

WELCOME TO COPD 101



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- Pathophysiology
- Risk Factors and Epidemiology
- Diagnosis
- Treatment Strategies
- Additional Resources
- Patient Materials

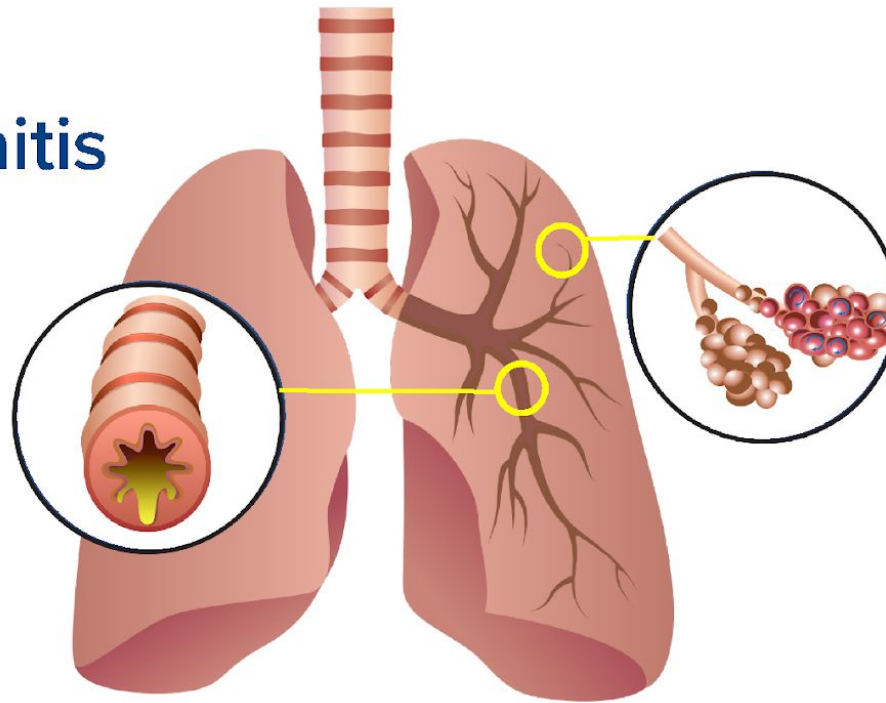
Pathophysiology



Most people with COPD have a combination of:

Chronic bronchitis characterized by

- Airways inflammation
- Mucus hypersecretion



Emphysema characterized by

- Alveolar consolidation
- Loss of elastic recoil
- Occasionally, pulmonary blebs & bullae

One pathology may be dominant, but generally both are present.¹

Many have other pulmonary conditions (such as asthma and bronchiectasis), potentially complicating diagnosis.

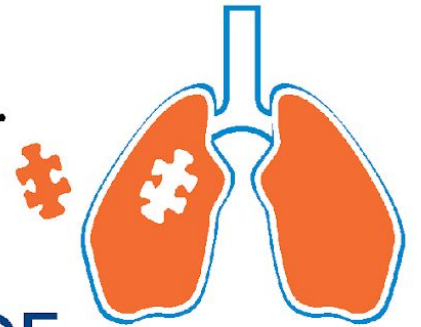


Risk Factors and Epidemiology



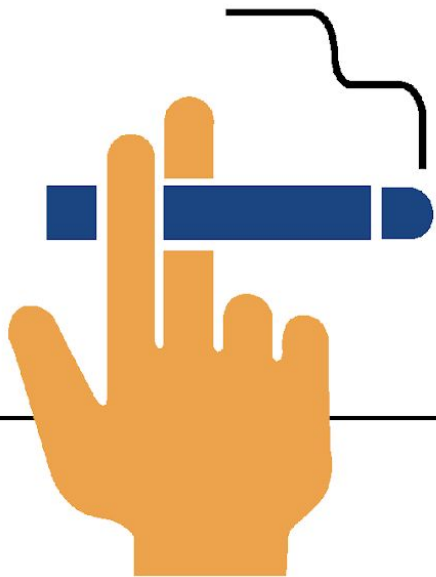
PREVALENCE (in Adults)

- Nearly **16 MILLION** Americans are diagnosed with COPD.
- **16 MILLION MORE** have COPD but are **UNDIAGNOSED**.
- Cases of COPD are expected to **INCREASE WORLDWIDE** due to exposure to smoke, pollution, and other inhaled irritants.
- Nearly **ONE OUT of EVERY FIVE PATIENTS** 40 years or older in U.S. hospitals has a diagnosis of COPD.
- More than **320 MILLION** people are affected by COPD worldwide.²

