



University of Colorado **Anschutz Medical Campus**

# COPD in the Nursing Home

Guideline Updates and Treatment Considerations

Matthew Griffith MD MPH  
CMDA Conference April 28, 2023



# Objectives

- Identify 2 indications for escalating current COPD treatment
- Identify 2 indications for de-escalating potentially unnecessary or harmful COPD treatments
- Identify 4 different devices used to deliver inhaled medications for COPD and their indications



# Chronic Obstructive Pulmonary Disease

## Prevalence

- Historic data regarding prevalence shows significant variation across PALTC settings
- Likely due to fact is is not specifically recorded on MDS reports
- Also is chronically under diagnosed in the general population.



## Post-acute and Long-term Care Providers and Services Users in the United States, 2017–2018

Analytical and Epidemiological Studies

**Figure 24. Percentage of post-acute and long-term care services users with selected diagnoses, by sector: United States, 2017 and 2018**

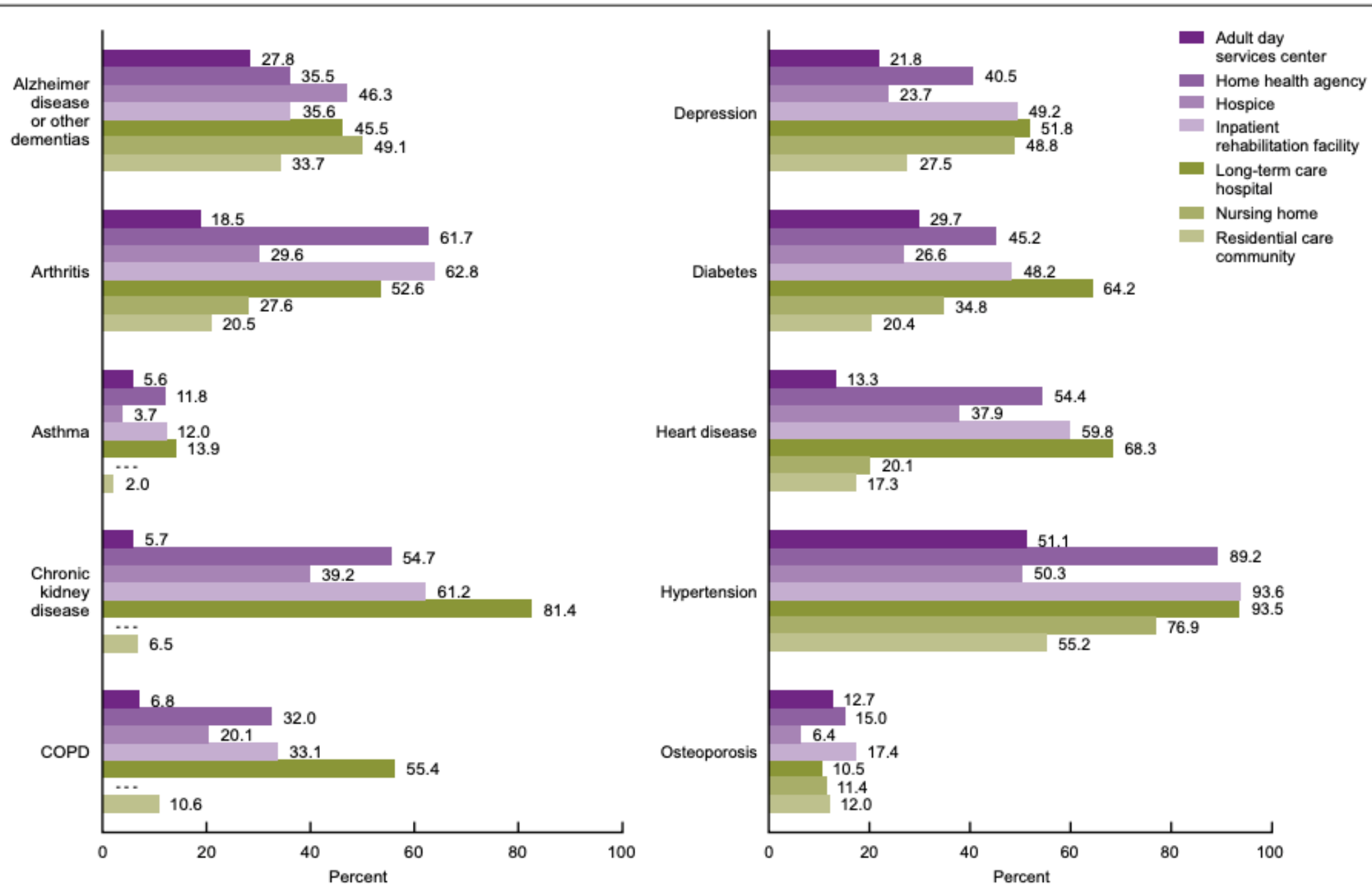
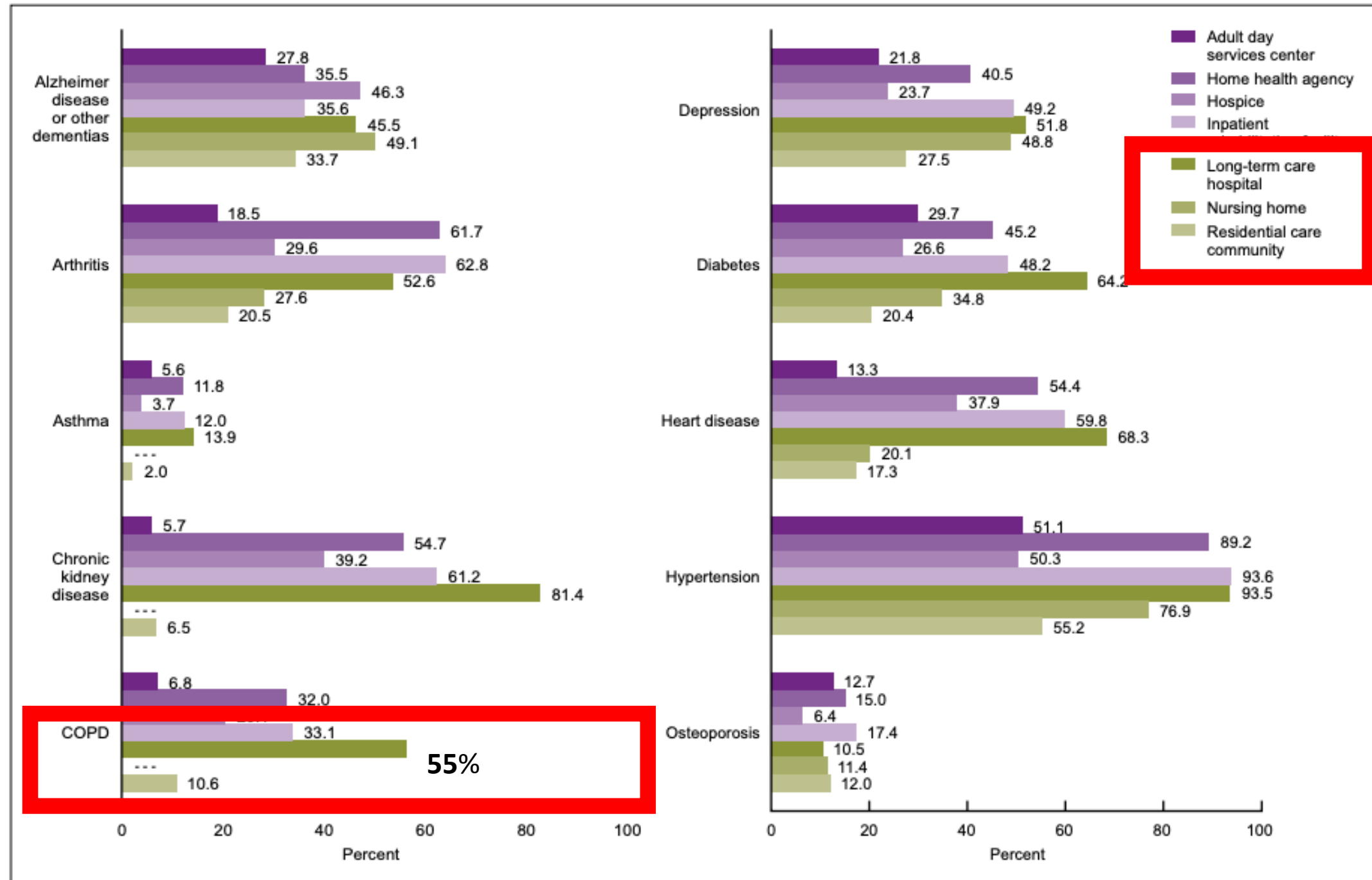


Figure 24. Percentage of post-acute and long-term care services users with selected diagnoses, by sector: United States, 2017 and 2018



