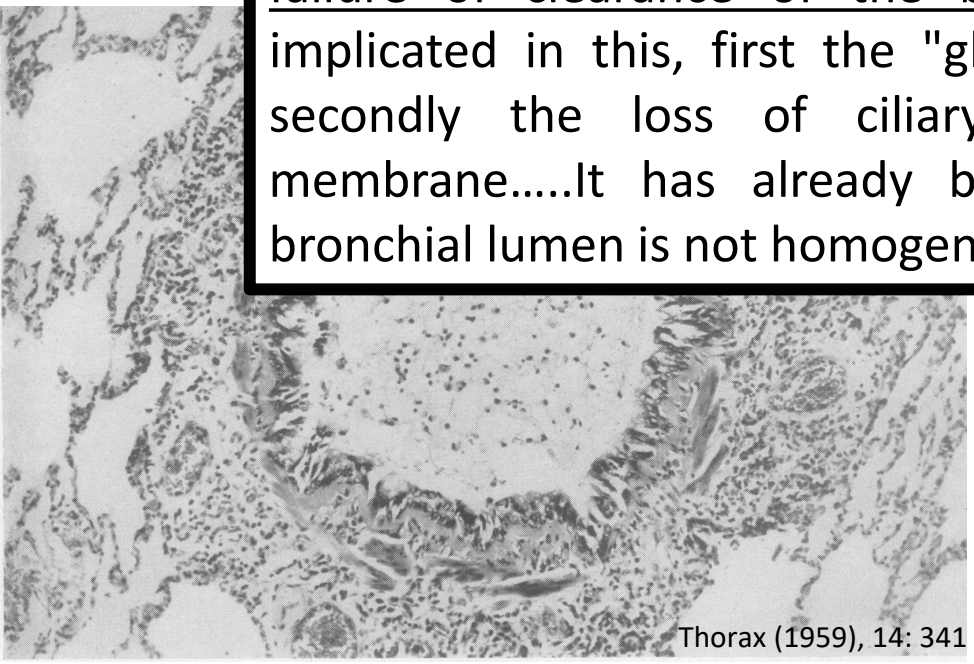
B.

From the Departments

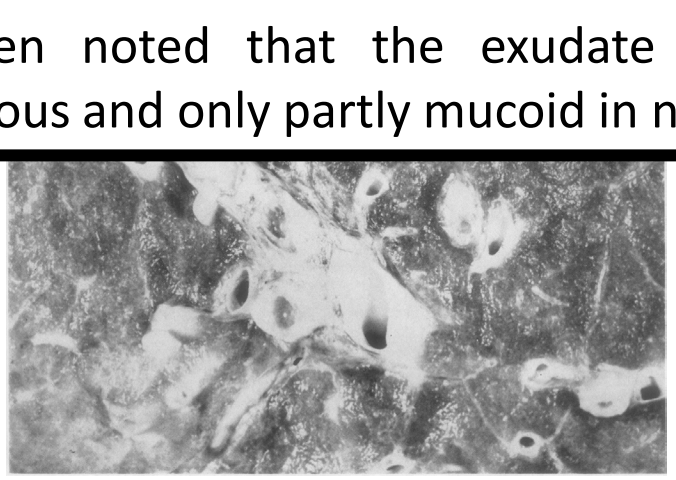
THE PATHOLOGY OF ASTHMA, WITH SPECIAL REFERENCE TO CHANGES IN THE BRONCHIAL

, Oxford

"Pathologically the outstanding feature of the asthmatic lung lies in the failure of clearance of the bronchial secretions. Two factors are implicated in this, first the "glairy" quality of the mucus itself, and secondly the loss of ciliary action in the bronchial mucous membrane.....It has already been noted that the exudate in the bronchial lumen is not homogeneous and only partly mucoid in nature."