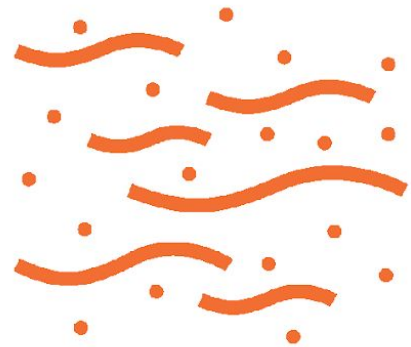


Risk Factors

Age 40+



Smoking
(at least 10 pack-years)



Occupational/Environmental
exposures



Alpha-1/Genetic COPD



History of asthma

Barriers to Diagnosis



- COPD symptoms can be nonspecific and confused with simply “getting older.”
- Many feel guilt and shame for having damaged their lungs through lifestyle and are reluctant to mention symptoms.
- They may present with more pressing or immediate health issues.
- Not all offices or clinics have PFT equipment available and/or many patients may not follow up with referrals.

Where Is Your COPD Population?

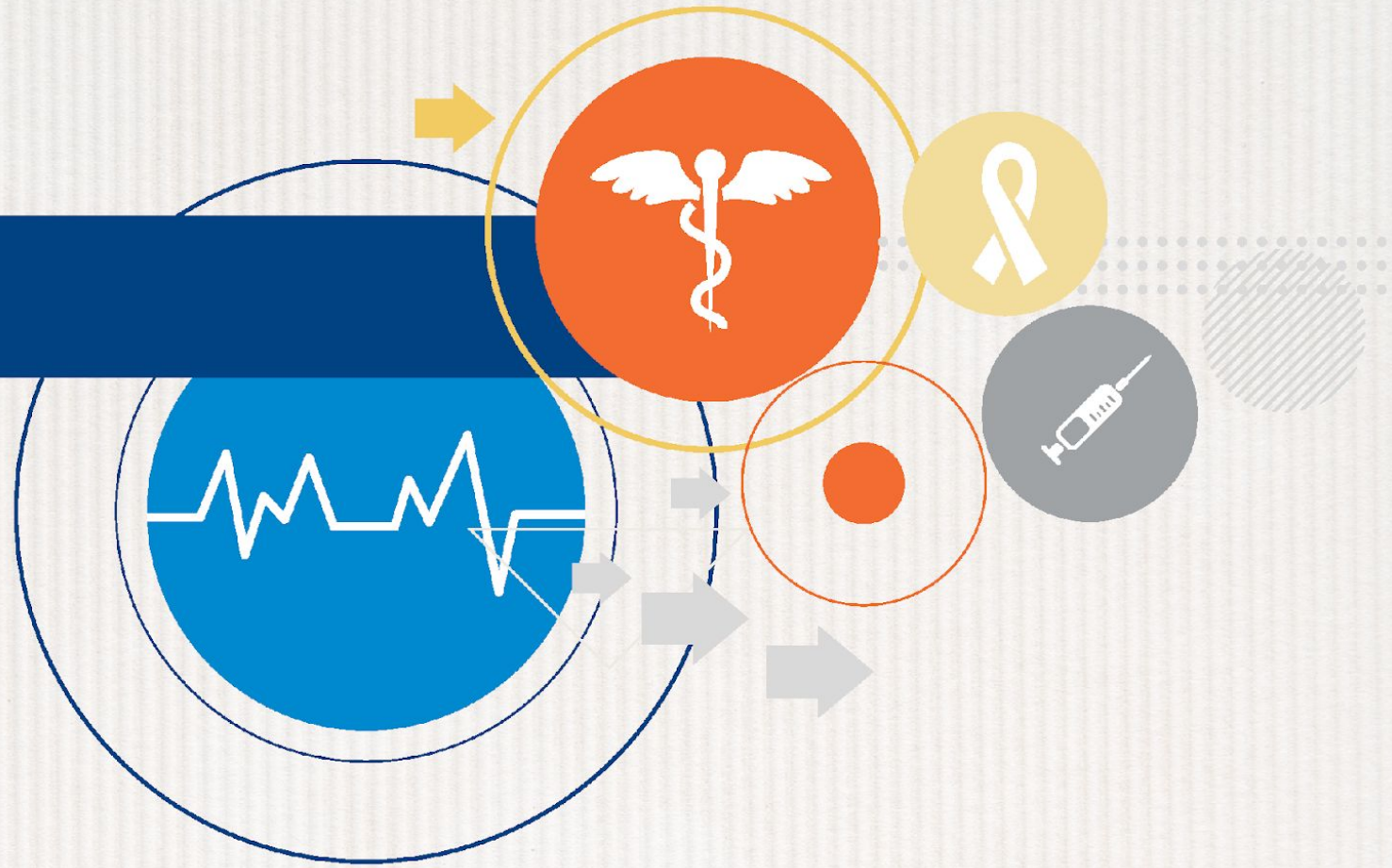
To help facilitate diagnosis, there are simple questions you can ask patients you suspect may have COPD:

