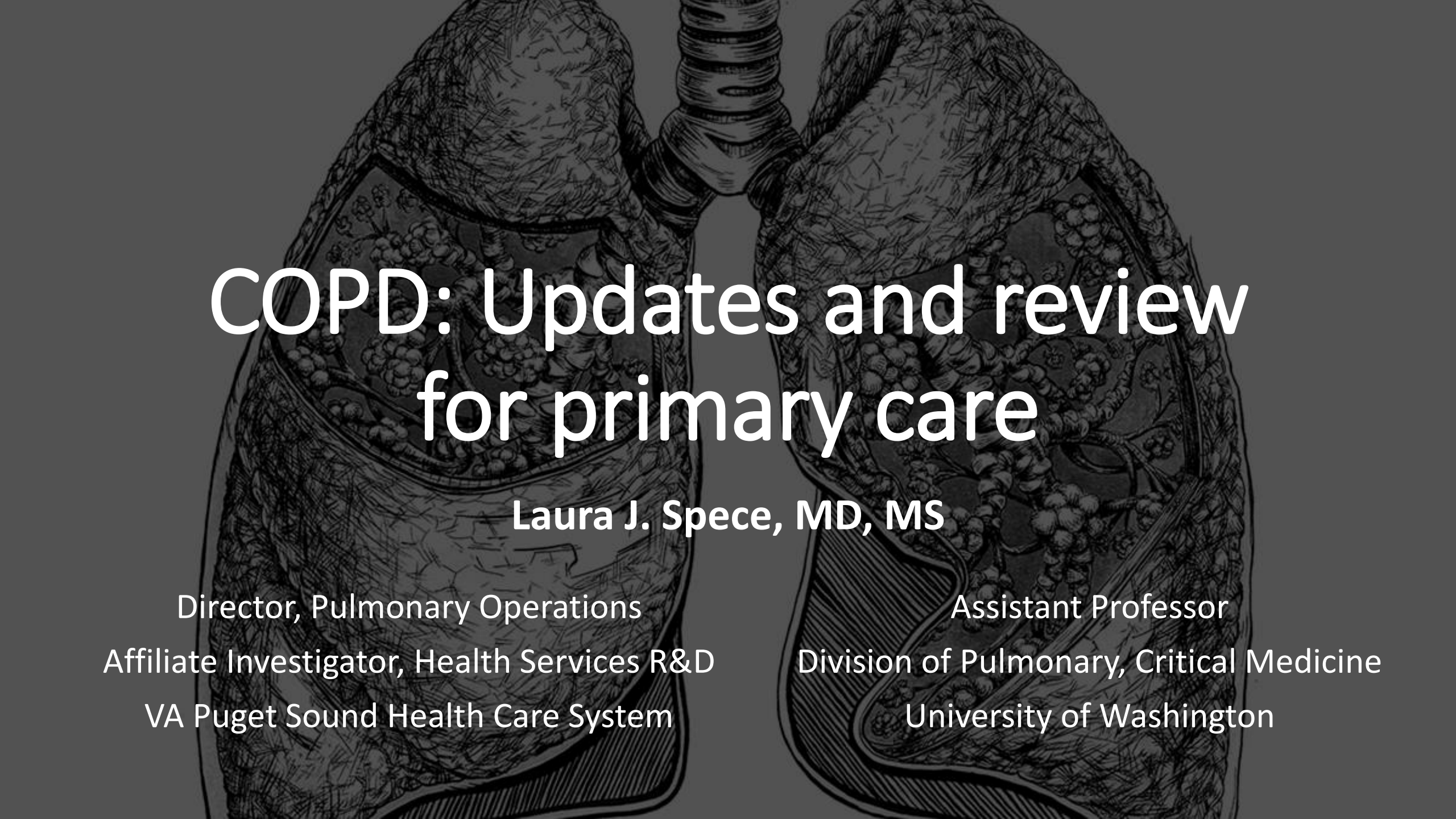

COPD: Updates and review for primary care

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Outline

- Updates from 2023-24 clinical practice guidelines and statements
- Brief review of diagnosis and spirometry interpretation
- Inhaled medication selection for COPD
- A plug for tobacco cessation
- Home oxygen – when is the juice worth the squeeze?
- When to think about advanced therapies and pulmonary referral
- COPD Exacerbations

