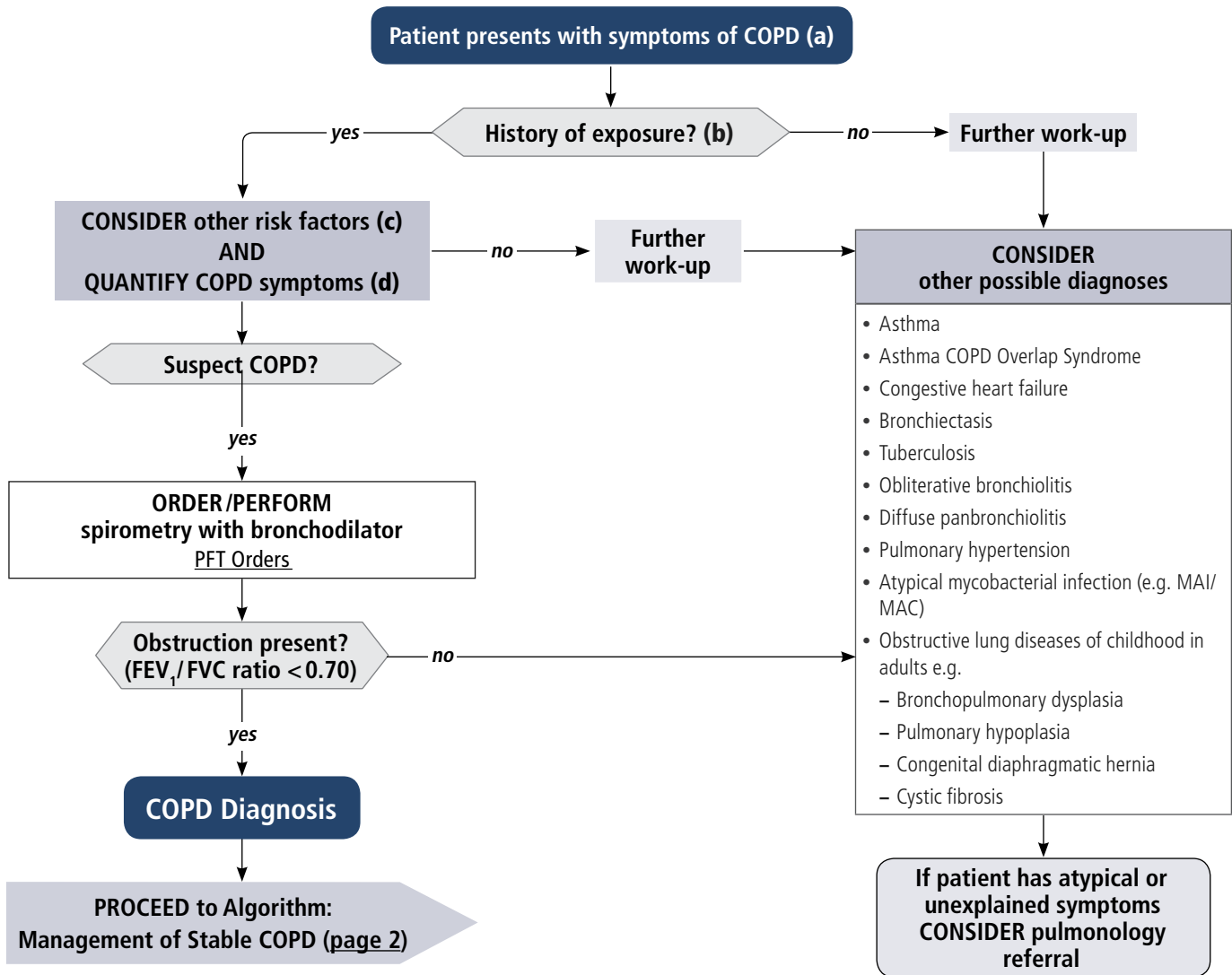


Chronic Obstructive Pulmonary Disease (COPD)