- Have you ever lived around dirty, polluted air or smoke?
- Do your symptoms change with the seasons?
- Do your symptoms make strenuous activity (e.g., carrying heavy loads or aerobic exercise) very difficult?
- Do you get tired easily?
- Have you missed work because of your symptoms?

If the answer is YES to 2 or more, your patient may have COPD.⁵



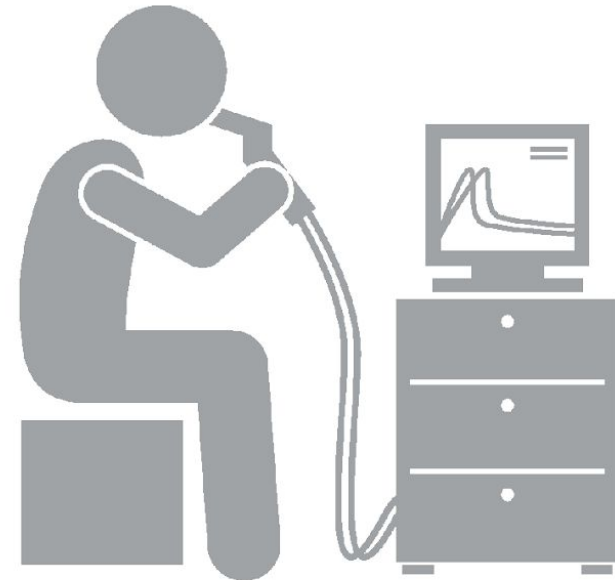
Diagnosis



Spirometry is Key

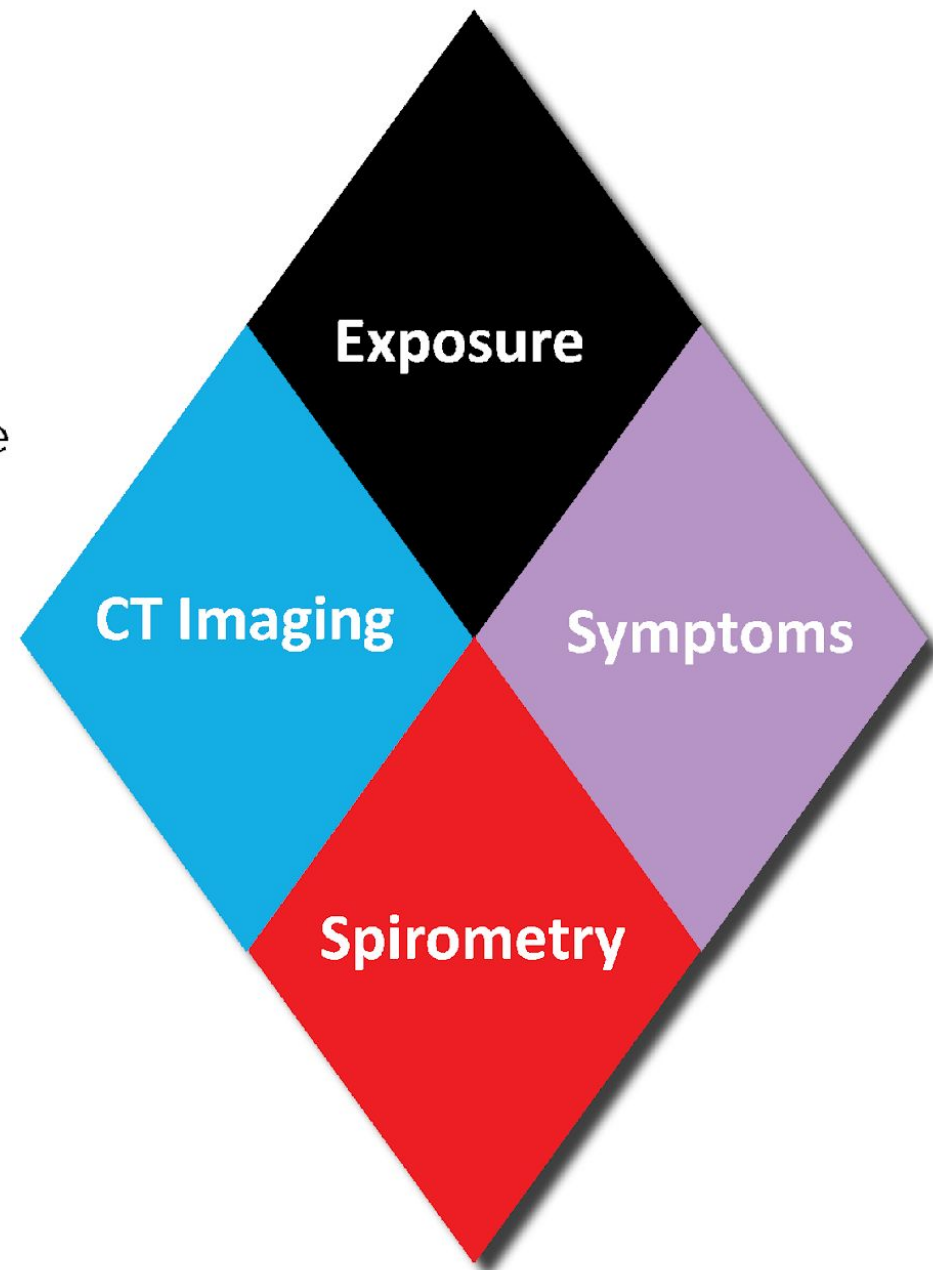
According to best practice recommendations from the Global Initiative for Chronic Obstructive Lung Disease (GOLD), the American Thoracic Society (ATS), and the European Respiratory Society (ERS), post-bronchodilator spirometry is required for diagnosis. An FEV_1/FVC ratio < 0.70 and/or $FEV_1 < 80\%$ predicted is diagnostic for COPD.