# Chronic Obstructive Pulmonary Disease

## Diagnosis

- History of tobacco use, second-hand smoke, or exposure to organic (e.g., wood) smoke
- Diagnosed by spirometry  
FEV1/FVC Ratio
- UPDATES
- ATS/ERS no longer recommend a fixed cutoff of FEV1/FVC ratio to diagnose COPD
- Recommend use of lower limit of normal
- Often well below former cutoff of 70%



# Chronic Obstructive Pulmonary Disease

## Implications

- Older adults previously diagnosed with COPD no longer meet COPD diagnostic criteria
- This is meant to encourage further evaluation of dyspnea for patients who have borderline FEV1/FVC ratios



# Chronic Obstructive Pulmonary Disease

## Recommendation

- For patients who are not improving with COPD treatment, consider a referral to a pulmonologist for spirometry





# Chronic Obstructive Pulmonary Disease

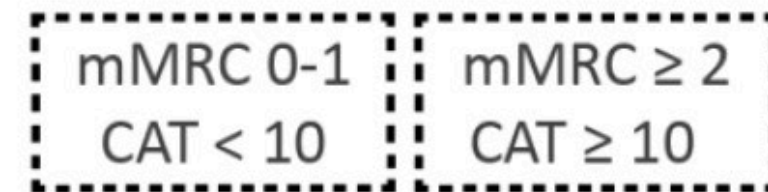
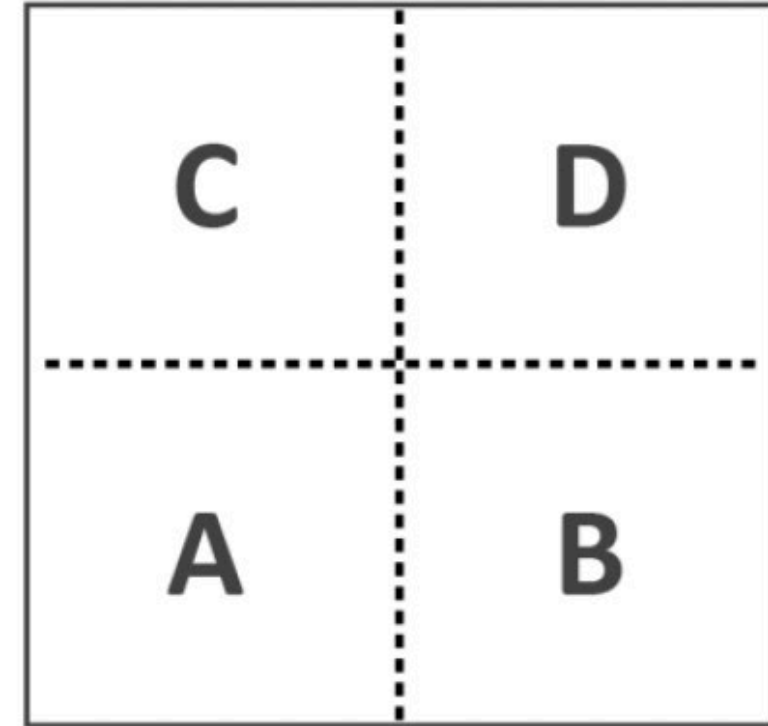
## Assessment

- Severity of symptoms should be assessed AT LEAST annually
- Global Initiative for Chronic Obstructive Lung Disease (GOLD) Categories have been updated

## Moderate or Severe Exacerbation History

≥2 or  
≥ 1 leading  
to hospital  
admission

0 or 1  
(not leading  
to hospital  
admission)



## Symptoms

# Chronic Obstructive Pulmonary Disease

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## EXACERBATION HISTORY (PER YEAR)

≥ 2 moderate exacerbations or  
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0 or 1 moderate exacerbations  
(not leading to hospitalization)

**E**

**A**

**B**

mMRC 0-1  
CAT < 10

mMRC ≥ 2  
CAT ≥ 10

## SYMPTOMS

# Chronic Obstructive Pulmonary Disease

## Assessment

- Severity of symptoms should be assessed AT LEAST annually
- Two validated patient-reported assessment tools
  - COPD Assessment Test (CAT)
  - Modified Medical Research Council Score (mMRC)

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## Assessment

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This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your well being and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy       I am very sad