Diagnosis, Treatment, and Resources

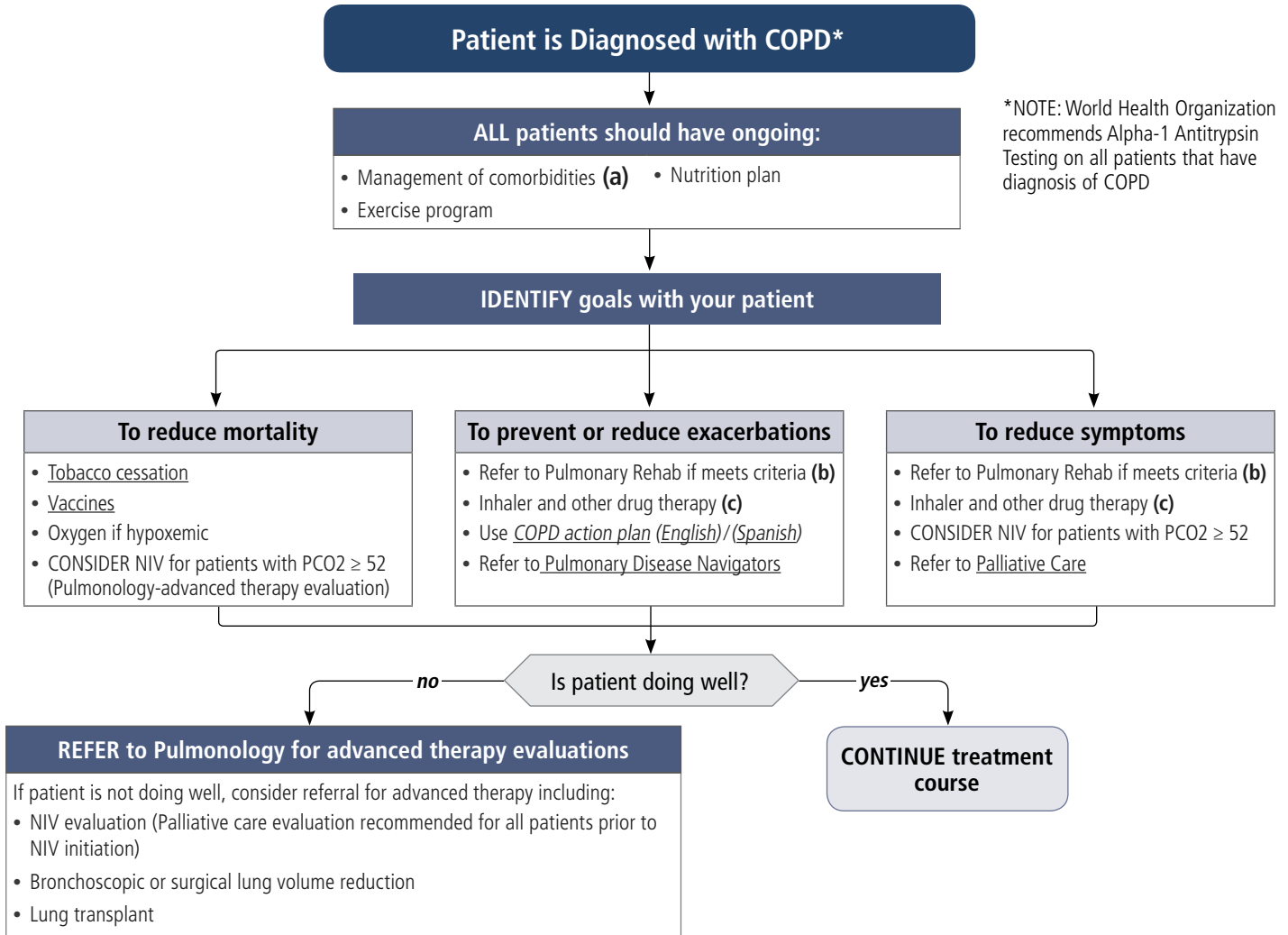
▶ ALGORITHM: DIAGNOSIS OF COPD



ALGORITHM NOTES

(a) Symptoms	(b) Exposures	(c) Other risk factors	(d) Quantify COPD symptoms
<ul style="list-style-type: none"> • Dyspnea • Chronic cough with or without sputum 	<ul style="list-style-type: none"> • Cigarettes (pack years) • Cigars, e-cigarettes, vaping, Juuling, waterpipes/hooka • Smoking marijuana • Passive smoking (second-hand smoke) • Vapors, dust, gas fumes, and occupational exposures 	<ul style="list-style-type: none"> • Factors that increase the likelihood of COPD <ul style="list-style-type: none"> – Emphysema present on prior CT – Family history of COPD – Family history of alpha-1 antitrypsin deficiency • Factors that may be associated with COPD <ul style="list-style-type: none"> – History of severe early childhood respiratory infections – History of asthma, allergies or chronic sinusitis – Eosinophilia 	<ul style="list-style-type: none"> • ADMINISTER the CAT AND/OR mMRC assessment (pg 3) • DETERMINE history of COPD exacerbations <ul style="list-style-type: none"> – Exacerbations per year – Number of antibiotics or steroid courses per year – Number of hospitalizations, ED visits and instacare visits due to COPD exacerbations • ASSESS for chronic bronchitis: Productive cough lasting at least 3 months over 2 years. If long term productive cough , CONSIDER sputum culture.

▶ ALGORITHM: MANAGEMENT OF STABLE COPD



*NOTE: World Health Organization recommends Alpha-1 Antitrypsin Testing on all patients that have diagnosis of COPD

(a) Common comorbidities

- Lung cancer
- Cardiovascular disease
- Osteoporosis
- Depression/anxiety
- GERD (higher risk of exacerbation)