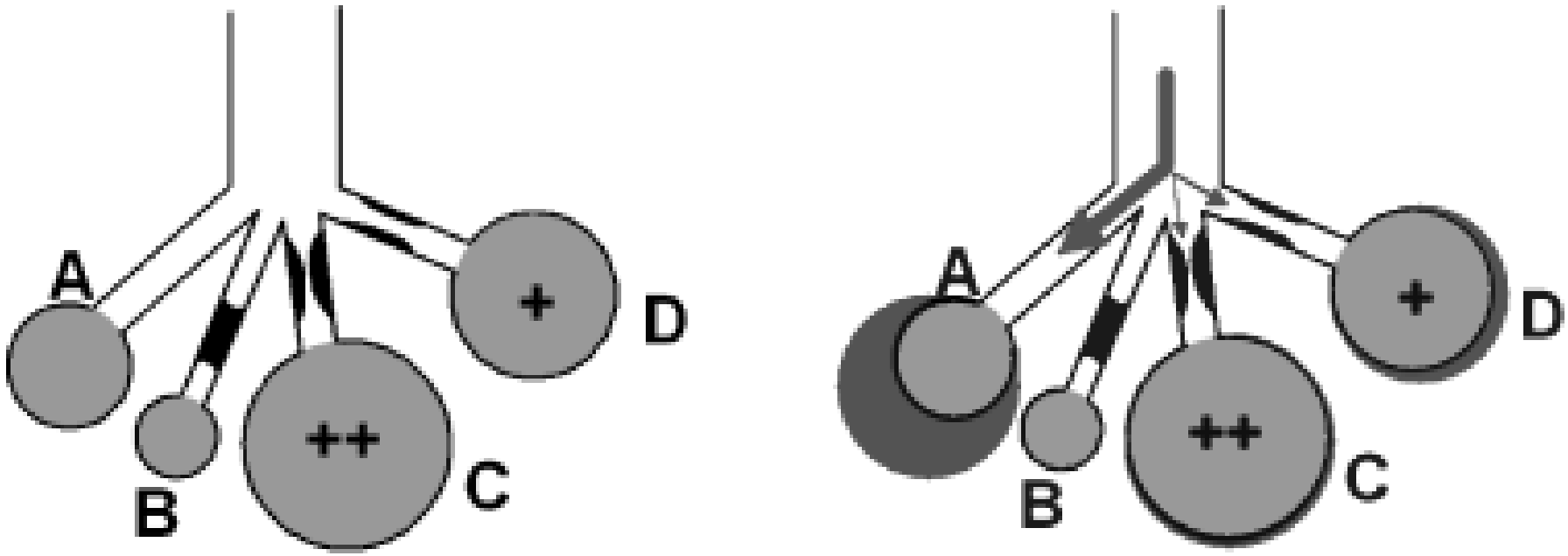
Thorax (1959), 14: 341



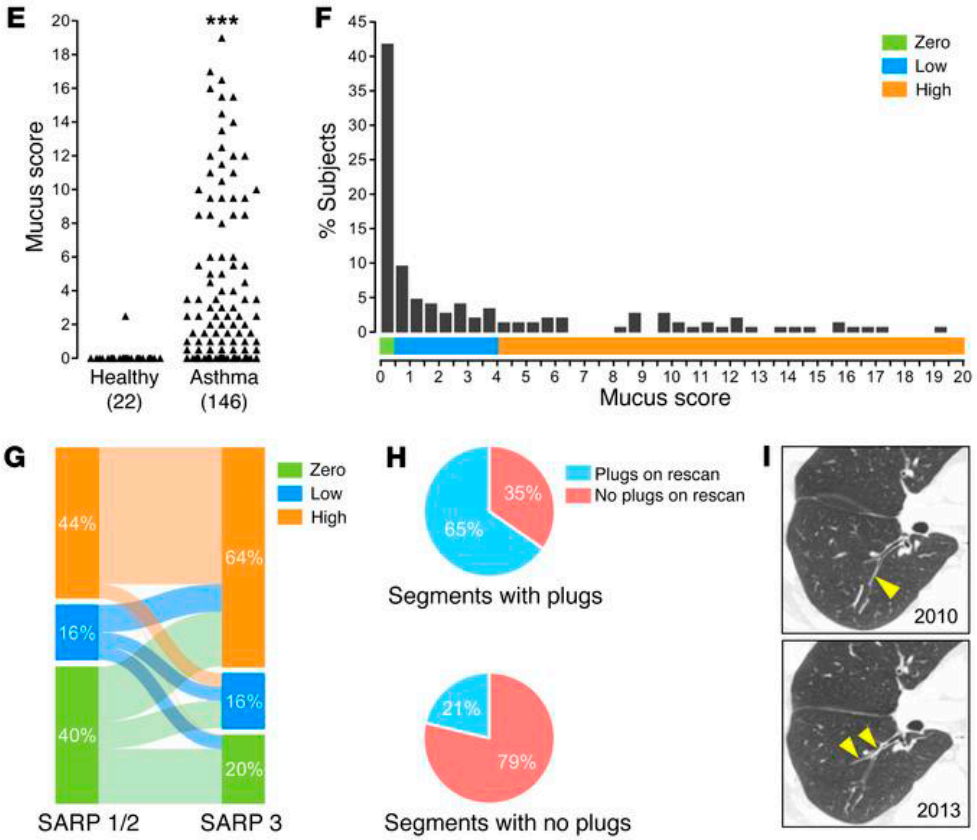
J. Clin. Path. (1960), 13, 27

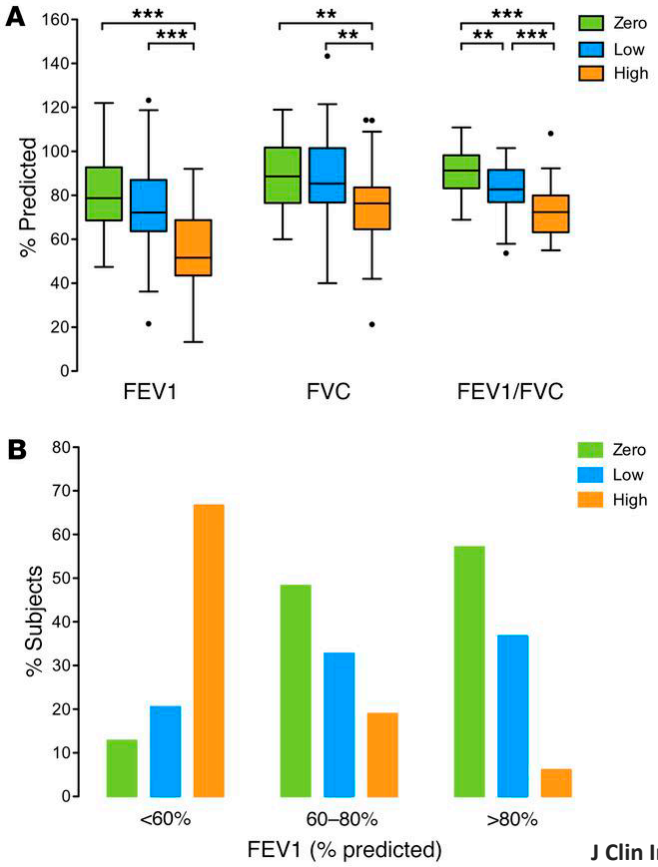
Mucus Plugging – Physiologic Implications

- Mucus Plugging => Heterogeneity:



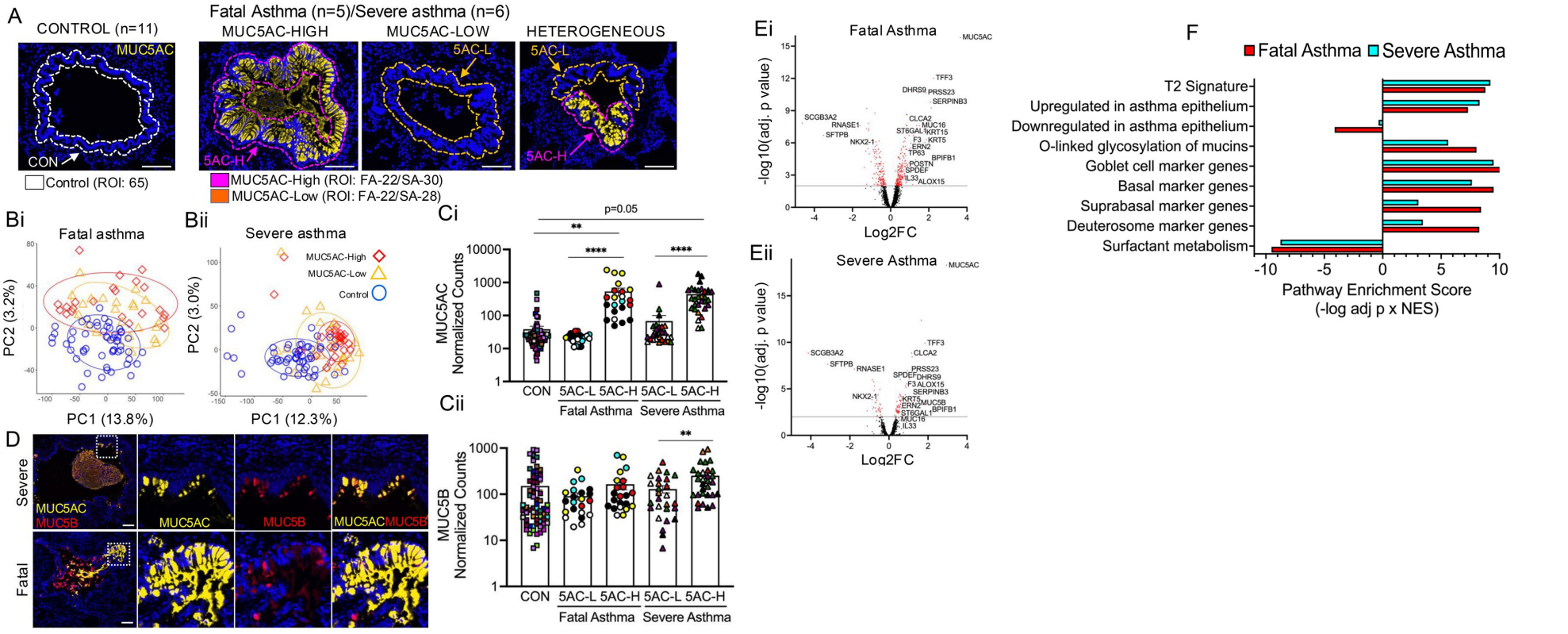
Mucus Plugging – Physiologic Implications





J Clin Invest. 2018;128(3):997

Mucus Plugging – Molecular Implications



Am J Respir Crit Care Med, Volume 212, Issue 2, February 2026, Pages 209–226, https://doi.org/10.1164/rccm.202409-1849OC

J Clin Invest DOI: 10.1172/JCI95693

Intro Summary

- Mucus plugging has long been recognized as a significant contributor to severe and fatal asthma
- Mucus plugs may cause significant airway obstruction and complicate management due to heterogeneity of ventilation
- Asthmatics with a “high mucus plug” phenotype have worse lung function
- Changes to mucus composition can affect mucociliary transport/inflammation