			Score
I never cough	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I cough all the time	<input type="text"/>
I have no phlegm (mucus) in my chest at all	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	My chest is completely full of phlegm (mucus)	<input type="text"/>
My chest does not feel tight at all	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	My chest feels very tight	<input type="text"/>
When I walk up a hill or one flight of stairs I am not breathless	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	When I walk up a hill or one flight of stairs I am very breathless	<input type="text"/>
I am not limited doing any activities at home	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I am very limited doing activities at home	<input type="text"/>
I am confident leaving my home despite my lung condition	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I am not at all confident leaving my home because of my lung condition	<input type="text"/>
I sleep soundly	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	I don't sleep soundly because of my lung condition	<input type="text"/>

# Chronic Obstructive Pulmonary Disease

## Assessment

- Severity of symptoms should be assessed AT LEAST annually
- Two validated patient-reported assessment tools
  - COPD Assessment Test (CAT)
  - Modified Medical Research Council Score (mMRC)

## mMRC Breathlessness Scale

Grade	Description of Breathlessness
0	I only get breathless with strenuous exercise
1	I get short of breath when hurrying on level ground or walking up a slight hill
2	On level ground, I walk slower than people of the same age because of breathlessness, or have to stop for breath when walking at my own pace
3	I stop for breath after walking about 100 yards or after a few minutes on level ground
4	I am too breathless to leave the house or I am breathless when dressing

Chris Stenton. The MRC breathlessness scale. *Occup Med (Lond)*(2008)58(3): 226-227 doi:10.1093/occmed/kqm162, Table 1. By permission of Oxford University Press on behalf of the Society of Occupational Medicine. A mMRC score of 1 or more suggests significant symptoms.

mMRC=modified Medical Research Council

# Development of MDS-Based Predication Model for COPD Severity in Nursing Home Residents

Annals of Pharmacotherapy  
2022, Vol. 56(8) 878–887

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DOI: 10.1177/10600280211059241

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**Barbara Blaylock, PhD<sup>1</sup> , Xiaoli Niu, PhD<sup>2</sup>,  
H. Edward Davidson, PharmD, MPH<sup>3</sup>, Stefan Gravenstein, MD, MPH<sup>4</sup>,  
Ronald DePue, PharmD<sup>2</sup>, G. Rhys Williams, ScD<sup>2</sup>,  
and Karl E. Steinberg, MD, CMD<sup>5</sup>**

**Table 3.** Multivariate Multinomial Logit Regression on GOLD A to D Groups (Reference = GOLD A).

Independent variable	GOLD B		GOLD C		GOLD D	
	OR	95% CI	OR	95% CI	OR	95% CI
Sex						
Female	0.89	(0.26-3.01)	6.66	(0.34-130.58)	0.84	(0.21-3.30)
Male [ref]						
Age	0.98	(0.91-1.05)	1.00	(0.90-1.12)	0.96	(0.89-1.03)
BMI	1.01	(0.94-1.08)	0.85	(0.71-1.02)	0.95	(0.88-1.03)
Any LABD use	4.15	(1.13-15.21) <sup>a</sup>	0.57	(0.04-8.09)	12.33	(2.91-52.2) <sup>a</sup>
Any dyspnea	5.79	(1.17-28.65) <sup>a</sup>	0.55	(0.03-9.02)	16.94	(3.10-92.76) <sup>a</sup>
PHQ-9 Total severity score	1.20	(0.93-1.54)	1.53	(0.76-1.63)	1.26	(0.77-1.64)
Long-form ADL score	0.98	(0.84-1.15)	1.13	(0.86-1.48)	1.07	(0.90-1.27)
Bathing						
Independent, supervision, or limited assistance	0.48	(0.10-2.22)	10.88	(0.25-469.19)	0.17	(0.03-1.02)
Extensive assistance, total dependence, or did not occur [ref]						
Mobility assistance						
Not wheelchair dependent	0.21	(0.04-1.15)	0.12	(0.01-1.66)	0.12	(0.02-0.75) <sup>a</sup>
Wheelchair dependent [ref]						
Balance: Toilet						
Steady or able to stabilize without assistance	0.54	(0.07-4.17)	0.27	(0.01-7.63)	1.12	(0.12-10.42)
Able to stabilize with assistance or did not occur [ref]						
Anemia	1.17	(0.36-3.85)	0.19	(0.02-1.84)	0.88	(0.23-3.32)
Coronary artery disease	0.53	(0.07-3.77)	5.05	(0.35-72.82)	0.36	(0.05-2.83)
Heart failure	1.27	(0.32-4.97)	8.92	(0.87-91.10)	2.46	(0.56-10.71)
Hypertension	2.03	(0.56-7.32)	16.54	(0.82-331.62)	2.32	(0.53-10.10)
Diabetes mellitus	1.40	(0.33-5.88)	0.59	(0.05-7.06)	2.23	(0.48-10.30)
Anxiety	2.13	(0.49-9.19)	1.17	(0.06-21.82)	2.67	(0.56-12.79)
Depression	0.65	(0.19-2.30)	0.06	(0.00-0.79) <sup>a</sup>	0.79	(0.20-3.13)

