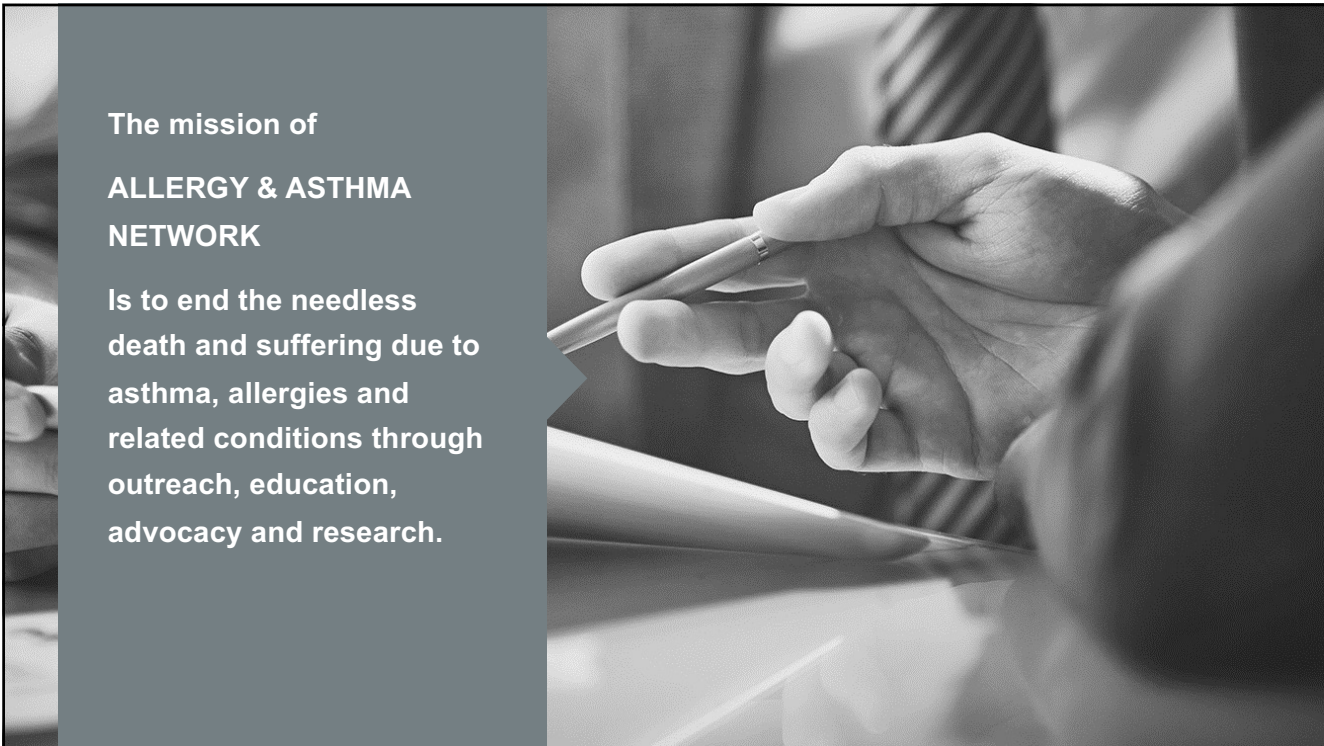




Asthma & COPD: **Two Diseases or a Spectrum of One?**

Dr. Vickram Tejwani

1



The mission of
**ALLERGY & ASTHMA
NETWORK**

Is to end the needless
death and suffering due to
asthma, allergies and
related conditions through
outreach, education,
advocacy and research.