COPD Diagnosis

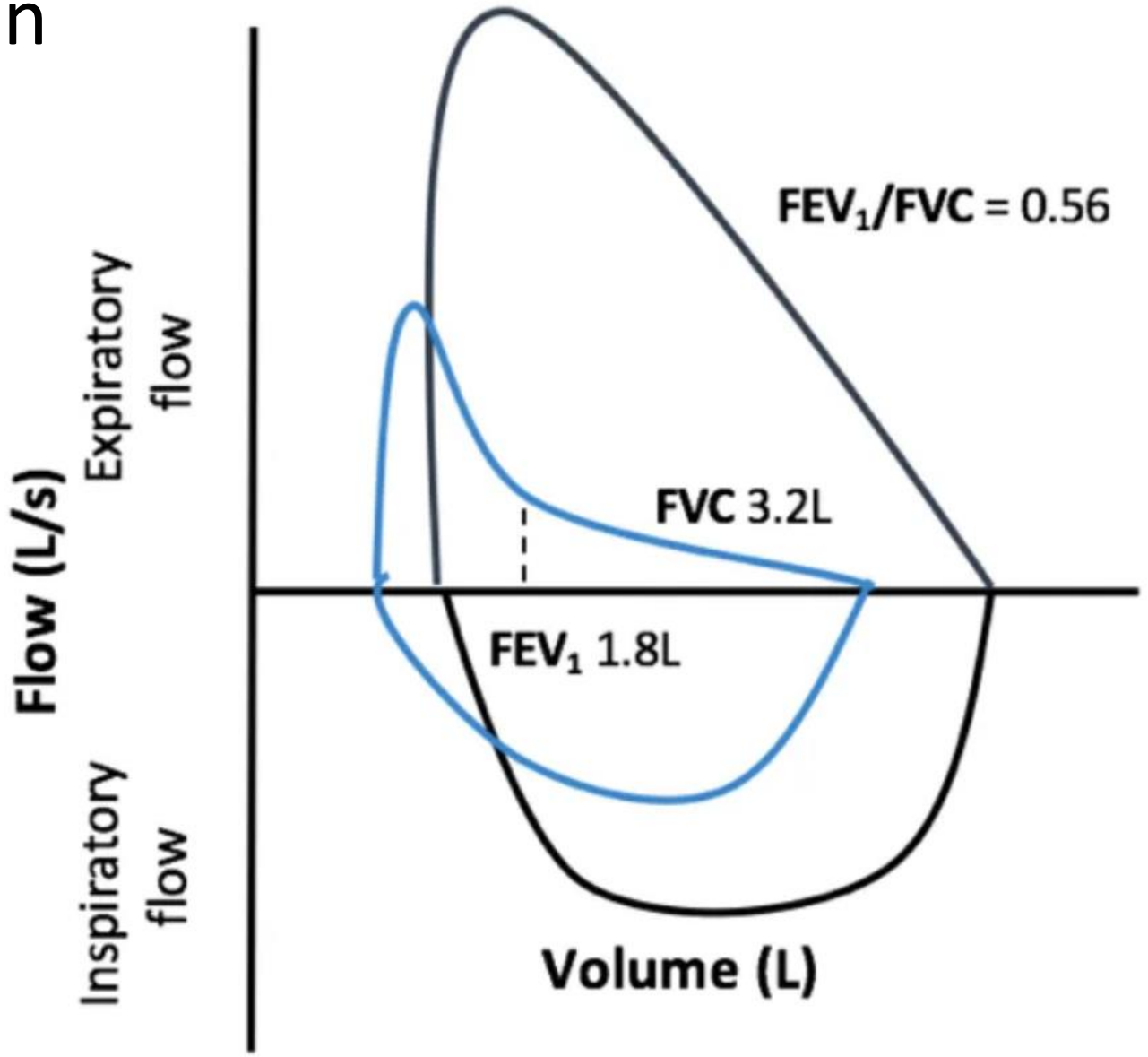
- Requires spirometry to confirm airflow obstruction
- Can not be made based on clinical history alone
- Estimates suggest only 50-60% of persons who carry a COPD diagnosis have completed spirometry
    - Ultimately, when spirometry is performed, only 50% of those have the disease
    - MISSED OPPORTUNITY (heart failure, other pulmonary disease, etc.)
- Emphysema is a radiographic finding, not synonymous with COPD
- No benefit found from inhalers among persons using tobacco *without* airflow obstruction (ReTHINC study, PMID 36066078)

Identifying Airflow Obstruction with Spirometry

1. **GOLD criteria: $FEV_1/FVC < 0.7$**
   (Post-bronchodilator test)
   - May overdiagnose older pts
   - May underdiagnose younger pts

2. **ATS criteria: $FEV_1/FVC < LLN$**
   - Classifies the lowest 5% as abnormal
   - Depends on reference equation selected

- One has not been shown to be superior to the other, varies by site



Case:

67yoF with spirometry confirmed COPD, routine appt

History:

-Can walk 2 blocks before stopping (dyspnea).
-No hospitalizations for COPD, no exacerbations in the last year.
-Quit smoking 17 years ago.

Current medications:

-LABA/ICS daily (fluticasone/salmeterol)
-SABA/SAMA PRN (albuterol/ipratropium)

Vitals and Data:

SpO_2 at rest 97%
FEV_1 49% predicted

SABA:	short-acting β-agonist i.e. albuterol
SAMA:	short-acting muscarinic antagonist i.e. ipratropium
LABA:	long-acting β-agonist e.g. formoterol, olodaterol
LAMA:	long-acting muscarinic antagonist i.e. tiotropium
ICS:	inhaled corticosteroid

Next step:

1) Increase ICS
2) Add LAMA (and stop SAMA, ICS)
3) Discuss lung cancer screening

SABA:	short-acting β-agonist i.e. albuterol
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ICS:	inhaled corticosteroid

Add LAMA –
create COPD maintenance inhaler “backbone”

LAMA/LABA dual combination inhalers

Anora®
(umeclidinium and vilanterol)
Device: Ellipta® (24 hours)

Bevespi® (glycopyrrolate and formoterol)
Device: MDI Aerosphere®
(12 hours)

Stiolto® (olodaterol and tiotropium)
Device: Respimat®
(24 hours)

Utibron® (indacaterol and glycopyrrolate)
Device: Neohaler®
(12 hours)

VA go to for COPD

Tiotropium/Olodaterol (Stiolto)
Device: Soft Mist
(24 hours)

+

Albuterol (ProAir)
Device: Metered Dose
Q4-6 hours, PRN

LAMA monotherapy (mild, patient preference/formulary)

Incruse® (umeclidinium)
Device: Ellipta®
(24 hours)

Seebri® (glycopyrrolate)
Device: Neohaler®
(12 hours)

Spiriva® (tiotropium)
Device: HandiHaler®
(24 hours)

Spiriva® (tiotropium)
Device: Respimat®
(24 hours)

Tudorza® (aclidinium)
Device: Pressair®
(12 hours)

Inhaled Corticosteroids (ICS)