MDS variables mapped to GOLD group (reference = GOLD A) with multivariate multinomial logit model.

Abbreviations: ADL, activity of daily living; BMI, body mass index; CI, confidence interval; GOLD, Global Initiative for Chronic Obstructive Lung Disease; LABD, long-acting bronchodilator; MDS, Minimum Data Set; OR, odds ratio; PHQ-9, Patient Health Questionnaire-9; ref, reference category.

<sup>a</sup>Indicates significance versus GOLD A at  $P < 0.05$ .

# Chronic Obstructive Pulmonary Disease

## Assessment

- MDS Dyspnea Assessment can potentially replace either CAT or mMRC scales to establish a GOLD score of A or B/E
- Exacerbation history must be determined annually from clinical chart

## EXACERBATION HISTORY (PER YEAR)

≥ 2 moderate exacerbations or  
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## SYMPTOMS

# Chronic Obstructive Pulmonary Disease

## Treatment

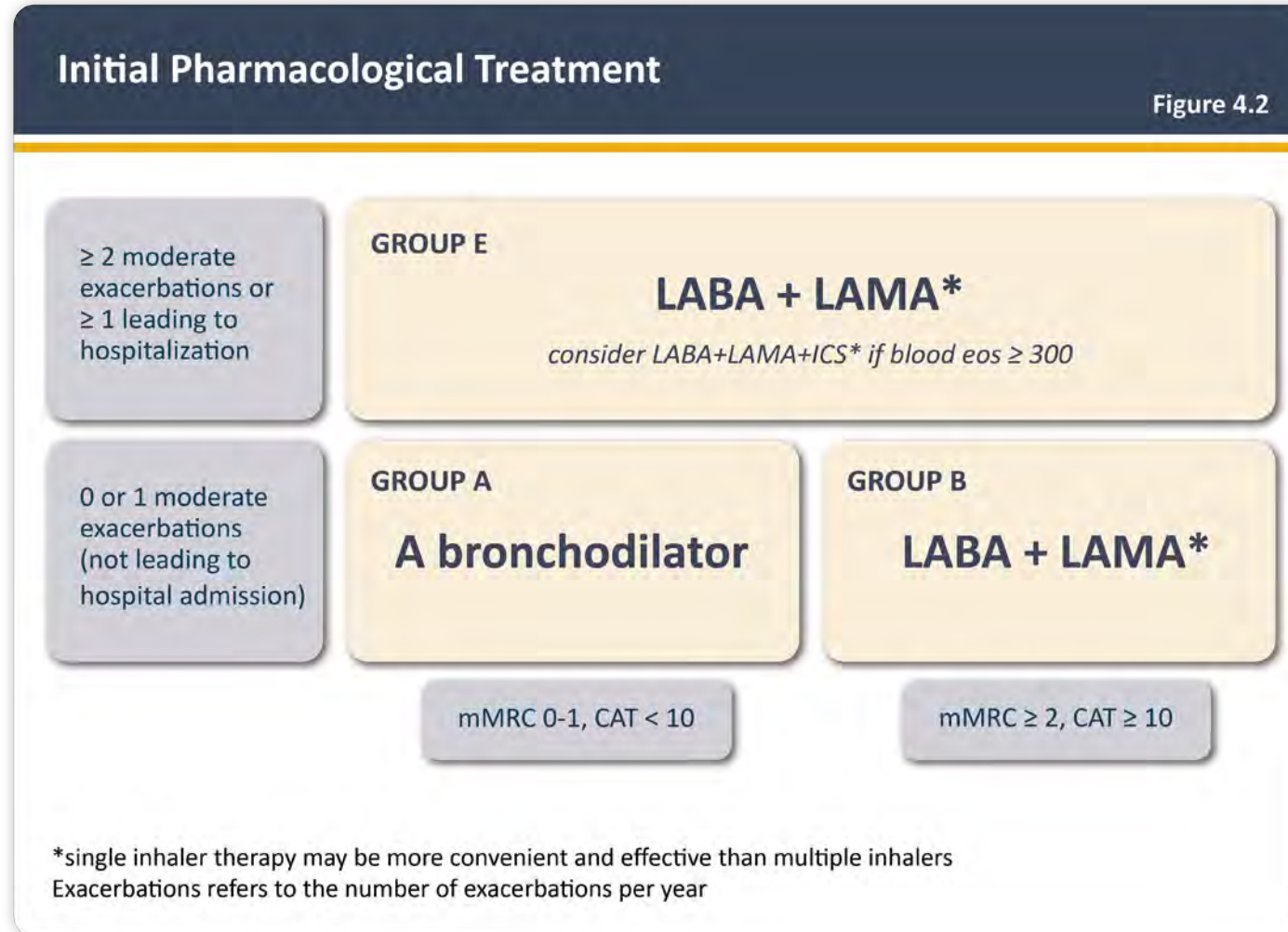
- Medication
  - Only about 25-35% of LTC residents with COPD receive a LAMA or LABA containing medication regimen
  - 40% of patients with 2 or more exacerbations in prior year were only on PRN albuterol
- Delivery Device
  - 25% have a nebulized form of medication available (usually only albuterol)