2



Vickram Tejawani, MD

Pulmonary Medicine, Cleveland Clinic



- Assistant Professor at the Cleveland Clinic Lerner College of Medicine
- Physician in the Cleveland Clinic asthma and COPD centers following a clinical and research fellowship at Johns Hopkins University
- Active scientific investigator in asthma and COPD

3

Today's Program

- 01** | Historical perspective and definitions
- 02** | Relevance
- 03** | Practical pearls and future directions

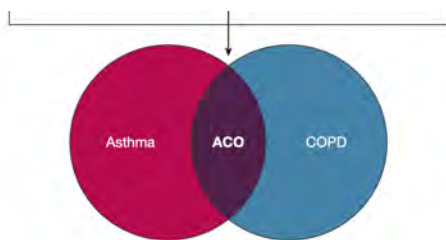


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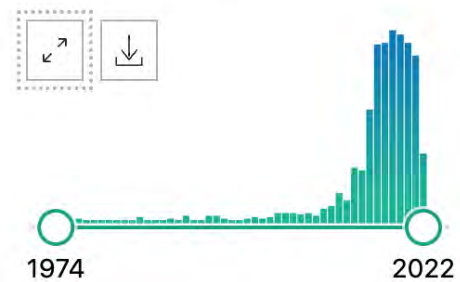
5

The Dutch Hypothesis (1961)



Results for “asthma COPD overlap”

RESULTS BY YEAR



Leung, et al. *CHEST*. 2022

6

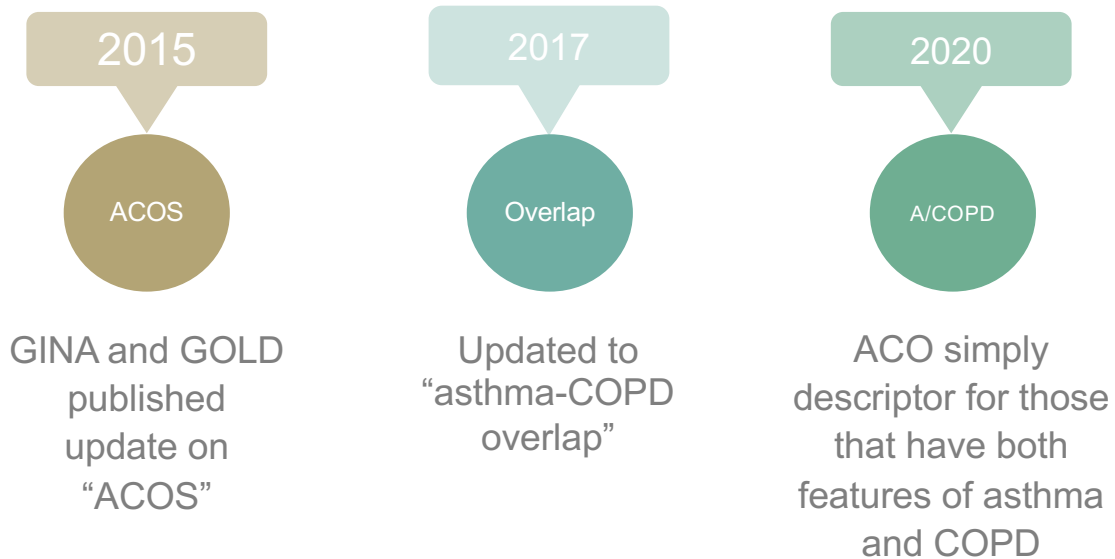
Implications are limited by heterogenous definitions