Asmanex® HFA (mometasone) 100, 200
Device: MDI with counter

Asmanex® (mometasone)
Device: Twisthaler®

Arnuity® (fluticasone) 100, 200
Device: Ellipta®

Alvesco® (ciclesonide) 80, 160
Device: MDI

Flovent® HFA (fluticasone) 44, 110, 220
Device: MDI

Pulmicort® (budesonide)
Device: Flexhaler®

QVAR® (beclomethasone) 40, 80

Inhaled Corticosteroids (ICS) for COPD

STRONG SUPPORT

- Hospitalization for COPD in the last year
- ≥2 outpatient exacerbations in the last year
- Comorbid asthma

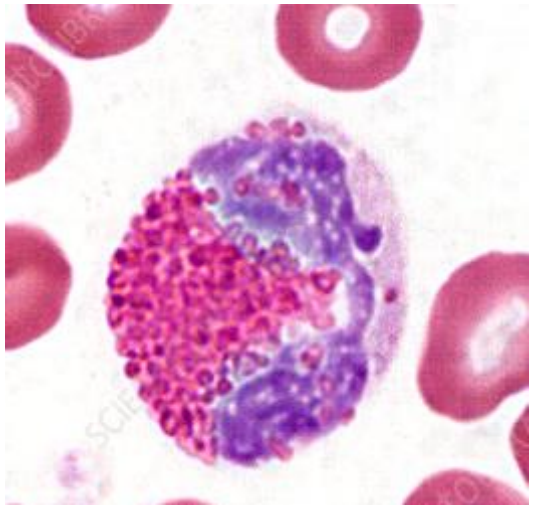
AGAINST USE

- History of pneumonia
- History of mycobacterial infection

TORCH: Calverley et al. NEJM 2007

Eosinophils as a biomarker in COPD?

- ICS patient selection: no randomized evidence (unlike asthma)
- Unknown cut point for “high” (150? 300? 2%?)
- Highly confounded by active tobacco use
- Concern around COI among expert panels (GOLD, etc.) for ICS
- May have some promise re: selecting who might benefit from oral steroids for mild/moderate COPD exacerbation (STARR2 trial)
  - 308 patients with COPD had 144 exacerbations
  - Stratified into high eos (>2%) vs. low
  - Blood eosinophils high = prednisone 30mg daily x14d; low = placebo
  - Caveat – all participants received 7d of doxycycline (ethics committee)



PMID: 28601554; 34172466; 37924830

Stopping ICS for COPD

- ICS carry an increased risk of pneumonia among those with COPD (NNH = 17)*
- Most ICS inhalers can be stopped without a taper
- Try to stop ICS at 6 months – 1 year after last qualifying exacerbation

Pneumonia Risk in COPD patients receiving inhaled corticosteroids alone or in combination: TORCH study results. ERJ 2009; 34: 641-647

Updated GOLD groups (ABE)

Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2023 report. www.goldcopd.org

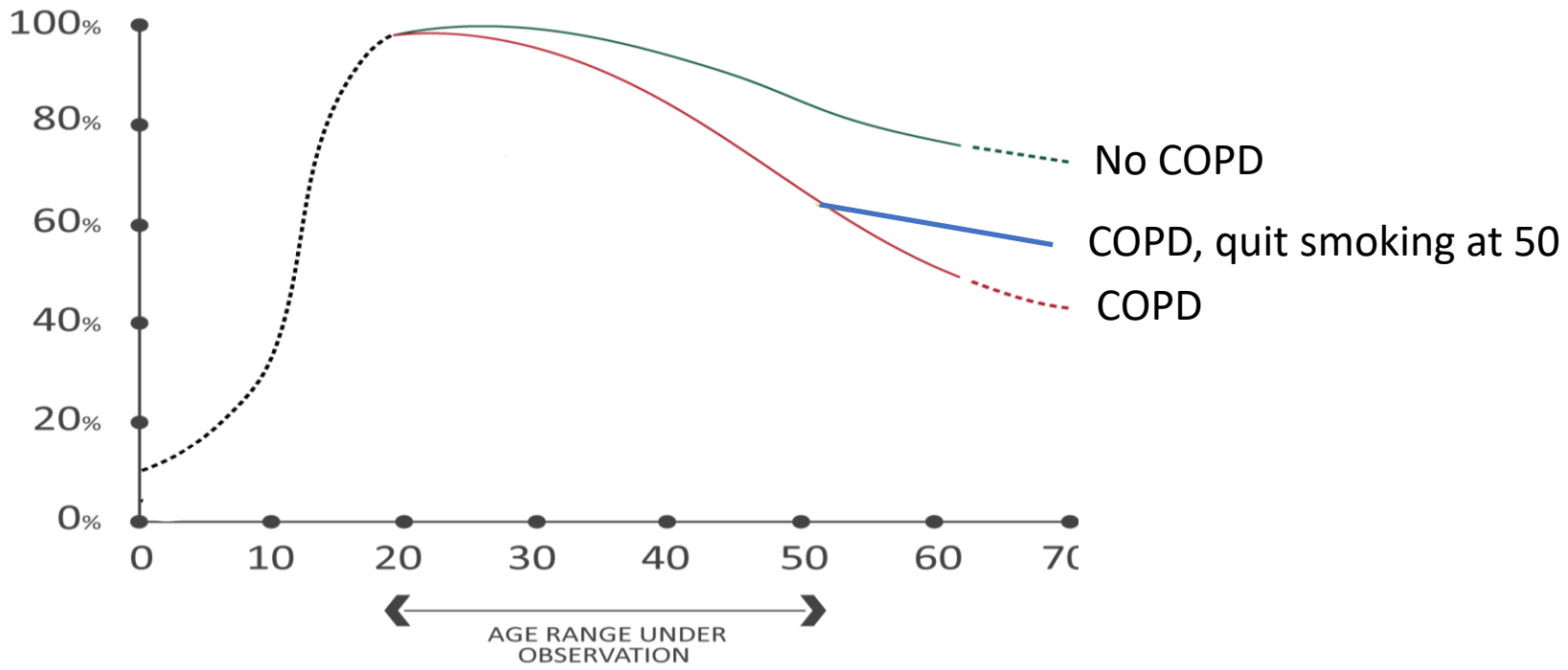
Smoking

A 56yo current user of tobacco with COPD (FEV_1 55% predicted) returns for a routine appointment. He reports that he is taking the inhalers you prescribed but he is very disappointed that he still gets out of breath when he walks his dog.