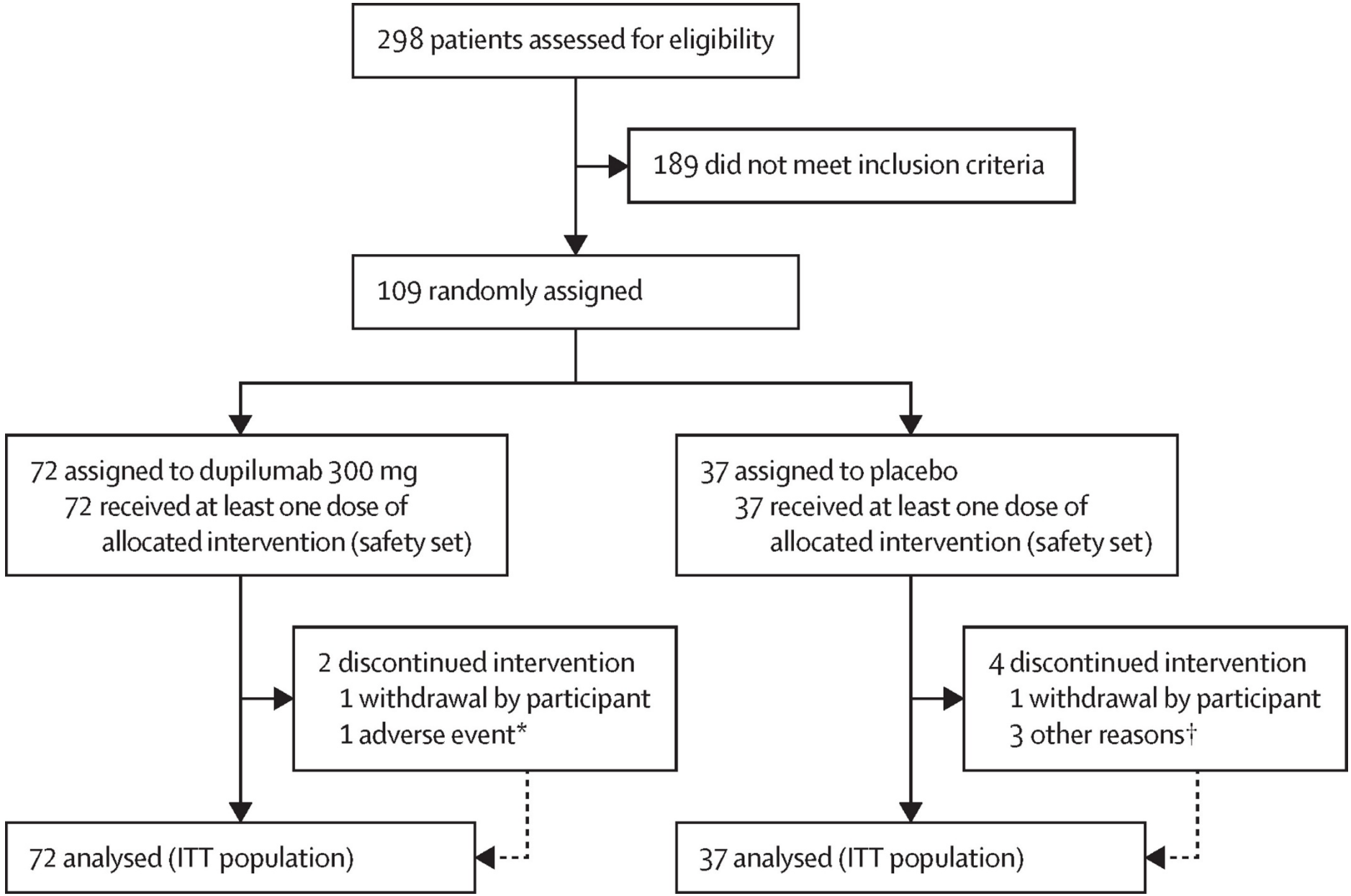
VESTIGE Trial

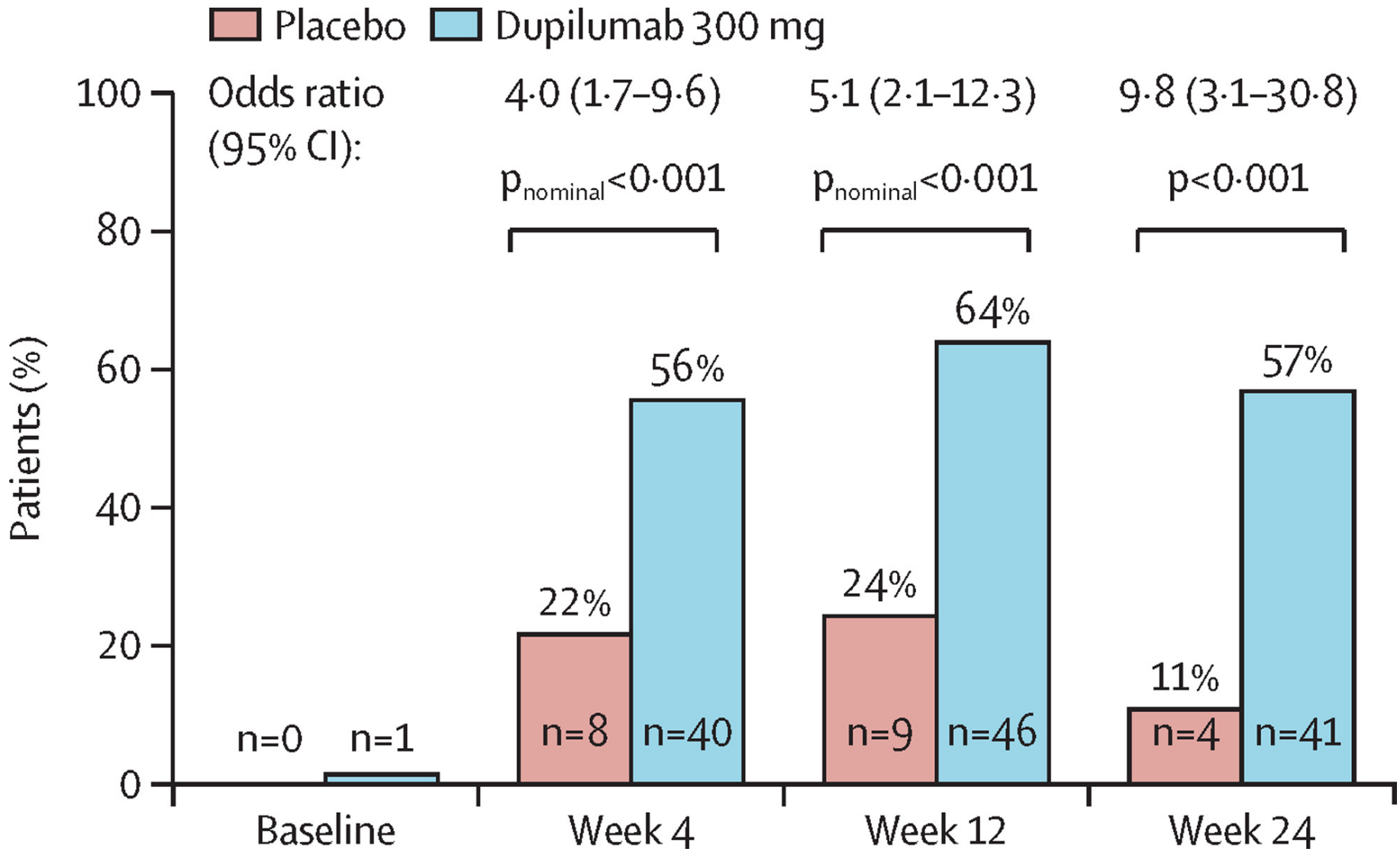
Effect of dupilumab on exhaled nitric oxide, mucus plugs, and functional respiratory imaging in patients with type 2 asthma (VESTIGE): a randomised, double-blind, placebo-controlled, phase 4 trial

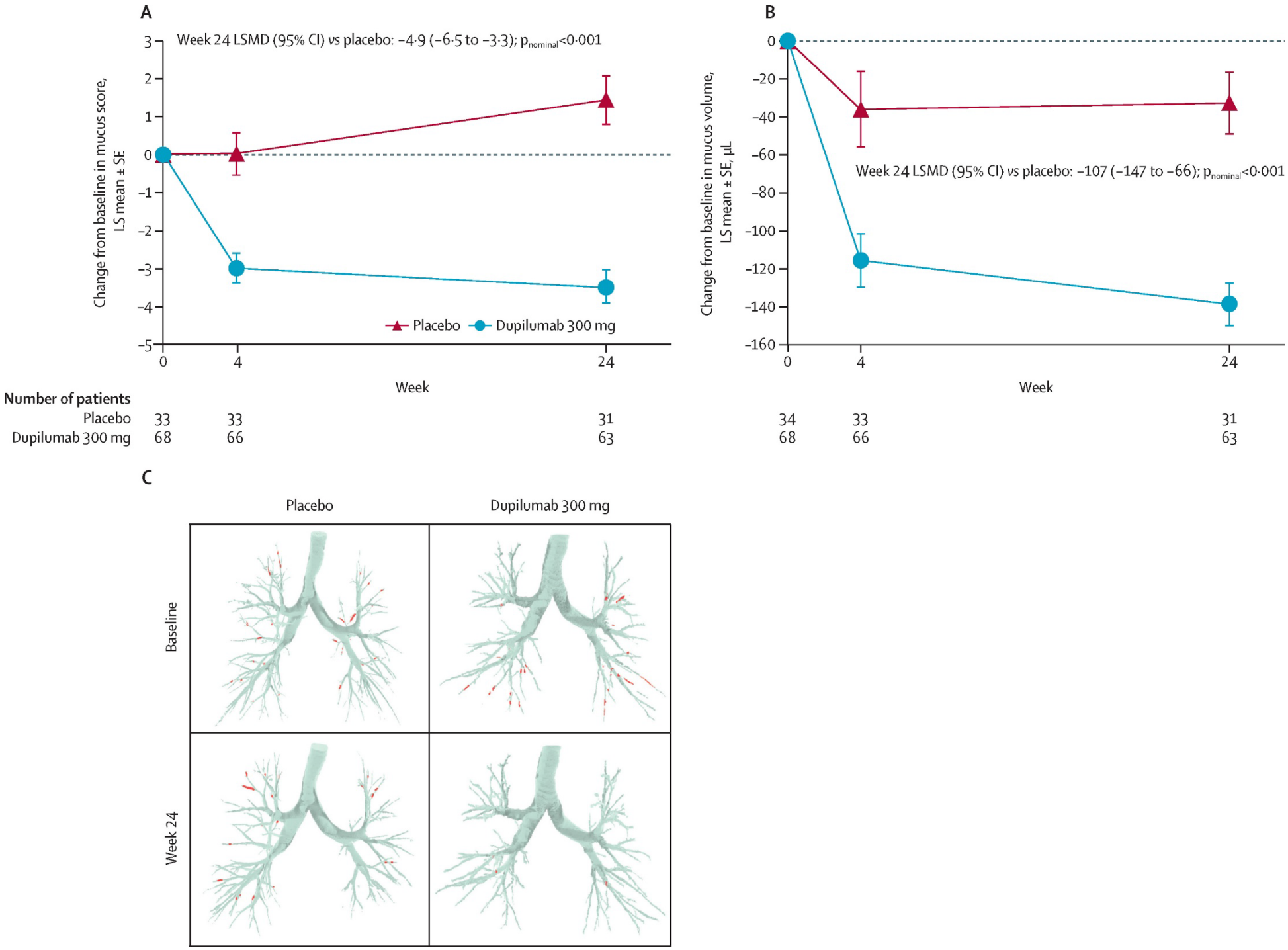
Mario Castro, Alberto Papi, Celeste Porsbjerg, Njira L Lugogo, Christopher E Brightling, Francisco-Javier González-Barcala, Arnaud Bourdin, Mykola Ostrovskyy, Maria Staevska, Pai-Chien Chou, Liliana Duca, Ana Margarida Pereira, Charles Fogarty, Rufai Nadama, Mei Zhang, Amelie Rodrigues, Xavier Soler, Harry J Sacks, Yamo Deniz, Paul J Rowe, Lucía de Prado Gómez, Juby A Jacob-Nara