- FEV_1 : Forced Expiratory Volume in 1 second
- FVC: Forced Vital Capacity











Another Perspective

- The COPDGene® study has given us a potential new paradigm to evaluate the evolving definition of COPD.⁷
- Spirometry alone may not capture all those with COPD and may not be easily accessible in all practices.
- Looking at the additional factors may be useful in certain scenarios.



Classification

- The number of positive factors your patient has affects their odds of having chronic obstruction.
- Spirometry is still needed for clinical certainty, but the likelihood of symptoms being related to COPD can support your clinical decision-making.

	Category	COPDGene 2019® Classification
	A	No COPD
	B	Possible COPD
	C	
	D	
	E	Probable COPD
	F	
	G	
	H	Definite COPD

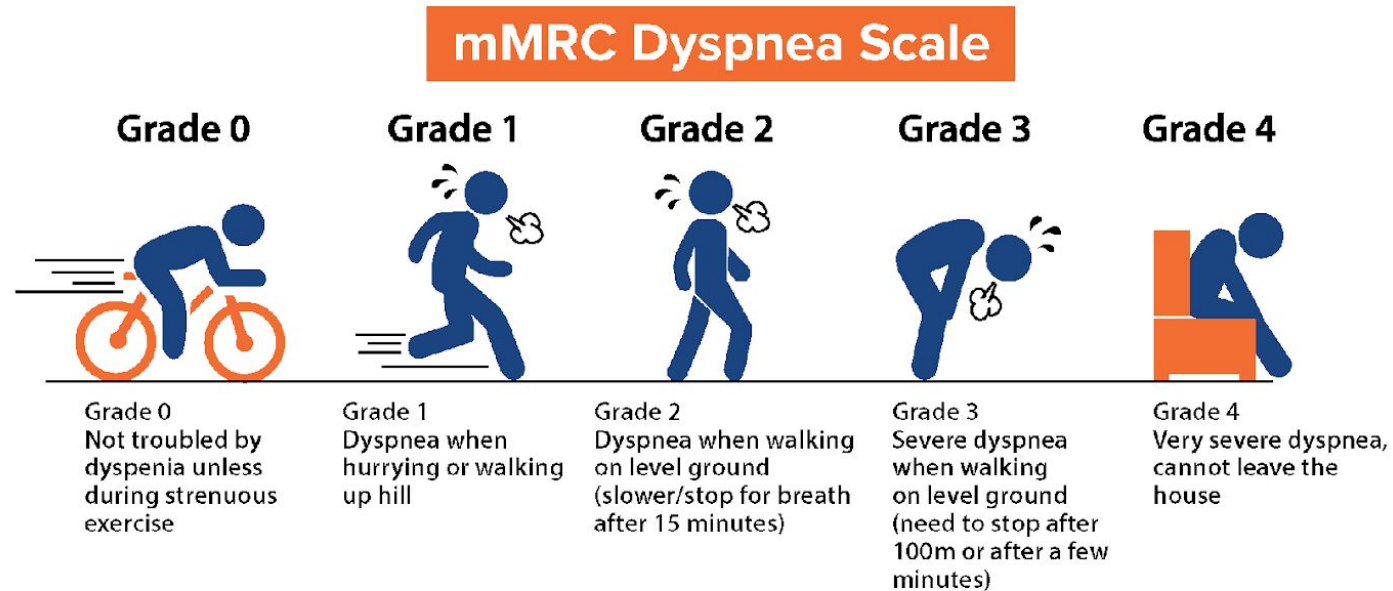
Exposure

- In COPDGene[®], exposure was defined as at least a 10 pack-year history of smoking.
- Additional exposures, such as to environmental pollutants or biomass smoke, may contribute to the development of COPD, but these were not formally evaluated.



Symptoms

- Modified Medical Research Council (mMRC) score of AT LEAST 2
- Diagnosis of chronic bronchitis

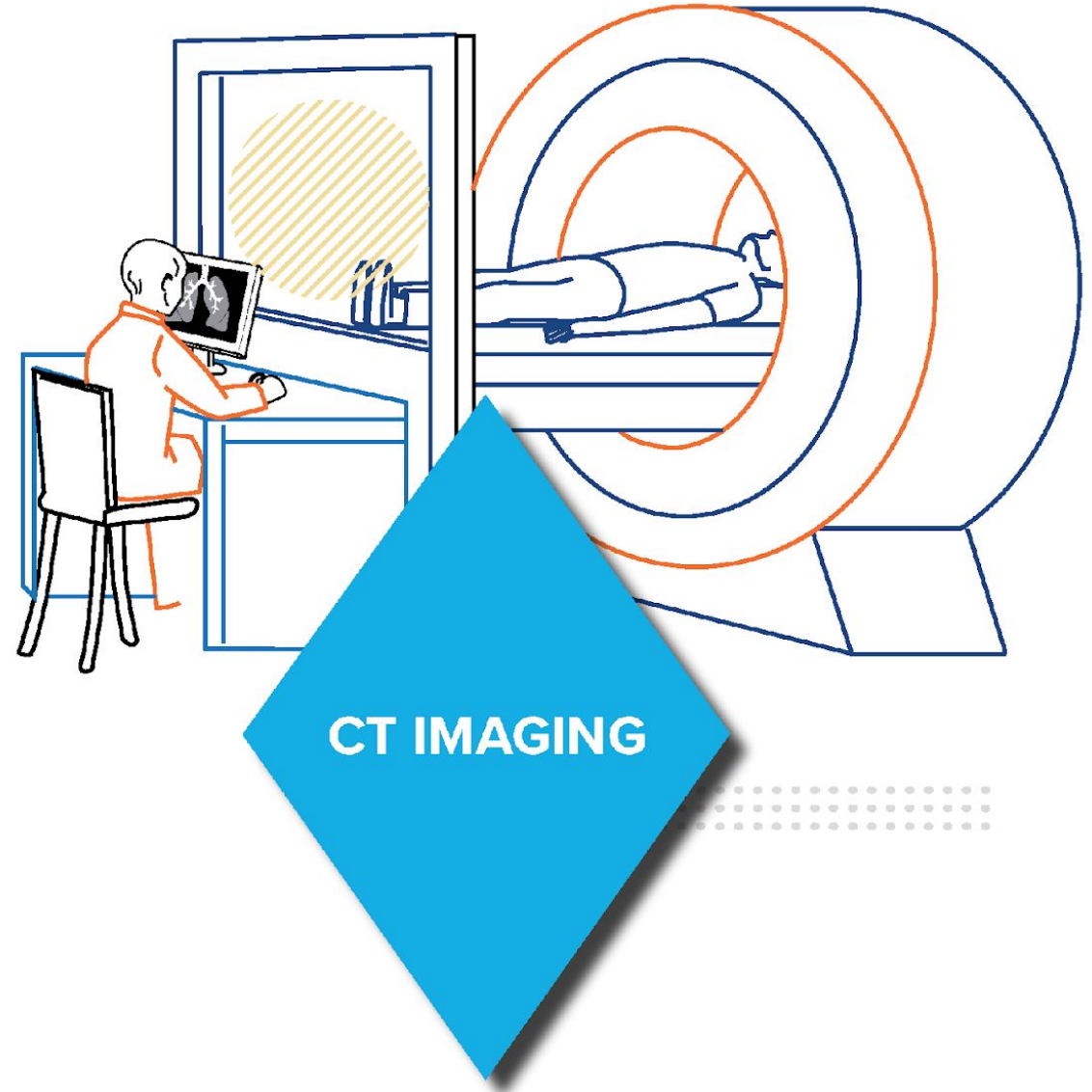


CT Imaging

Positive if patient's chest CT scan revealed:

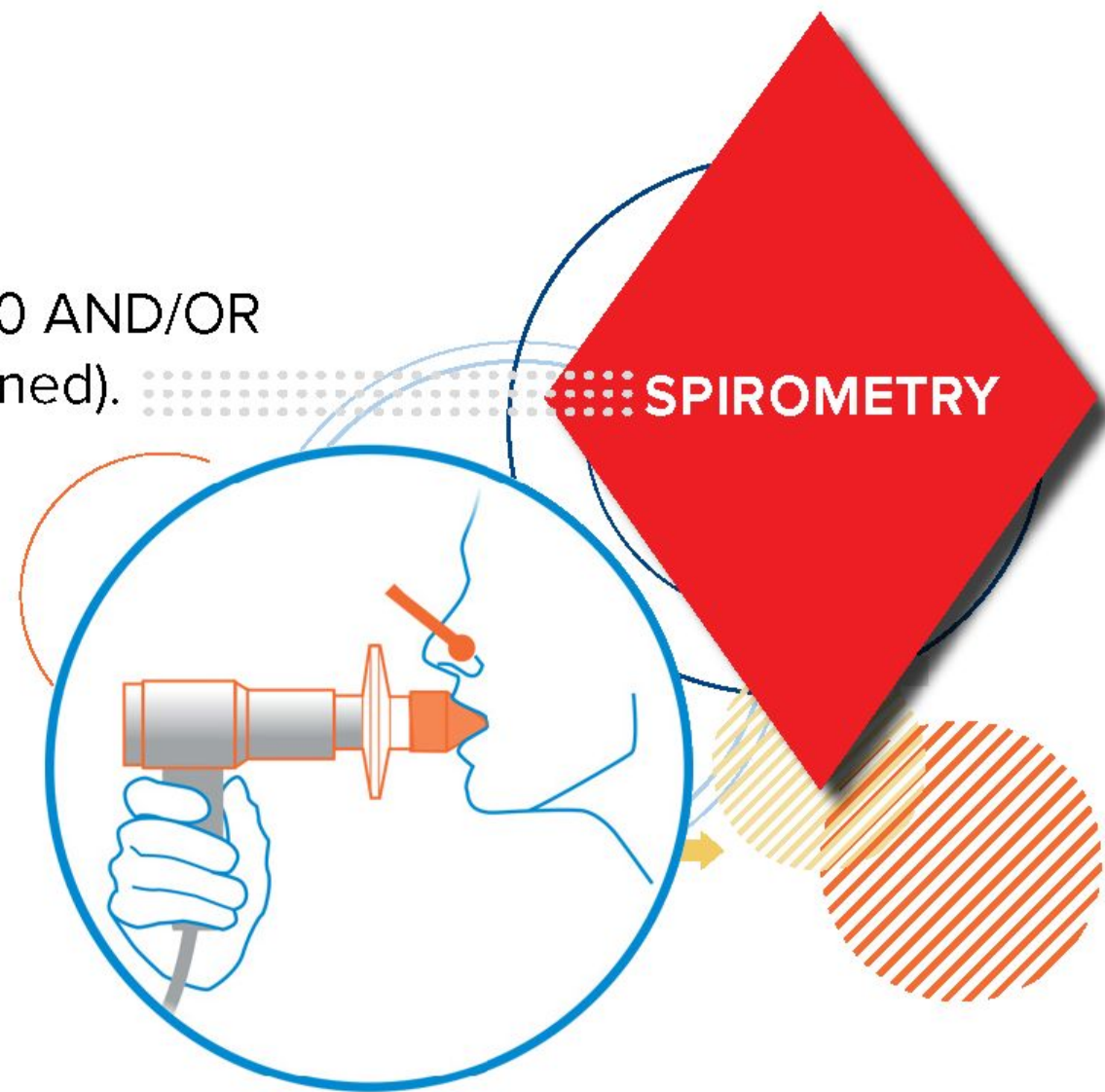
- At least 5% emphysema AND/OR
- At least 15% gas trapping AND/OR
- Pi10 of at least 2.5 millimeters

However, these values may not appear on every CT report.