I'd like to help, would you be open to talking about tobacco?

Lung function declines with age. Quitting smoking reduces the rate of decline.

FEV_1 as percent maximally attained value



Note: This is a simplified diagram of FEV_1 progression over time. In reality, there is tremendous heterogeneity in the rate of decline in FEV_1 owing to the complex interactions of genes with environmental exposures and risk factors over an individual's lifetime [adapted from Lange et al. NEJM 2015;373:111-22].

Tobacco: Assess readiness to quit & prescribe

- Provide contact info for local tobacco cessation counseling and support (quit lines, smoking cessation consult services)
- Proactive nicotine replacement therapy (NRT) can be helpful even among those who are pre-contemplative
- Varenicline (Chantix) is superior to mono-NRT, can be used in combination with NRT
  - Black box warning has been removed re: mental health concerns

ATS Clinical Practice Guideline for Initiating Pharmacologic Treatment for Tobacco. PMID 33052710

Oxygen

CASE: 73yo man with COPD (FEV_1 38% pred.) routine appointment.

Reports he's "doing well"
Takes olodaterol/tiotropium daily
+ albuterol prn
Can walk up 1 flight of stairs
Last prednisone 2 years ago

Quit smoking 25 years ago
No ankle swelling
Resting sat 95%
Exercise nadir sat 87%
Recent labs: Hb 14 g/dL, bicarb 26
Vaccinations up to date

You should:

1) Check arterial blood gas
2) Add inhaled corticosteroid
3) Prescribe oxygen on exertion
4) Refer for pulmonary rehabilitation

COPD: Supplemental oxygen therapy

Mortality benefit from >15hrs/day for patients with SEVERE hypoxemia (resting sat <89%)[1,2]

NO benefit for patients with moderate resting hypoxemia (sat 88-93%) or exertional desat[3]

1. NOTT Ann Intern Med 1980;93:391-8
2. MRC Lancet 1981;1:681-6
3. LOTT NEJM 2016;375:1617

COPD: prescribe oxygen for patients

With resting sat <88%
(or if they do more exercise using oxygen)

Titrated to sat of 88-92%

COPD: Supplemental oxygen therapy

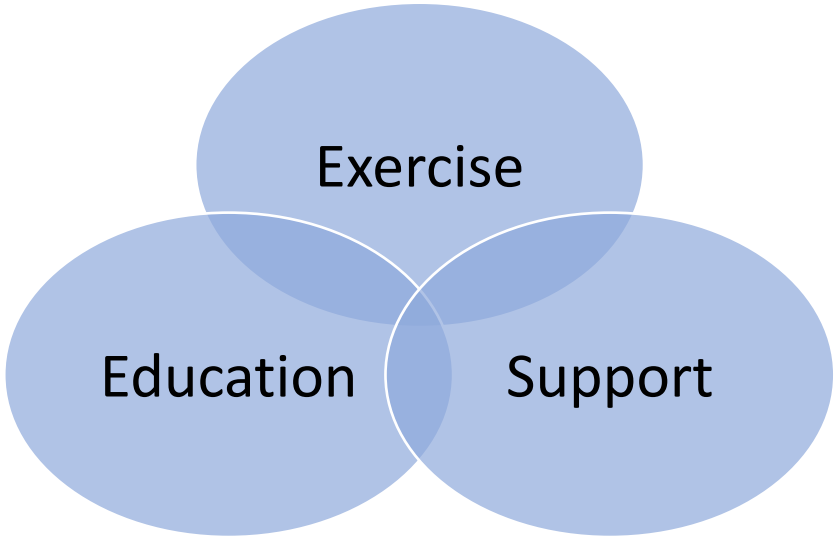
Increased mortality associated with hyperoxia (sat >92%) in patients with acute exacerbations[1]