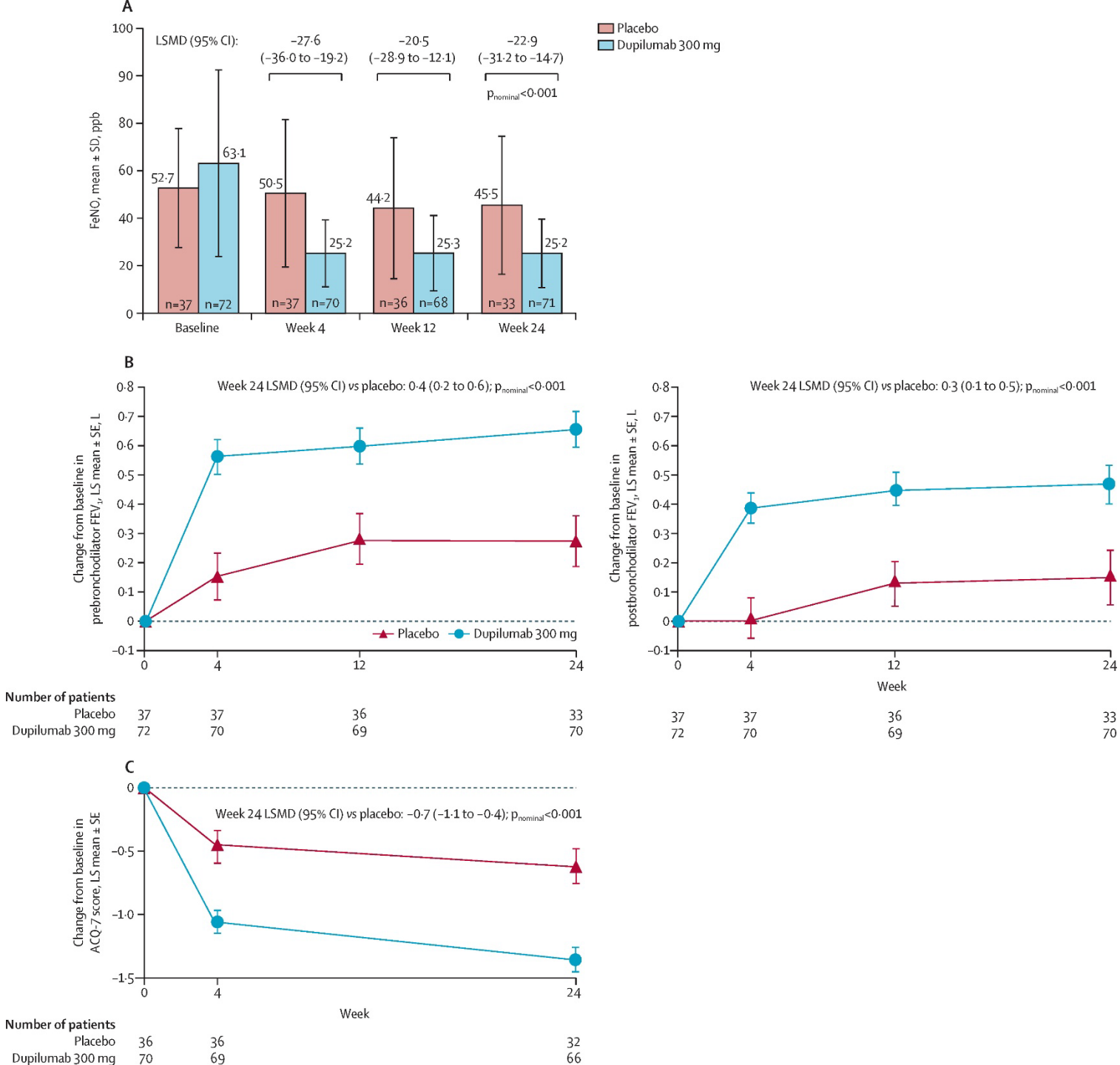
- Randomized, double-blind, placebo-controlled, phase 4 trial done at 72 research sites or academic centers in 14 countries.
- Adult patients (aged 18–70 years) with uncontrolled, moderate-to-severe type 2 asthma (blood eosinophil count ≥300 cells/µL and fractional exhaled nitric oxide [FeNO] ≥25) being treated with medium-dose to high-dose ICS combined with other controller medications.
- Patients were randomly assigned (2:1) to receive add-on dupilumab 300 mg subcutaneously once every 2 weeks or volume-matched placebo up to week 24.
- The primary endpoints were the proportion of patients with a FeNO concentration below 25 ppb at week 24, and the percentage change from baseline to week 24 in airway volumes