# Chronic Obstructive Pulmonary Disease

## Treatment

- Medication
- LABA + LAMA is the preferred initial inhaled medication regimen for all patients with symptomatic COPD
  - **Stiloto (Olodaterol + Tiotropium)\***
  - **Anoro (Vilanterol + Umeclidinium)\***
  - Duaklir (Formoterol + Acclidinium)
  - Bevespi (Formoterol + Glycopyrrolate)



\* - once daily

# What if Meds Don't Work

## Selective Escalation

- Single Inhalers

Trelegy (fluticasone, umeclidinium, vilanterol)

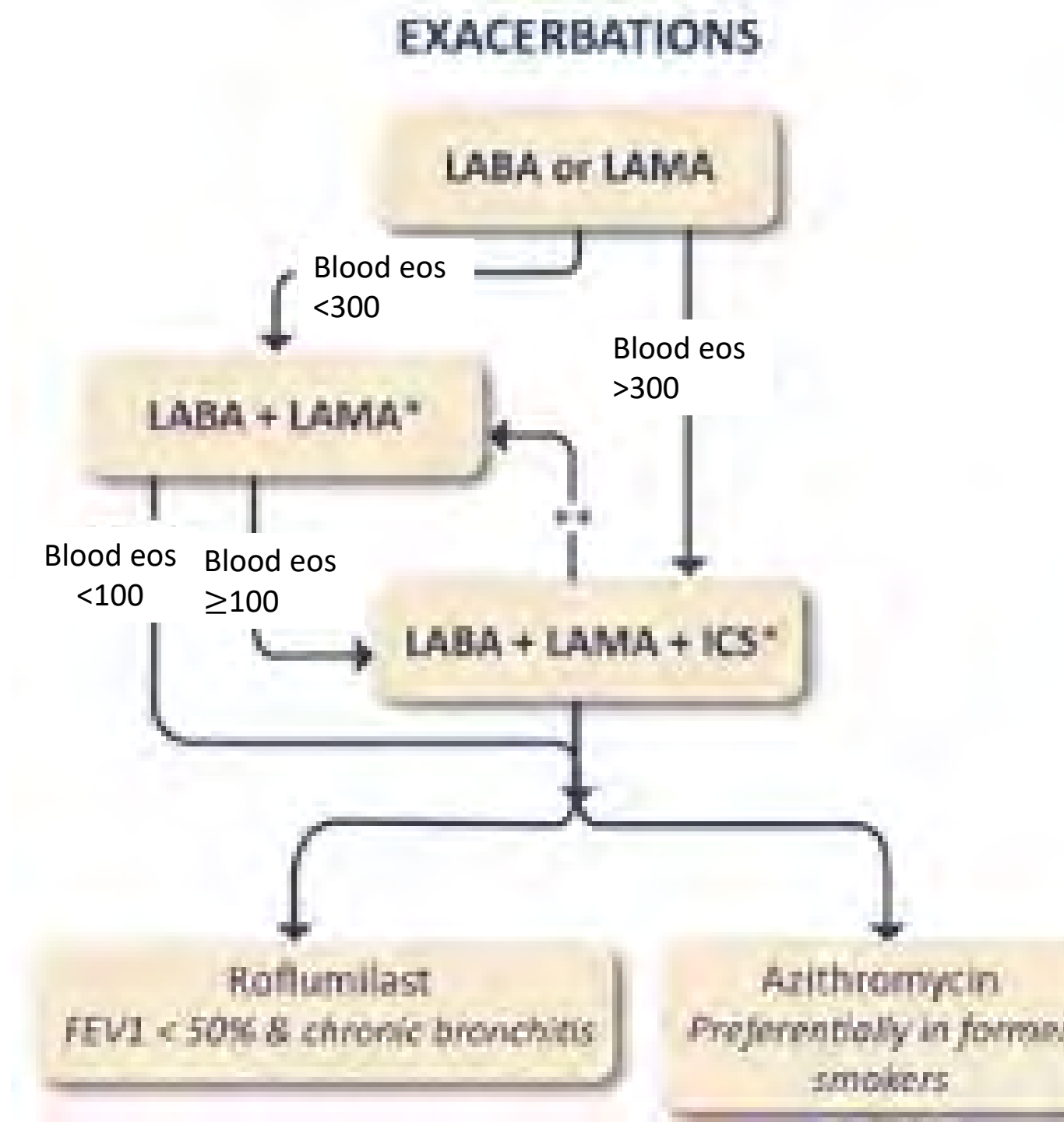
Breztri (budesonide, glycopyrrolate, formoterol)