1. Austin et al. BMJ 2010;341:c5462

Recommendation: #4, refer to Pulm Rehab

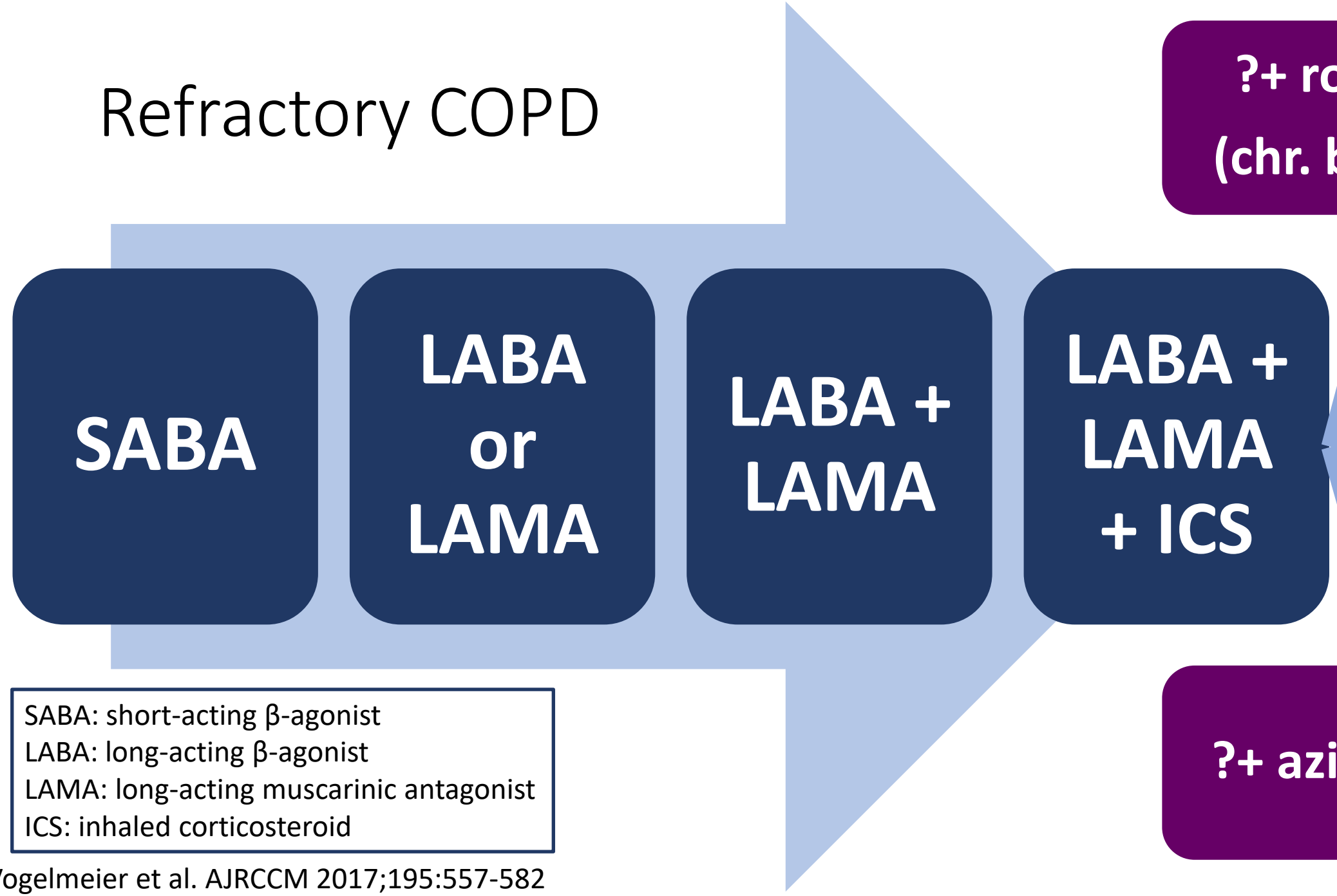
Pulmonary rehab improves quality of life

- 8 week course
- 2 sessions per week
- Plus one education session



McCarthy et al. Cochrane Database Syst Rev 2015;2

Refractory COPD



SABA: short-acting β-agonist
LABA: long-acting β-agonist
LAMA: long-acting muscarinic antagonist
ICS: inhaled corticosteroid

Vogelmeier et al. AJRCCM 2017;195:557-582

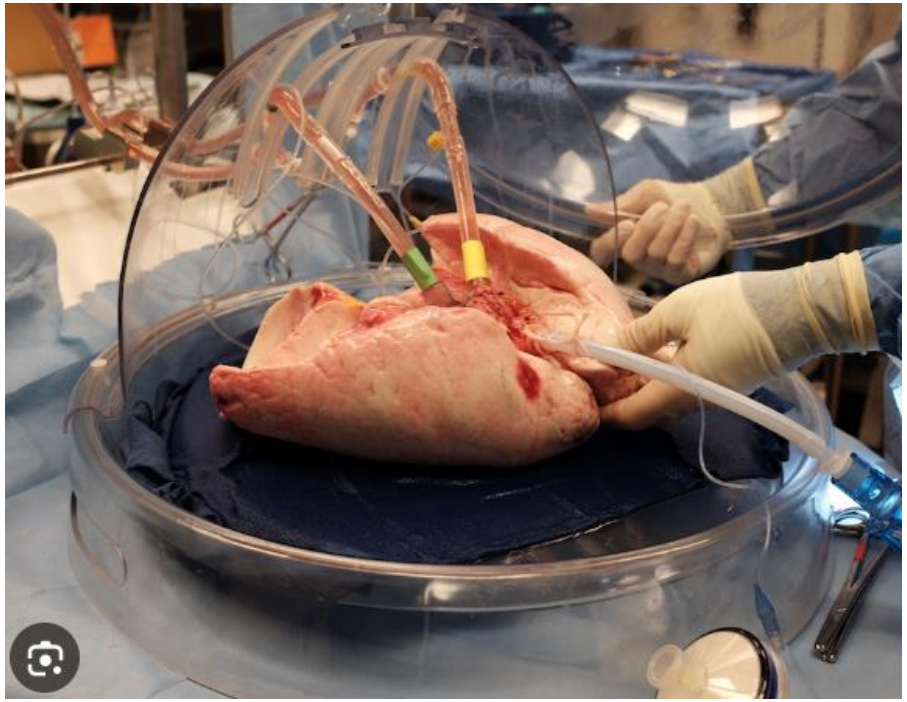
Azithromycin

- Macrolide antibiotic, acting as anti-inflammatory (dosed TIW)
- Evidence for reduction in AECOPD in patients with severe – very severe COPD and a history of exacerbations
  - *Less evidence for benefit among current users of tobacco*
- Risks
  - Bacterial resistance
  - Increased cardiovascular mortality
  - Hearing loss