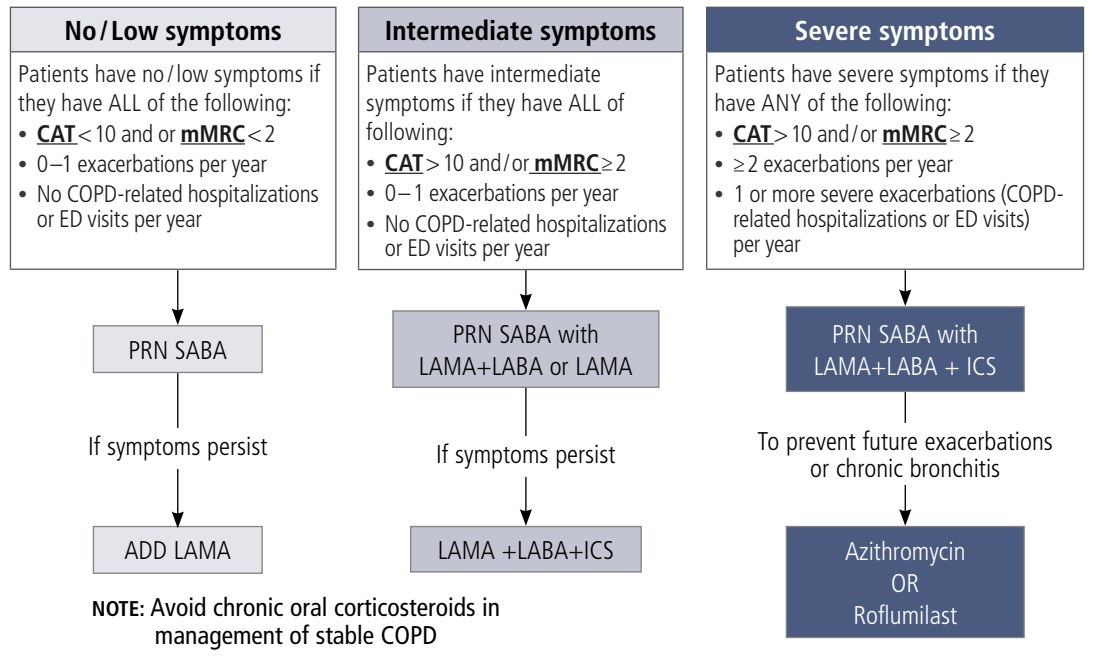
(b) Pulmonary rehab

- Criteria for pulmonary rehab referral:
- Pulmonary Function Tests performed
 - $FEV_1 < 80\%$ of predicted OR Gold stage 2–4.

Abbreviations

- NIV: Non-invasive ventilation
- GERD: Gastroesophageal Reflux Disease
- CAT: COPD assessment test
- mMRC: Modified Medical Research Council breathlessness scale
- SABA: Short-acting beta₂ agonists
- LAMA: Long-acting muscarinic antagonists
- LABA: Long-acting beta₂ agonists
- ICS: Inhaled corticosteroids

(c) Inhaler and other drug therapy for COPD. (See Table 2 for details)

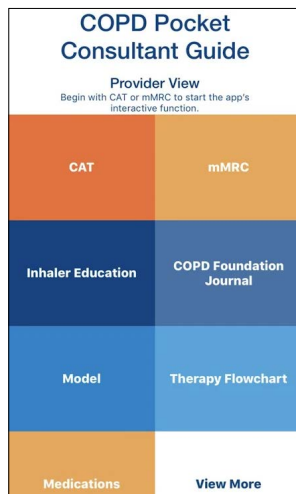


► RESOURCES FOR PROVIDERS

[COPD Foundations: COPD Pocket Consultant Guide app](#)

Available for Android and iPhone

[GOLD's Pocket Guide to COPD Diagnosis, Management, and Prevention 2020](#)



This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every physician or every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although physicians are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base. Send feedback to [Medical Specialties Clinical Program Pulmonology](#), Intermountain Healthcare.

► RESOURCES FOR PATIENTS

[Asthma and COPD: How to use a nebulizer](#)
Available in [English](#) and [Spanish](#)

[Asthma and COPD: How to use an MDI](#)
Available in [English](#) and [Spanish](#)

[COPD Chronic Obstructive Pulmonary Disease](#)
Available in [English](#) and [Spanish](#)

[Breathing Better: A handbook for people with COPD and other chronic lung conditions](#)
Available in [English](#)

[COPD Action Plan](#)
Available in [English](#) and [Spanish](#)

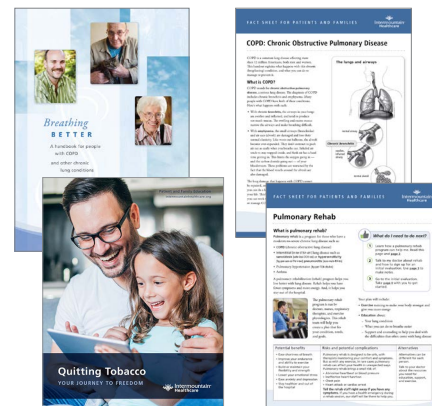
[Pulmonary Rehab](#)
Available in [English](#) and [Spanish](#)

[Quitting Tobacco: Your Journey to Freedom](#)
Available in [English](#) and [Spanish](#)

[Respiratory Therapy: Your Plan for Better Breathing](#)
Available in [English](#) and [Spanish](#)

[Nebulizer Safety and Training \(Homecare\)](#)
Available in [English](#) and [Spanish](#)

[Driving With a Chronic Health Condition](#)
Available in [English](#) and [Spanish](#)



TABLES

TABLE 1. Modified Medical Research Council Breathlessness Scale (mMRC)