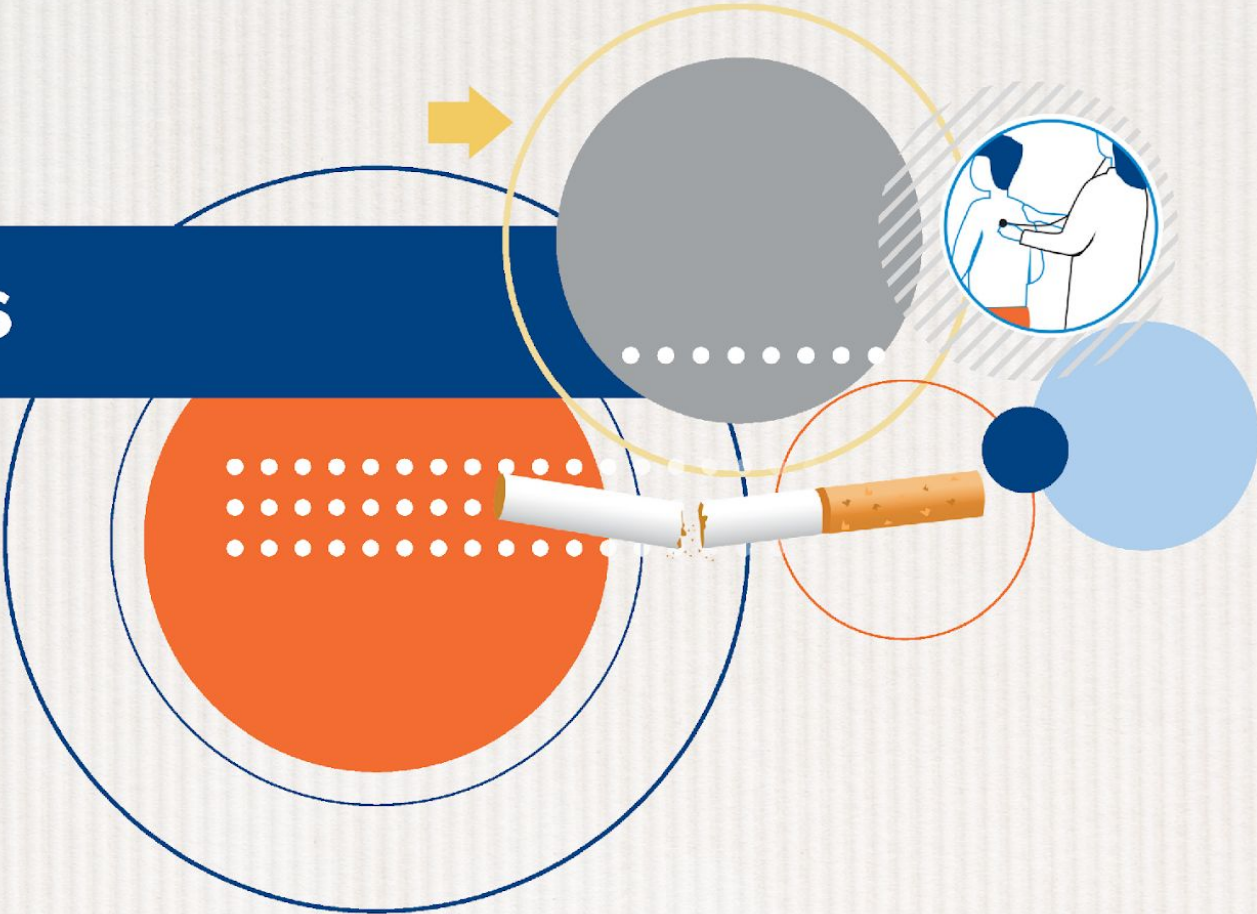


Spirometry

Post-bronchodilator FEV_1/FVC ratio < 0.70 AND/OR $FEV_1 < 80\%$ predicted (as previously defined).



Treatment Strategies



Tobacco Cessation

All people with COPD should have tobacco treatment if they continue to smoke!



Tobacco Cessation — Counseling

START BY ASKING:

- For permission to discuss usage of tobacco/ecigs
- About desire for behavior change



ASSESS

- Usage rate/frequency
- Symptom burden
- Financial cost

ADVISE

- Benefits of quitting
- Available resources
- What to expect

AGREE

- The importance of quitting
- Positive, reasonable goals/timelines

ASSIST

- Order prescriptions
- Connect with counselor/other resources
- Set follow-up



RELEVANCE

Collaborate on tangible reasons quitting might be personally relevant (e.g., improved health status or lower spending).