- Two Inhaler Therapy (ICS/LABA + Tiotropium)

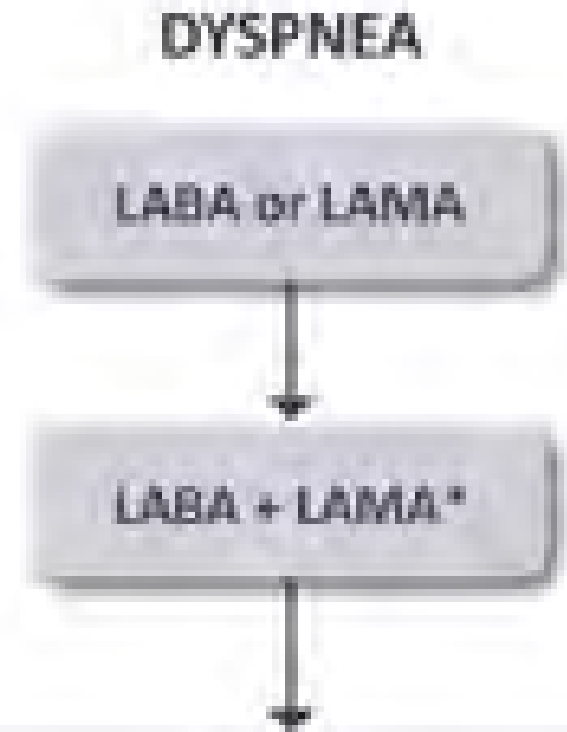
Wixela/Advair (fluticasone + salmeterol)

Symbicort (budesonide + formoterol)

Dulera (mometasone + formoterol)



# What if Meds Don't Work?



- Consider switching inhaler device or molecules
- Implement or escalate non-pharmacologic treatment(s)
- Investigate (and treat) other causes of dyspnea

# Non-Pharmacologic Therapies

Non-Pharmacologic Management of COPD\*

Table 4.9

Patient Group	Essential	Recommended	Depending on Local Guidelines
<b>A</b>	Smoking Cessation (can include pharmacological treatment)	Physical Activity	Flu Vaccination Pneumococcal Vaccination Pertussis Vaccination COVID-19 Vaccinations Shingles Vaccination
<b>B and E</b>	Smoking Cessation (can include pharmacological treatment) Pulmonary Rehabilitation	Physical Activity	Flu Vaccination Pneumococcal Vaccination Pertussis Vaccination COVID-19 Vaccinations Shingles Vaccination

\*Can include pharmacologic treatment

# Pulmonary Rehab in LTC

- Patients enrolled regardless of symptoms (only COPD dx)
- Excluded patients with CAD, CHF, MSK disorders, or “mentally challenged” (could not complete patient questionnaires with assistance)