Lancet Resp Med Volume 13, Issue 3 p208-220


298 patients assessed for eligibility
189 did not meet inclusion criteria
109 randomly assigned
72 assigned to dupilumab 300 mg
72 received at least one dose of allocated intervention (safety set)
37 assigned to placebo
37 received at least one dose of allocated intervention (safety set)
2 discontinued intervention
1 withdrawal by participant
1 adverse event*
4 discontinued intervention
1 withdrawal by participant
3 other reasons†
72 analysed (ITT population)
37 analysed (ITT population)


Placebo
Dupilumab 300 mg
Odds ratio (95% CI):
4·0 (1·7–9·6)
5·1 (2·1–12·3)
9·8 (3·1–30·8)
p_nominal<0·001
p_nominal<0·001
p<0·001
Patients (%)
100
80
60
40
20
0
n=0
n=1
22%
n=8
56%
n=40
24%
n=9
64%
n=46
11%
n=4
57%
n=41
Baseline
Week 4
Week 12
Week 24


A
Week 24 LSMD (95% CI) vs placebo: −4·9 (−6·5 to −3·3); p nominal <0·001
Change from baseline in mucus score, LS mean ± SE
3
2
1
0
−1
−2
−3
−4
−5
Placebo
Dupilumab 300 mg
0
4
24
Week
Number of patients
Placebo 33 33 31
Dupilumab 300 mg 68 66 63
B
Change from baseline in mucus volume, LS mean ± SE, µL
0
−20
−40
−60
−80
−100
−120
−140
−160
Week 24 LSMD (95% CI) vs placebo: −107 (−147 to −66); p nominal <0·001
0
4
24
Week
34 33 31
68 66 63
C
Placebo
Dupilumab 300 mg
Baseline
Week 24


A
LSMD (95% CI):
−27·6 (−36·0 to −19·2)
−20·5 (−28·9 to −12·1)
−22·9 (−31·2 to −14·7)
p_nominal<0·001
Placebo
Dupilumab 300 mg
FeNO, mean ± SD, ppb
52·7
63·1
50·5
25·2
44·2
25·3
45·5
25·2
n=37
n=72
n=37
n=70
n=36
n=68
n=33
n=71
Baseline
Week 4
Week 12
Week 24
B
Week 24 LSMD (95% CI) vs placebo: 0·4 (0·2 to 0·6); p_nominal<0·001
Change from baseline in prebronchodilator FEV1, LS mean ± SE, L
Placebo
Dupilumab 300 mg
Week 24 LSMD (95% CI) vs placebo: 0·3 (0·1 to 0·5); p_nominal<0·001
Change from baseline in postbronchodilator FEV1, LS mean ± SE, L
Week
Number of patients
Placebo 37 37 36 33
Dupilumab 300 mg 72 70 69 70
C
Week 24 LSMD (95% CI) vs placebo: −0·7 (−1·1 to −0·4); p_nominal<0·001
Change from baseline in ACQ-7 score, LS mean ± SE
Week
Number of patients
Placebo 36 36 32
Dupilumab 300 mg 70 69 66

CASCADE Trial

NEJM Evidence

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ORIGINAL ARTICLE

Tezepelumab and Mucus Plugs in Patients with Moderate-to-Severe Asthma

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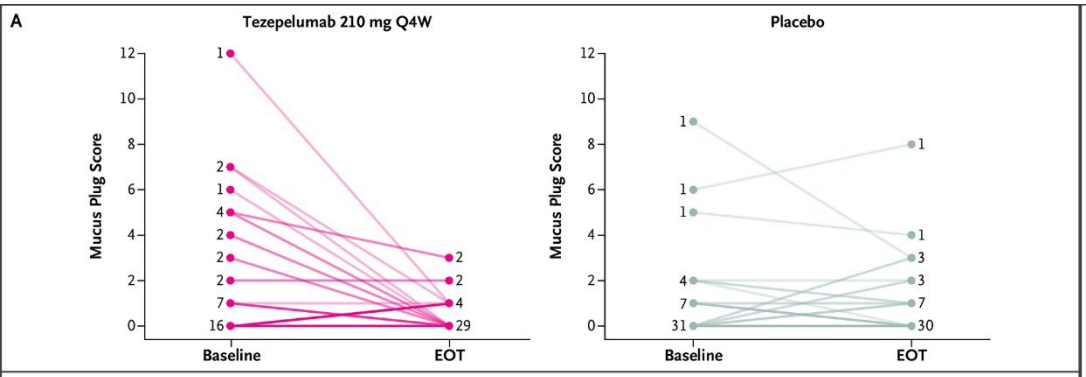
- Randomized, double-blind, placebo-controlled phase 2 trial at 27 centers.
- Patients (aged 18 to 75 years old) were randomly assigned 1:1 to 210mg tezepelumab or placebo every 4 weeks subcutaneously for at least 28 weeks.
- Moderate to high dose ICS, BD reversibility on PFTs, excluded if recent exacerbation.
- 30% had blood eosinophils less than 300 cells/ul, 40% had eosinophils >300 cells/ul
- An expert radiologist, blinded to treatment groups and time points, objectively scored 18 lung segments for the presence of mucus plugs in CT scans obtained before and after treatment.
- Bronchoscopies performed at baseline and end of treatment (EOT)