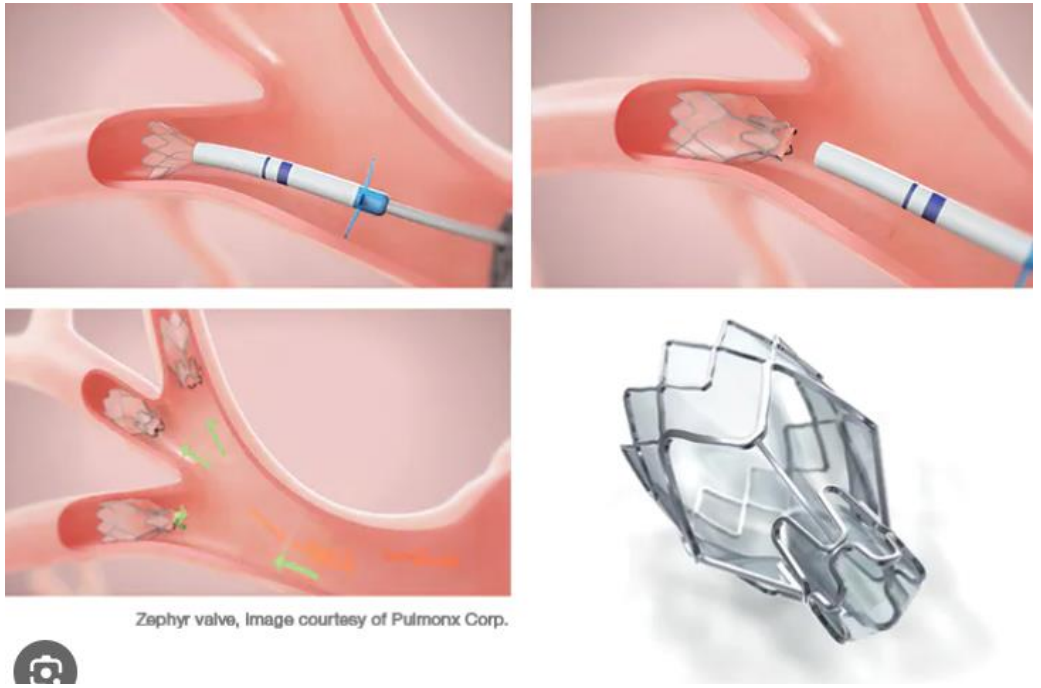
Roflumilast

- PDE4 inhibitor
- Evidence for reduction in moderate-severe AECOPD in patients with severe – very severe COPD and a history of exacerbations *AND chronic bronchitis*
- Adverse effects:
  - Suicidality
  - Significant GI toxicity (reduced by starting at half dose for 2 weeks)
  - Weight loss

COPD: Advanced Surgical Therapies

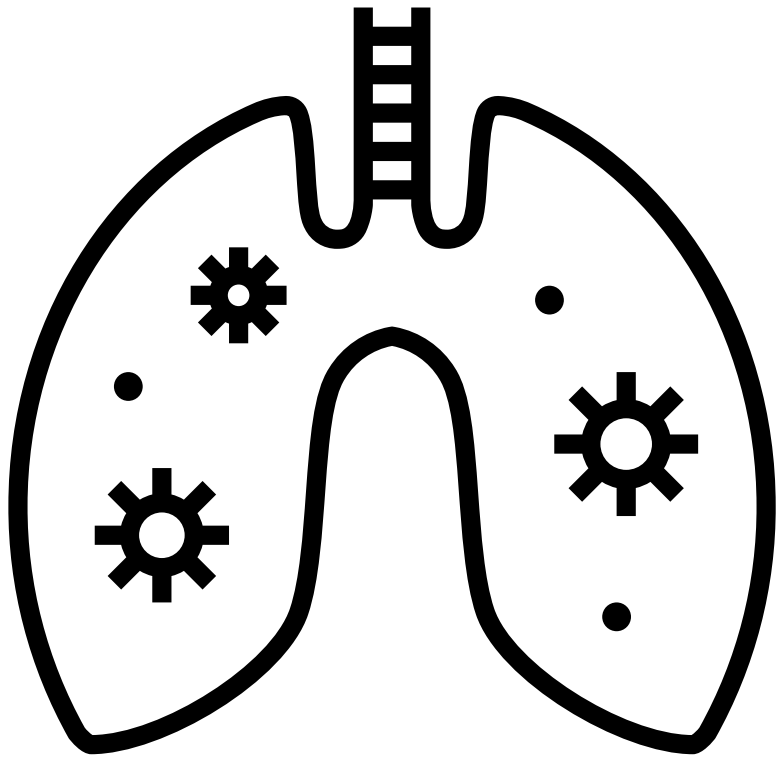


Lung Transplant



Surgical and Endobronchial Lung Volume Reduction

COPD Exacerbations



57y.o. woman, former tobacco use, with COPD, walk-in visit due increased dyspnea & cough for 2 days

- Can normally walk 2-3 blocks, now less than 1 block
- Increased use of albuterol, 4x/day
- Increased dry cough
- Some rhinorrhea & sore throat
- O_2 sat 92% other vital signs within normal limits
- Diffuse wheeze, prolonged exhalation, no respiratory distress at rest

What will you you prescribe?

1) Prednisone and azithromycin for 5 days
2) Prednisone for 10 days and azithromycin for 5 days
3) Prednisone for 5 days
4) Prednisone for 10 days

COPD exacerbations: antibiotics

Not for outpatients without sputum purulence/volume

For patients needing ICU and/or ventilatory support

Probably reduce risk of treatment failure*

GOLD guidelines

*Vollenweider DJ, et al. Cochrane Database Systematic Reviews 2012; 12:CD010257

COPD exacerbation: steroid dose and duration

Meta-analysis: No difference between 3-7 days and 10-15 days of steroids in terms of treatment failure[1]

REDUCE RCT: 40mg methylprednisolone IV then 40mg prednisone daily for 5 or 14 days (no difference)[2]