GRADE	Description of Breathlessness
0	Not troubled by breathlessness except on strenuous exercise
1	Short of breath when hurrying on level ground or walking up a slight hill
2	Walks slower than people of the same age because of breathlessness, or have to stop for breath when walking at own pace
3	Stops for breath after walking about 100 yards or after a few minutes on level ground
4	Too breathless to leave the house or breathless when dressing

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MRC- Fletcher CM. The clinical diagnosis of pulmonary emphysema—an experimental study, *Proc R Soc Med*, 1952, vol. 45 (pg. 577-584)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1987525/>

mMRC The MRC breathlessness scale. *Occupational Medicine* (2008) 58 (3): 226–227

TABLE 2. Medications used in the treatment of stable COPD

Medication name - generic (Brand)	Dosages Available	Frequency	Tier*	Cost†
Short-acting Beta₂ Agonists- Inhaled (SABAs)				
albuterol solution	0.63/3, 1.25 /3, 2.5/3, 5/1 mg/mL	1 NEB every 4–6 hrs	PG	\$
albuterol HFA	108 mcg/INH	1–2 INH every 4–6 hrs	PG, NPB	\$\$
levalbuterol solution	1.25/0.5, 0.3/3, 0.63 /3, 1.25/3 mg/ml	1–2 NEB 3 times daily	PG	\$
levalbuterol HFA (Xopenex)	45 mcg/INH	1–2 INH every 4–6 hrs	PG	\$\$
Long-acting Muscarinic Antagonists (LAMAs)				
acridinium DPI (Tudorza)	400 mcg/INH	1 INH 2 times daily	NPB (ST)	\$\$\$\$\$
glycopyrrolate DPI (Seebri)	15.6 mcg/INH	1 INH 2 times daily	NPB (ST)	\$\$\$\$\$
glycopyrronium solution (Lonhala)	25 mcg/mL	1 NEB 2 times daily	NPB (PA)	\$\$\$\$\$
revefenacin solution (Yupelri)	175 mcg/3mL	1 NEB once daily	NPB (PA)	\$\$\$\$\$
tiotropium (Spiriva Handihaler, Spiriva Respimat)	18 mcg capsule, 2.5 mcg/INH	2 INH once daily	PB	\$\$\$\$
umeclidinium DPI (Incruse)	62.5 mcg/INH	1 INH once daily	NPB (ST)	\$\$\$\$\$
Short-acting Muscarinic Antagonists (SAMAs) - Can be used in place of LAMAs if use frequencies as listed below				
ipratropium solution	0.5 mg/2.5 mL	1 NEB 3–4 times daily	PG	\$
ipratropium aerosol (Atrovent)	17 mcg/INH	2 INH 4 times daily	NPB	\$\$\$\$\$
SABA + SAMA (combination)				
albuterol/ipratropium aerosol (Combivent)	100/20 mcg per INH	1 INH 4 times daily	PB	\$\$\$
albuterol/ipratropium solution (Duoneb)	0.5 /3, 2.5/3 mg/mL	1 NEB 4 times daily	PG	\$\$
Long-acting Beta₂ Agonists (LABAs)				
arformoterol solution (Brovana)	15 mcg/2 mL	1 NEB 2 times daily	NPB	\$\$\$\$\$
formoterol solution (Perforomist)	20 mcg/2 mL	1 NEB 2 times daily	NPB	\$\$\$\$\$
indacaterol DPI (Arcapta)	75 mcg//INH	1 INH once daily	NPB (ST)	\$\$\$\$
olodaterol aerosol (Striverdi)	2.5 mcg/INH	2 INH once daily	PB	\$\$\$\$