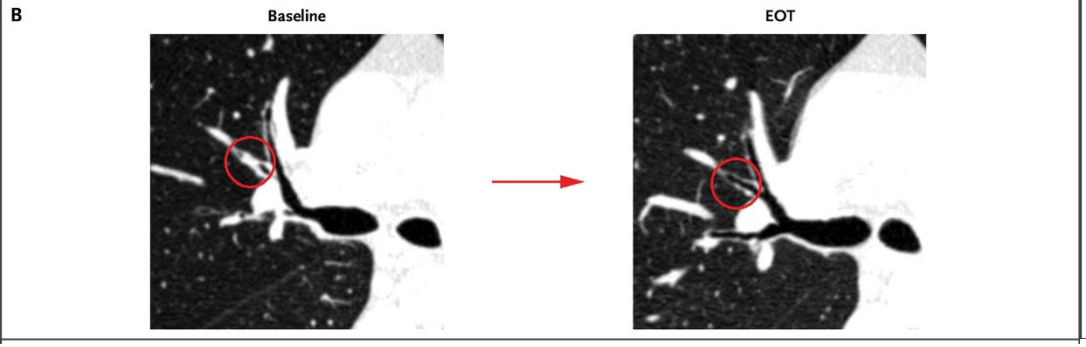
Baseline Mucus Plug Scores

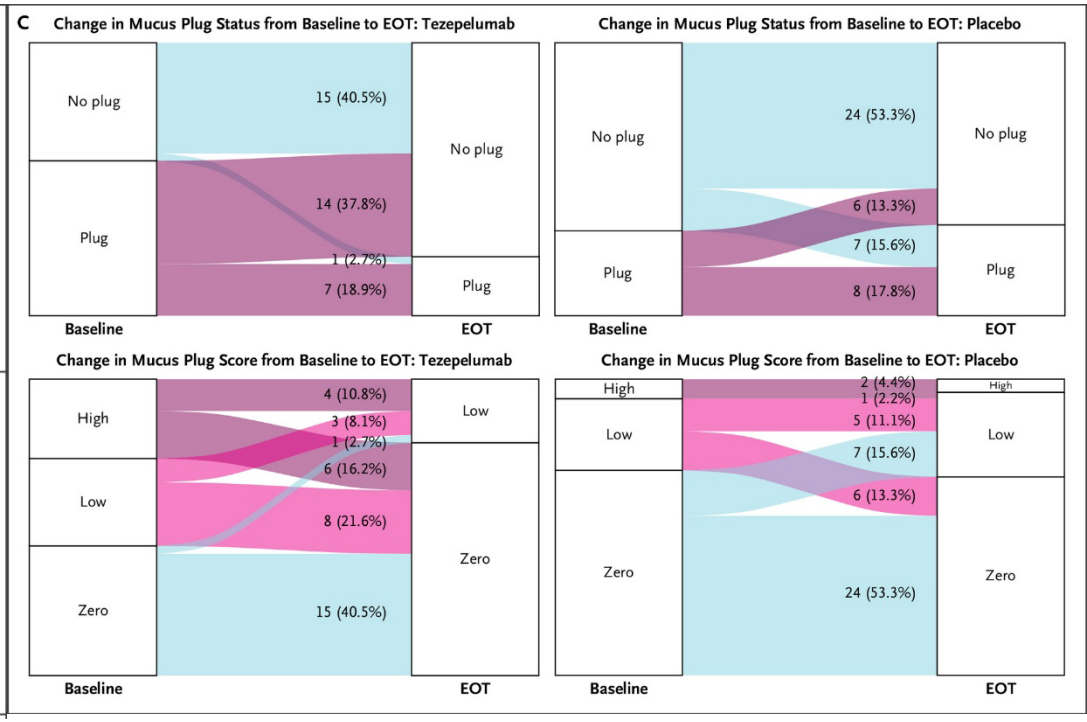
Table 2. Baseline Mucus Plug Scores in Patients Grouped According to Baseline BEC and FeNO Level (Modified FAS).*

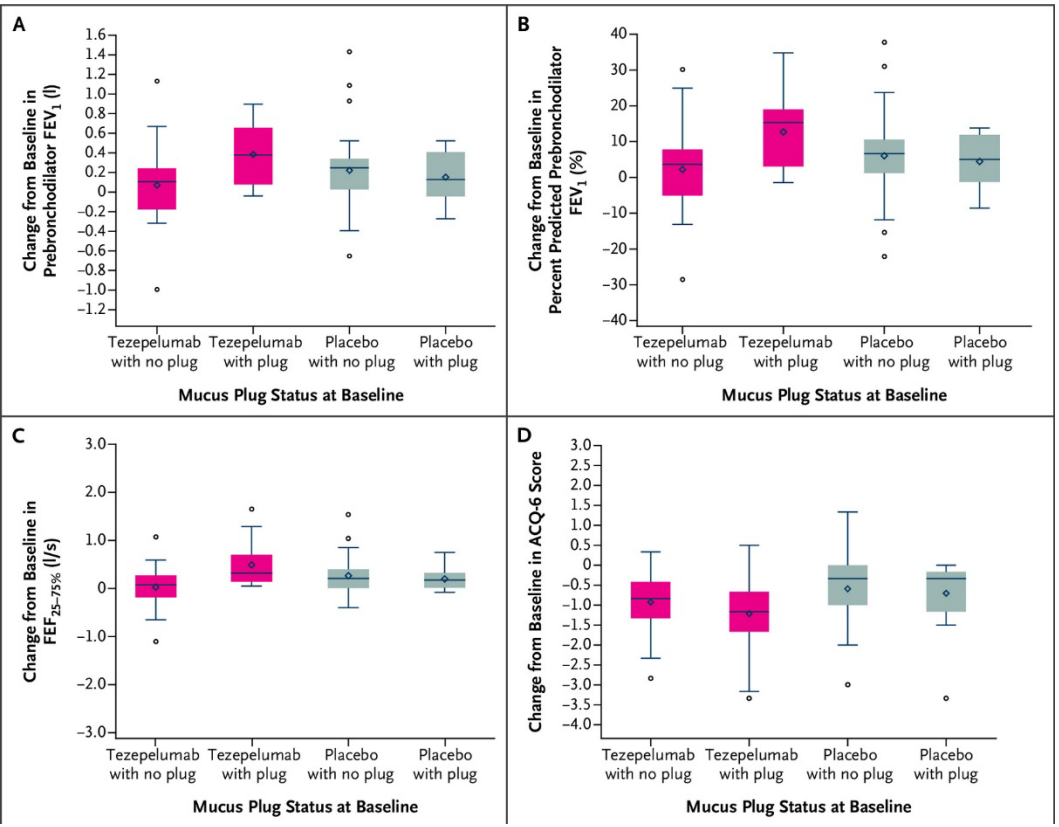
Baseline Mucus Plug Score	BEC <300 Cells/μl and FeNO <25 ppb (n=34)	BEC ≥300 Cells/μl and FeNO <25 ppb (n=16)	BEC <300 Cells/μl and FeNO ≥25 ppb (n=24)	BEC ≥300 Cells/μl and FeNO ≥25 ppb (n=13)
Baseline mucus plug score — mean (min, max)	0.53 (0, 5)	1.38 (0, 6)	1.29 (0, 9)	3.46 (0, 12)
Baseline mucus plug score — n (%)				
No mucus plugs (score of 0)	24 (70.6)	8 (50.0)	13 (54.2)	5 (38.5)
Low (score of 1–3)	8 (23.5)	6 (37.5)	8 (33.3)	2 (15.4)
High (score of >3)	2 (5.9)	2 (12.5)	3 (12.5)	6 (46.2)
With mucus plugs (score of ≥1)	10 (29.4)	8 (50.0)	11 (45.8)	8 (61.5)