Source	Diagnosis of ACO	Major Criteria	Minor Criteria
GesEPOC/SEPAR Consensus Guideline ^{1,2} (2012)	2 major criteria <u>OR</u> 1 major <u>AND</u> 2 minor criteria	1. Very positive BDR (increase in FEV ₁ of $\geq 15\%$ and of ≥ 400 mL) 2. Eosinophilia in sputum 3. Personal history of asthma before of 40 y of age	1. High total IgE 2. Personal history of atopy 3. Positive BDR (increase in FEV ₁ of $\geq 12\%$ and of ≥ 200 mL) on ≥ 2 occasions
Louie et al ¹⁴ (2013)	2 major criteria <u>AND</u> 2 minor criteria	1. Physician diagnosis of asthma and COPD 2. History or evidence of atopy 3. Elevated total IgE 4. Postbronchodilator FEV ₁ of $< 80\%$ predicted and FEV ₁ to FVC ratio of $< 70\%$ 5. Age ≥ 40 y 6. Smoking history > 10 pack-years	1. $\geq 15\%$ increase in post-bronchodilator FEV ₁ 2. $\geq 12\%$ and ≥ 200 mL increase in postbronchodilator FEV ₁
Czech guidelines ¹⁵ (2013)	Diagnosis of COPD <u>AND</u> 2 major criteria <u>OR</u> 1 major <u>AND</u> 2 minor criteria	1. Strong BDR positivity (FEV ₁ of $> 15\%$ and of > 400 mL) 2. BCT positivity 3. FENO of ≥ 45 -50 ppb, elevated sputum eosinophil of $\geq 3\%$, or both 4. History of asthma	1. Significant BDR (FEV ₁ of $> 12\%$ and of > 200 mL) 2. Elevated total IgE 3. History of atopy
Menezes et al ¹⁶ (2014)	Both major criteria	1. Postbronchodilator FEV ₁ to FVC ratio of < 0.7 2. Asthma, defined as wheezing in the last 12 mo plus BDR in FEV ₁ or FVC of 200 mL and 12%, or a medical diagnosis of asthma	—
Finnish guidelines ¹⁷ (2015)	2 major criteria <u>OR</u> 1 major <u>AND</u> 2 minor criteria	1. Significant BDR (FEV ₁ of $> 15\%$ and of > 400 mL) 2. Sputum eosinophilia or elevated (> 50 ppb) exhaled NO 3. Previous asthma symptoms (starting at age < 40 y)	1. Elevated total IgE 2. Atopy 3. Repeated significant BDR (FEV ₁ of $> 12\%$ and of > 200 mL) 4. PEF follow-up typical to asthma
Sin et al ¹⁸ (2016)	3 major criteria <u>AND</u> 1 minor criterion	1. Persistent airflow limitation (postbronchodilator FEV ₁ to FVC ratio of < 0.7 or LLN in patients age ≥ 40 y) 2. At least 10 pack-years of tobacco smoking OR equivalent indoor or outdoor air pollution exposure 3. Documented history of asthma before age 40 y OR BDR of > 400 mL in FEV ₁	1. Documented history of atopy or allergic rhinitis 2. BDR FEV ₁ of ≥ 200 mL and 12% from baseline on ≥ 2 visits 3. Peripheral blood eosinophil count of ≥ 300 cells/ μ L
Cosio et al ¹⁹ (2016)	1 major criterion <u>OR</u> 2 minor criteria	1. BDR to salbutamol of $\geq 15\%$ and 400 mL 2. Previous history of asthma	1. IgE of > 100 IU 2. History of atopy 3. 2 separate BDRs to salbutamol of $> 12\%$ and 200 mL 4. Blood eosinophils of $> 5\%$

Leung, et al. *CHEST*. 2022

7

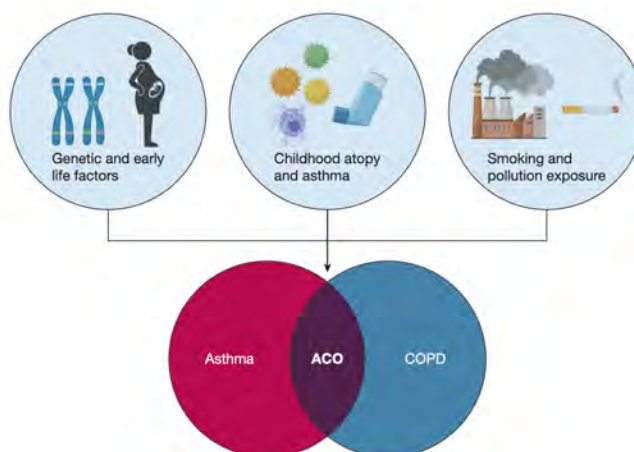
Implications are limited by evolving definitions



8

Scientific understanding of observations from 1961

- Intermittent / episodic symptoms
- Started before 40 years old
- History of smoking or toxic exposures; low birth weight or TB
- Asthma features