salmeterol DPI (Serevent)	50 mcg/INH	1 INH 2 times daily	PB	\$\$\$\$\$
LAMA + LABA (combination)				
glycopyrrolate/formoterol aerosol (Bevespi)	9/4.8 mcg	2 INH 2 times daily	NPB (ST)	\$\$\$\$\$
glycopyrrolate/indacaterol DPI (Utibron)	27.5/15.6 mcg	1 INH 2 times daily	NPB (ST)	\$\$\$\$\$
tiotropium/olodaterol aerosol (Stiolto)	2.5/2.5 mcg	2 INH once daily	PB	\$\$\$\$\$
umeclidinium/vilanterol DPI (Anoro)	62.5 /25 mcg	1 INH once daily	PB	\$\$\$\$\$
acridinium/formoterol (Duaklir, Pressair)	400/12 mcg	1 INH 2 times daily	NC	\$\$\$\$\$
Inhaled corticosteroids (ICS)				
beclomethasone aerosol (Qvar)‡	40, 80 mcg/INH	40–320 mcg once daily	NPB	\$\$\$\$
budesonide DPI (Pulmicort) ‡	90, 180 mcg/INH	180–360 mcg 2 times daily	NPB	\$\$\$
budesonide solution	0.25/2, 0.5/2, 1/2 mg/mL	1–2 mg every 6 hours	NPG	\$\$\$
ciclesonide aerosol (Alvesco) ‡	80, 160 mcg/INH	80–160 mcg 2 times daily	NPB	\$\$\$\$
fluticasone aerosol (Flovent HFA) ‡	110, 220, 440 mcg/INH	110–330 mcg 2 times daily	PB	\$\$\$
fluticasone DPI (Flovent Diskus) ‡	50, 100, 250 mcg/INH	100 mcg 2 times daily	PB	\$\$\$
fluticasone DPI (Arnuity)	50, 100, 200 mcg/INH	50–500 mcg 2 times daily	PB	\$\$\$
mometasone DPI (Asmanex Twisthaler) ‡	110, 220 mcg/INH	220–440 mcg once daily	PB	\$\$\$
mometasone HFA (Asmanex HFA) ‡	100, 200 mcg/INH	200–400 mcg once daily	PB	\$\$\$
ICS + LABA (combination)				
budesonide/formoterol aerosol (Symbicort)	80/4.5, 160/4.5 mcg	2 INH 2 times daily	PG	\$\$\$\$
fluticasone/salmeterol DPI (Wixela, Advair)	100/50, 250/50, 500/50 mcg	1 INH 2 times daily	PG	\$\$\$
fluticasone/salmeterol DPI (Airduo, Respiclick) ‡	55/14, 113/14, 232/14 mcg	1 INH 2 times daily	PG	\$\$\$
fluticasone/salmeterol aerosol (Advair HFA) ‡	45/21, 115/21, 231/21 mcg	1 INH 2 times daily	NPB (PA)	\$\$\$\$\$
fluticasone/vilanterol DPI (Breo)	100/25, 200/25 mcg	1 INH once daily	NPB (PA)	\$\$\$\$\$
mometasone/formoterol aerosol (Dulera) ‡	100/5, 200/5 mcg	2 INH 2 times daily	NPB (PA)	\$\$\$\$\$
LABA + LAMA + ICS (combination)				
fluticasone/umeclidinium/vilanterol (Trelegy)	100/62.5/25 mcg	1 INH once daily	PB	\$\$\$\$\$
budesonide/formoterol/glycopyrrolate (Breztri)	160/9/4.8 mcg/INH	2 INH 2 times daily	NC	\$\$\$\$\$
Phosphodiesterase-4 (PDE4) Inhibitor				
roflumilast (Daliresp)	250, 500 mg tablet	1 tablet orally once daily	PB	\$\$\$\$\$

* SelectHealth Tier: PG= Preferred generic, NPG= Non-Preferred generic, PB= Preferred brand, NPB= Non-preferred brand, NC= Not covered, PA= Prior authorization, ST= Step therapy
†Cost: Estimated monthly cost based on dose. \$=\$1 to \$25; \$\$=\$26 to \$75; \$\$\$=\$76 to \$150; \$\$\$\$=\$151 to \$300; \$\$\$\$\$=>\$300 ‡ Off-label for COPD