1. Walters JA et al. Cochrane Database Syst Rev 2014;9
2. Leuppi JD, et al. JAMA 2013; 309:2223-2231.

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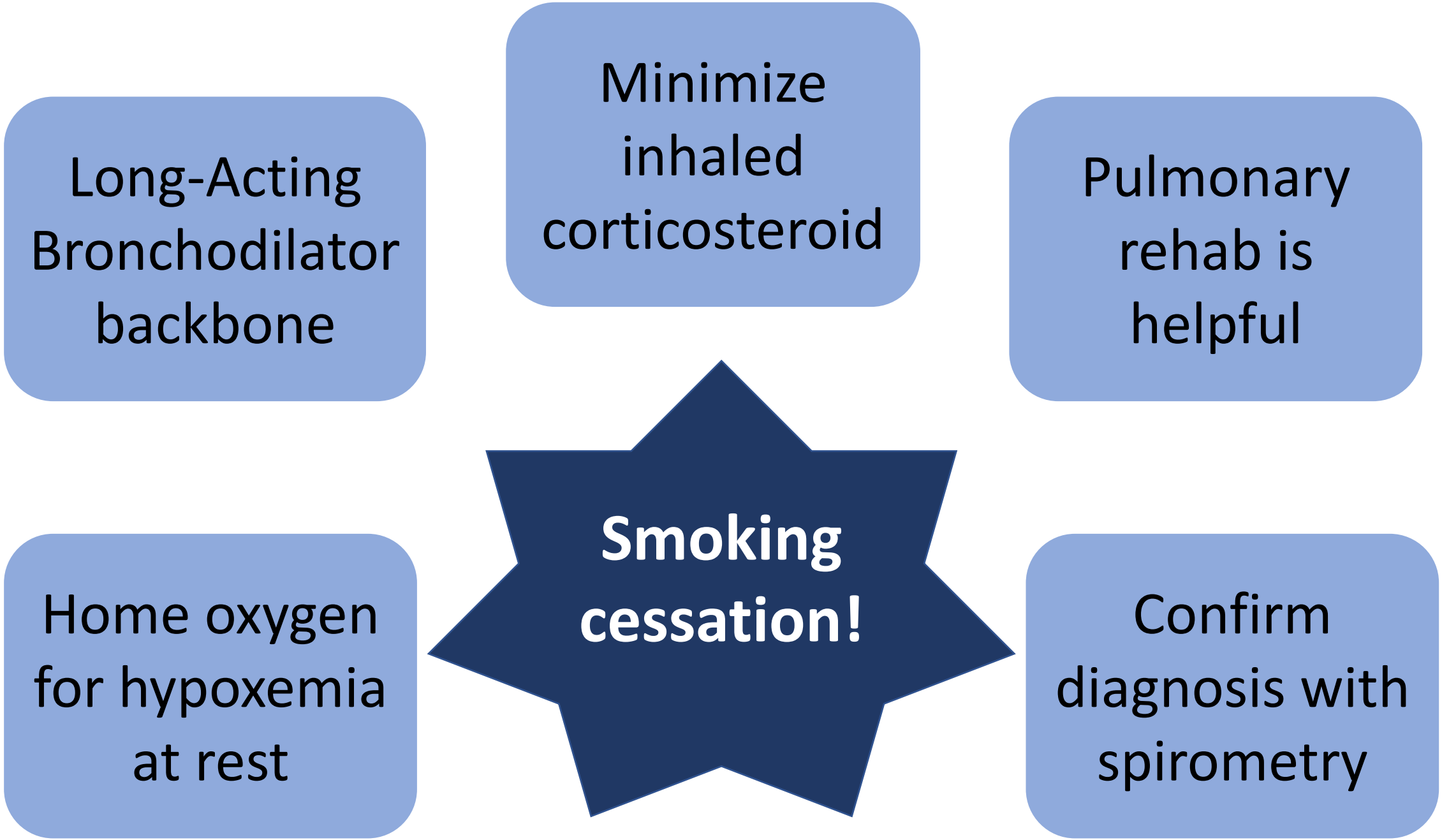
What did you prescribe?

#3: Prednisone for 5 days


Minimize inhaled corticosteroid
Long-Acting Bronchodilator backbone
Pulmonary rehab is helpful
Smoking cessation!
Home oxygen for hypoxemia at rest
Confirm diagnosis with spirometry

Thank you
& any questions?