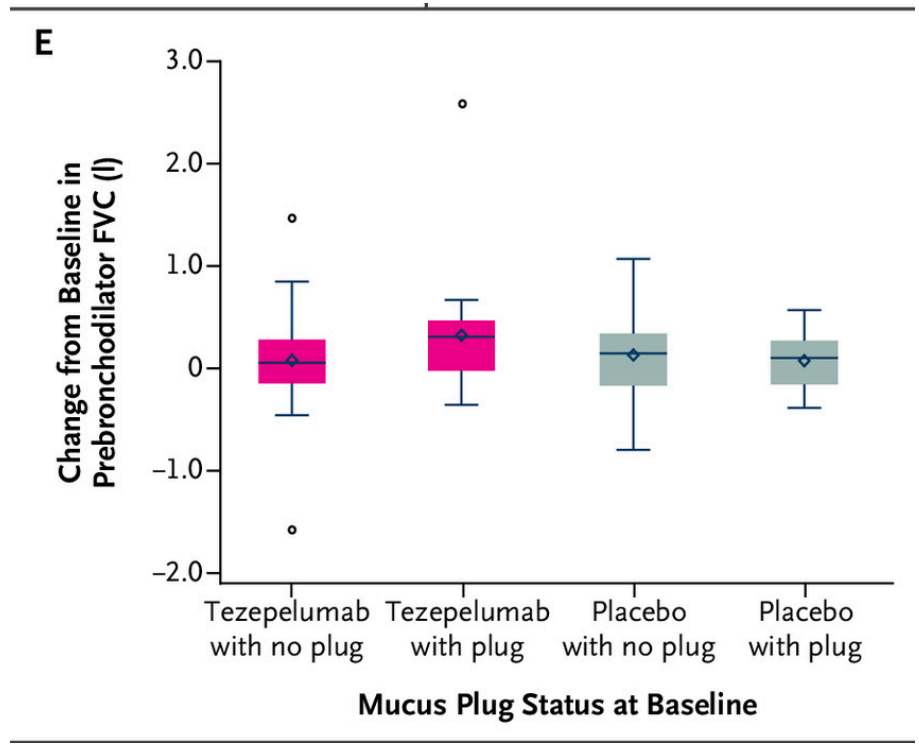
* BEC denotes blood eosinophil count; FAS, full analysis set; FeNO, fractional exhaled nitric oxide; max, maximum; and min, minimum.


A
Tezepelumab 210 mg Q4W
Placebo
Mucus Plug Score
12
10
8
6
4
2
0
Baseline
EOT
1
2
1
4
2
2
2
7
16
2
2
4
29
1
1
1
4
7
31
1
1
3
3
7
30


B
Baseline
EOT


C
Change in Mucus Plug Status from Baseline to EOT: Tezepelumab
No plug
Plug
15 (40.5%)
14 (37.8%)
1 (2.7%)
7 (18.9%)
No plug
Plug
Baseline
EOT
Change in Mucus Plug Status from Baseline to EOT: Placebo
No plug
Plug
24 (53.3%)
6 (13.3%)
7 (15.6%)
8 (17.8%)
No plug
Plug
Baseline
EOT
Change in Mucus Plug Score from Baseline to EOT: Tezepelumab
High
Low
Zero
4 (10.8%)
3 (8.1%)
1 (2.7%)
6 (16.2%)
8 (21.6%)
15 (40.5%)
Low
Zero
Baseline
EOT
Change in Mucus Plug Score from Baseline to EOT: Placebo
High
Low
Zero
2 (4.4%)
1 (2.2%)
5 (11.1%)
7 (15.6%)
6 (13.3%)
24 (53.3%)
High
Low
Zero
Baseline
EOT


A
Change from Baseline in Prebronchodilator FEV1 (l)
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
Tezepelumab with no plug
Tezepelumab with plug
Placebo with no plug
Placebo with plug
Mucus Plug Status at Baseline
B
Change from Baseline in Percent Predicted Prebronchodilator FEV1 (%)
40
30
20
10
0
−10
−20
−30
−40
Tezepelumab with no plug
Tezepelumab with plug
Placebo with no plug
Placebo with plug
Mucus Plug Status at Baseline
C
Change from Baseline in FEF25–75% (l/s)
3.0
2.0
1.0
0
−1.0
−2.0
−3.0
Tezepelumab with no plug
Tezepelumab with plug
Placebo with no plug
Placebo with plug
Mucus Plug Status at Baseline
D
Change from Baseline in ACQ-6 Score
3.0
2.5
2.0
1.5
1.0
0.5
0
−0.5
−1.0
−1.5
−2.0
−2.5
−3.0
−3.5
−4.0
Tezepelumab with no plug
Tezepelumab with plug
Placebo with no plug
Placebo with plug
Mucus Plug Status at Baseline


E
Change from Baseline in Prebronchodilator FVC (l)
3.0
2.0
1.0
0
−1.0
−2.0
Tezepelumab with no plug
Tezepelumab with plug
Placebo with no plug
Placebo with plug
Mucus Plug Status at Baseline

Take Home

- Both dupilumab and tezepulimab are effective agents to reduce mucus plugging in asthmatics
- Mucus plugs correlate positively with levels of type 2 inflammatory biomarkers and negatively with lung function measures
- Dupilumab reduced airway inflammation and mucus plugging, and improved airway volume and flow, corresponding to improved lung function and asthma control.
- Tezepelumab reduced mucus plug scores, which correlated with improvements in lung function and reductions in blood eosinophil count and levels of eosinophil-derived neurotoxin.
- These studies highlight the potential of mucus plug scores to assess disease severity and evaluate therapeutic responses in moderate-to-severe type 2 asthma.

Mass General Brigham Asthma Center

SEVERE ASTHMA PROGRAM

The Team

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