9

Varied prevalence given definition variance

0.9% - 11%

- in general population

11.1% to 61.0%

- in patients with asthma

4.2% to 66%

- in patients with COPD

Uchida, et al. *Allergol Int.* 2018

10

Relevance



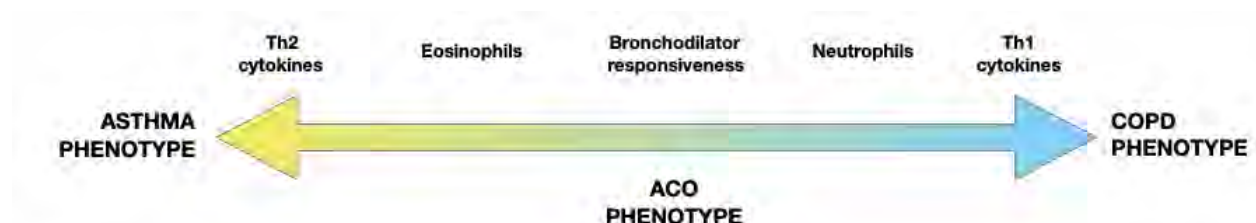
11

Distinct clinical features of asthma-COPD overlap



12

Distinct immune features of asthma-COPD overlap

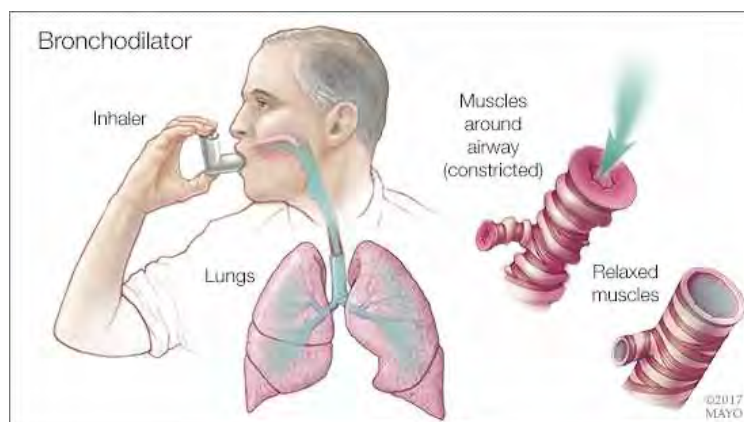


Milne, et al. *JACI Pract.* 2020

13

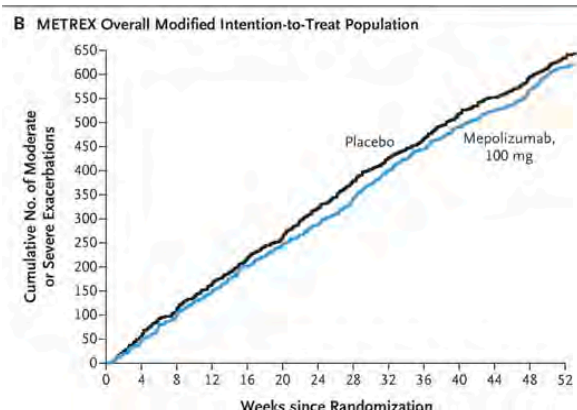
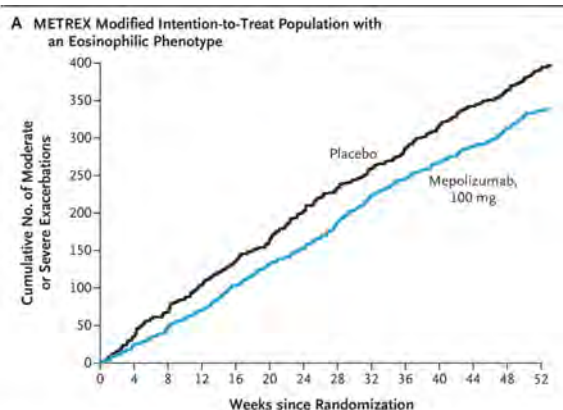
Distinct therapeutic features of asthma-COPD overlap