Laura J. Spece, MD, MS

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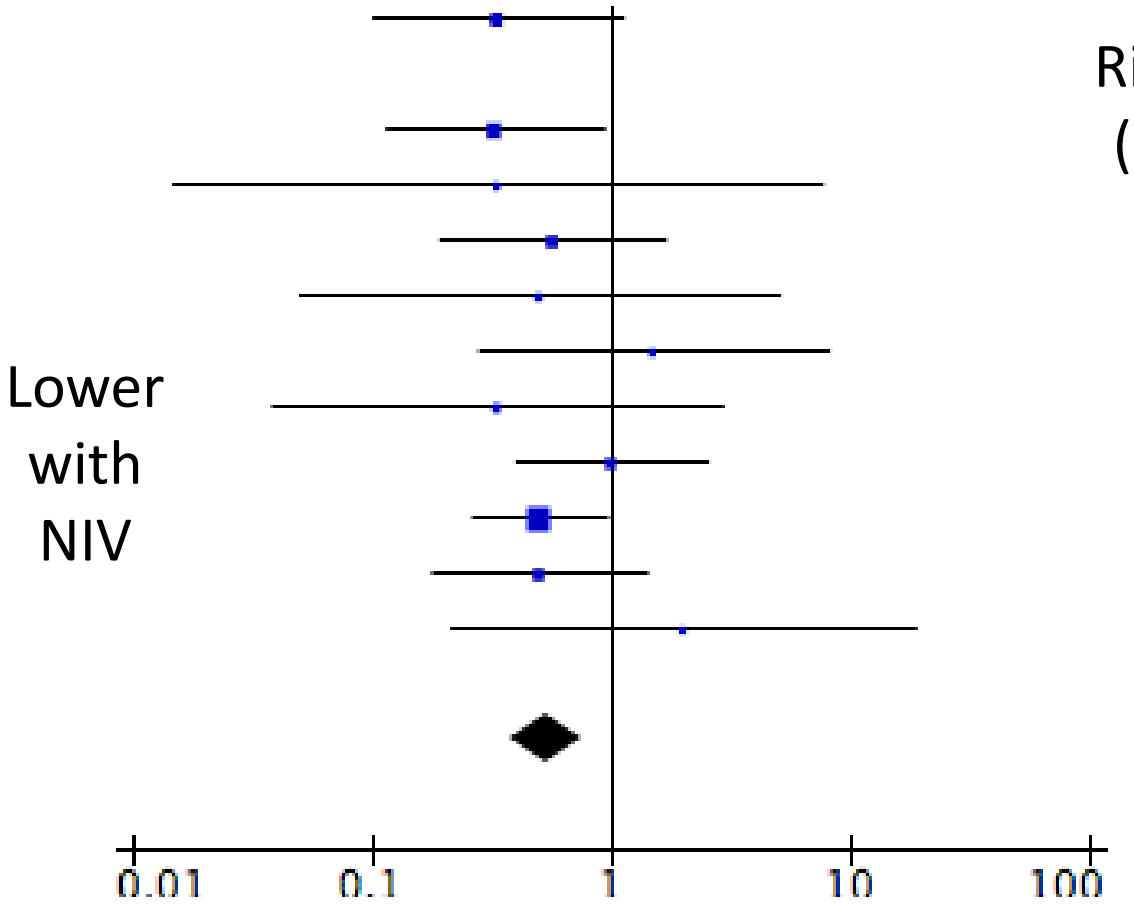
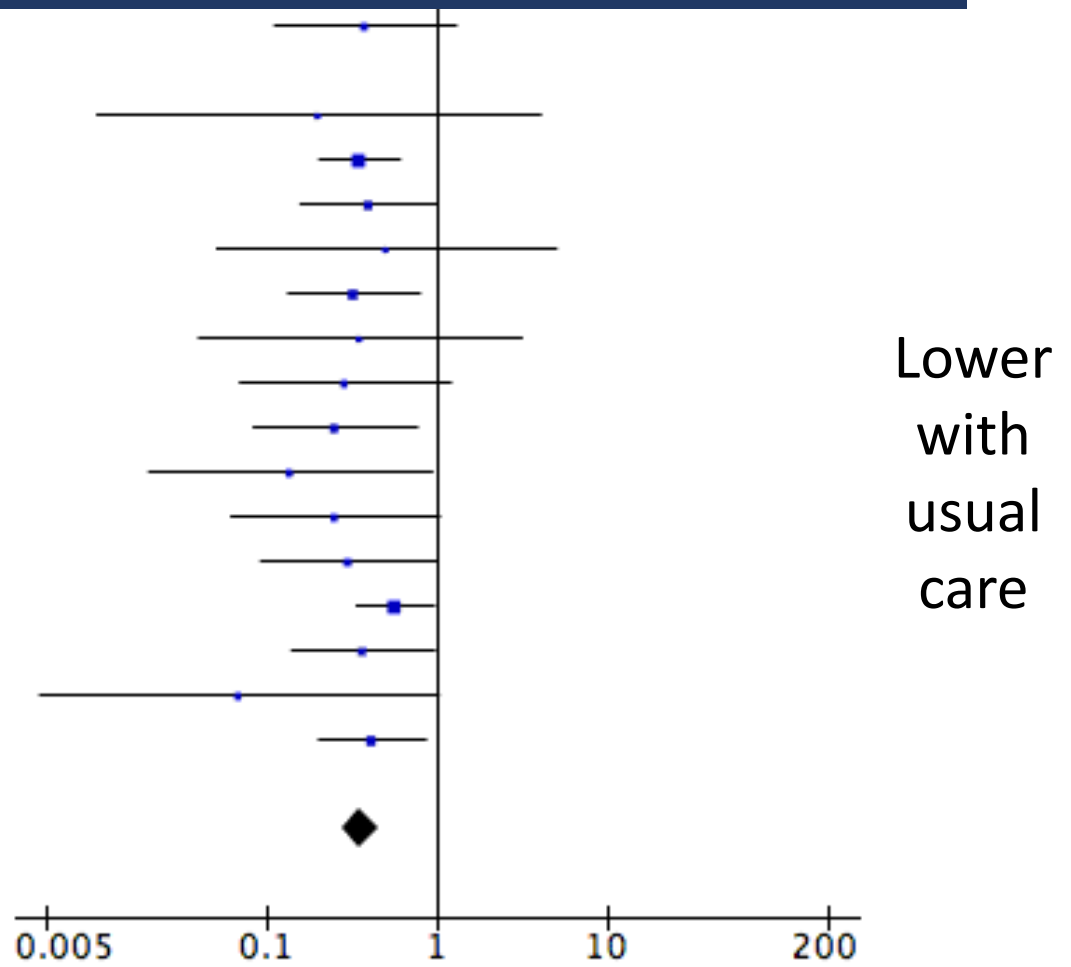
In AECOPD hypercapnic respiratory failure, NIPPV:

Reduces mortality



Reduces ET intubation



Osadnik CR et al. Cochrane Database of Systematic Reviews 2017. Issue 7.

Nocturnal BiLevel for stable outpatients with COPD

Mortality benefit from >6hrs/day for patients with pCO_2 >52mmHg[1]

*Required HIGH pressures

*Achieved using scheduled hospital *admissions*

1. Kohnlein et al. Lancet Respir Med 2014;2:698-705

COPD: refer patients for sleep evaluation

If pCO_2 elevated

Ensure they have close follow-up