## Inpatient Pulmonary Rehabilitation Program in a Long-Term Care Facility

### Short-Term Outcomes and Patient Satisfaction

#### ABSTRACT

The purpose of the current study was to evaluate short-term outcomes of inpatient pulmonary rehabilitation (IPR) programs for older patients with chronic obstructive pulmonary disease (COPD). IPR comprises medical management, exercise, nutrition counseling, and coping skills education programs, among other interventions. The current study used a pretest–posttest design with 21 participants evenly split by gender between the ages of 46 and 95. Effects of IPR on functional tolerance exercise capacity and perceived dyspnea on exertion level had a statistically significant difference by the end of the program. Scores for health-related quality of life and subscales of symptoms, impact, and activity in participants younger than 65 were not statistically significant, whereas St. George's Respiratory Questionnaire scores for participants older than 65 showed a statistically significant improvement. Results showed that early IPR is an effective intervention for the management of symptoms of COPD in older adults recovering from a COPD exacerbation. [*Journal of Gerontological Nursing*, 41(8), 44-52.]

disease causing persistent airflow limitations. It is generally associated with chronic and enhanced inflammatory response in the lungs and airways (GOLD, 2013). Although COPD may be prevented and treated, it cannot be cured with medical treatments. Progression of the disease is characterized by a cascade of systemic effects that lead to deteriorating respiratory function, resulting in compromised exercise tolerance capacity, perceived dyspnea on exertion, chronic cough with or without sputum production, wheezing, and respiratory failure (Qaseem et al., 2011), and decreased health-related quality of life (HRQoL) (Pasqua et al., 2009).

# Pulmonary Rehab in LTC

- Intervention
- 3h/week x 6-8 weeks
- Exercise training
  - Walking
  - Cycling
- TENS
- Dyspnea management education
- Upper extremity weight training

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# Pulmonary Rehab in LTC

- Outcome
- Improved exercise tolerance (6 minute walk test)
  - 70% increase
- Improved symptom scores

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# Medication Side-Effects

- LAMA and LABA Agents
  - Increased risk of cardiac events (MI, CHF, tachycardia, arrhythmia)
  - However even among adults with advance stage heart failure, risks were low and there was a signal for survival benefit among patients on medication<sup>a</sup>
- Inhaled Corticosteroid
  - Increased risk of pneumonia, severe pneumonia, cataract, glaucoma and long bone fractures

a- Su VY, Yang YH, Perng DW, et al. Real-world effectiveness of medications on survival in patients with COPD-heart failure overlap. *Ageing (Albany NY)*. 2019;11(11):3650-3667.

# Medication Side-Effects

- No reason to avoid LAMA/LABA inhaled medications in any patient population
- ICS should be used cautiously and de-escalated when appropriate



# Inhaler Devices

## Metered Dose Inhaler

- Advantages

Can be used with a spacer

- Disadvantages

Need to generate sufficient force to activate

Must clean spacer appropriately



# Inhaler Devices

## Dry Powder Inhaler

- **Advantages:**
  - Less Force to Activate
  - Breath Activated, Less temporal correlation
- **Disadvantages**
  - Must be held level after activation
  - Must generate sufficient inspiratory force to pull medication out of device



# Inhaler Devices

## Soft Mist Inhaler

- **Advantages:**
  - No need to generate inspiratory force
  - Potentially more of a natural breathing position
- **Disadvantages**
  - Cannot be used with spacer



# Inhaler Device

## Nebulizer

- Advantages

No breathing coordination needed

No need for patient to activate device

No maximal inspiratory force

- Disadvantages

Requires machine or medical air

Requires training to set up

No medication combinations



# Inhaler Devices

## Which to Choose

- Older adults and those with dementia can rarely perform correct technique without direct supervision and coaching
- Likely MDI with spacer is ideal first choice
- If patients have ongoing dyspnea then transition to nebulizer
- If ongoing exacerbations, optimize medications then transition to nebulizer





# Smoking Cessation

- Smoking cessation has survival benefits even if stopping after age 80
- Adults over 65 are less likely to smoke than younger adults (~9%)
- However, prevalence has not changed despite significant fall among younger adults
- Older adults less likely to stop smoking or attempt to stop smoking



# Smoking Cessation

- Older adults more likely than younger adults to successfully quit with nicotine replacement therapy alone
- Worth a trial among patients with concerns or contraindications to varenicline (Chantix)



# Summary

- COPD is extremely common among adults in nursing homes and often undertreated
- A mix of pharmacologic and non-pharmacologic therapies are effective in treating symptoms
- Overtreatment can have health consequences
- Choice of inhaler device matters a lot in this population





University of Colorado **Anschutz Medical Campus**

**THANK YOU**