Inhaled corticosteroids



14

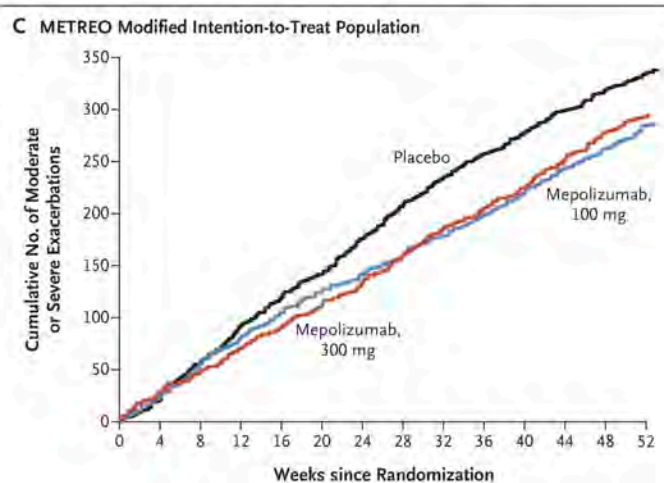
Distinct therapeutic features of asthma-COPD overlap



Pavord, et al. *NEJM*. 2017

15

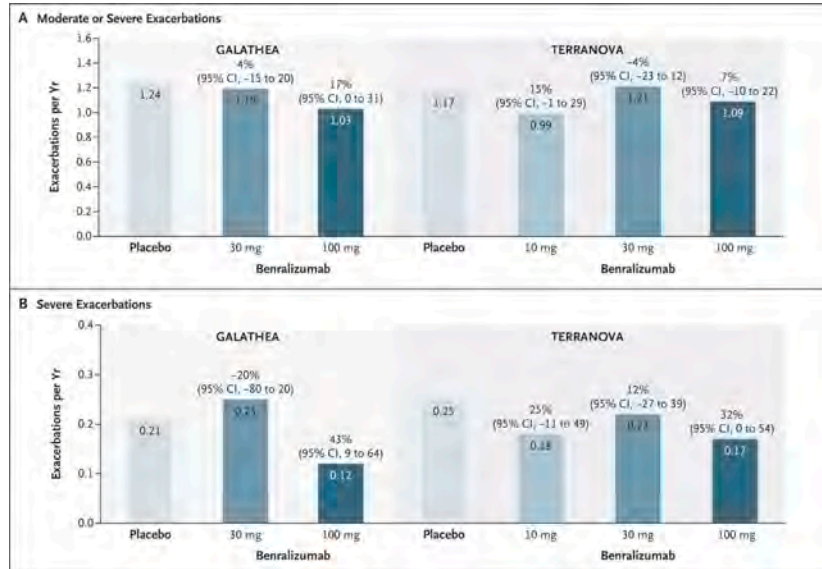
Distinct therapeutic features of asthma-COPD overlap



Pavord, et al. *NEJM*. 2017

16

IL-5 Receptor blockade (benralizumab) for eosinophilic COPD



Criner, et al. *NEJM*. 2019

17

Practical Pearls and Future Directions



18

Current clinical relevance



19

Future Directions



20



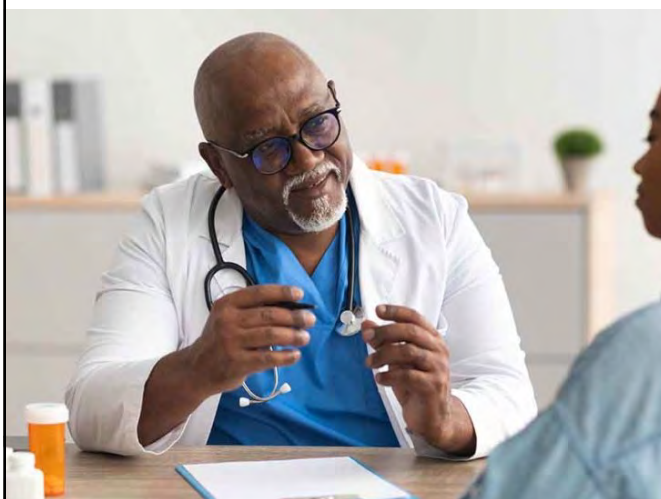
QUESTIONS



We'll get to as many questions as we can!

21

Next Webinar



Moving Allergy & Asthma Science Forward

June 9, 2022

3:00 PM ET

22

Breathe Better Together



allergyasthmanetwork.org