RISKS

Reinforce (cooperatively & gently) the potential adverse effects of continued tobacco/ecig usage.

REWARDS

Remind all potential positive effects of quitting, including those that seem hypothetical or intangible.

ROADBLOCKS

Identify possible real or perceived barriers to successful behavior change.

REPEAT

Discuss cessation at every clinical encounter until motivation increases, reiterating that most quits take multiple attempts.

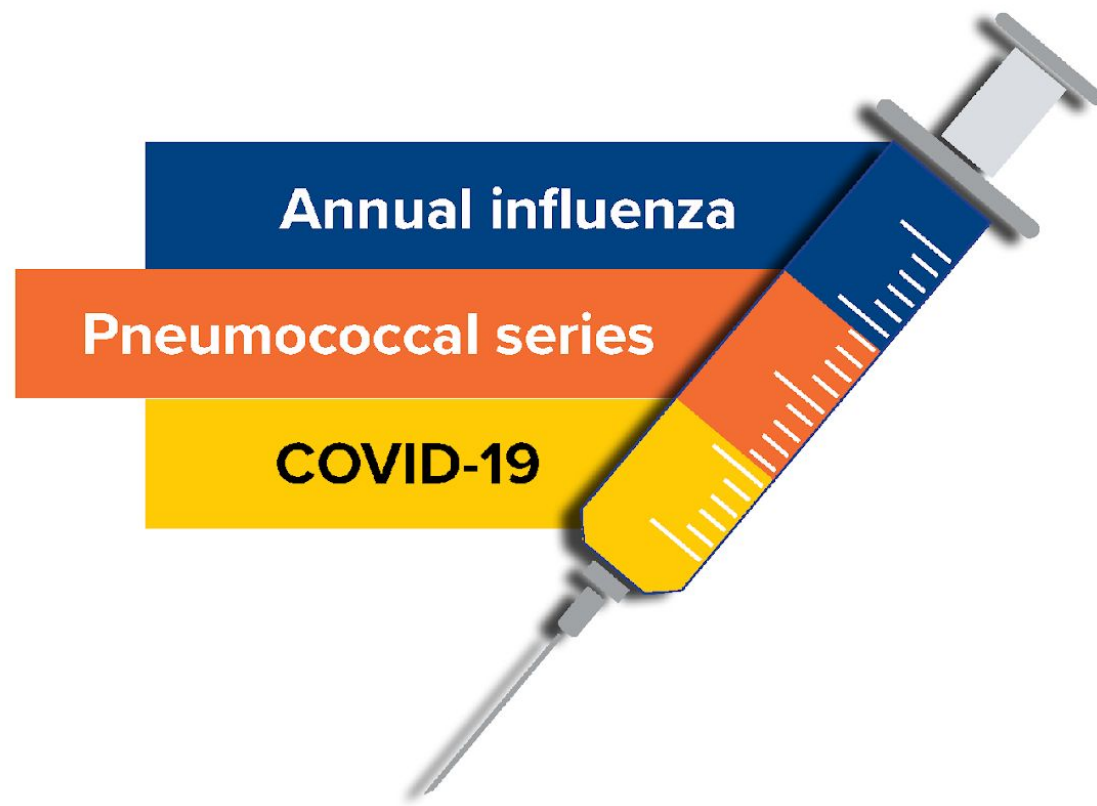
Tobacco Cessation — Pharmacology

- Nicotine Replacement Therapy
 - Patch
 - Gum
 - Lozenge
 - Inhalers/nasal sprays
 - Combination
- Bupropion/varenicline



Vaccination Is Essential for All!

Vaccinations are the first line of defense against communicable respiratory illnesses among people who already have respiratory impairments.



So Is Exercise!

- ALL patients should be on a program of regular exercise appropriate for their activity capacity.
- In most cases, clinicians should consider a referral to a local (or online) pulmonary rehabilitation program for additional therapy.




Pharmacology

- First, a symptom baseline must be established using either the mMRC or the COPD Assessment Test (CAT)[™], as well as exacerbation history (over the previous 12 months). The more exacerbations one has, the greater the risk of future flares.
- Then, ongoing management will depend on progression of symptoms and patient-reported outcomes.

COPD Assessment Test (CAT)

	SCORE
I never cough 0 1 2 3 4 5 I cough all the time	<input type="text"/>
I have no phlegm (mucus) in my chest at all 0 1 2 3 4 5 My chest is completely full of phlegm (mucus)	<input type="text"/>
My chest does not feel tight at all 0 1 2 3 4 5 My chest feels very tight	<input type="text"/>
When I walk up a hill or one flight of stairs I am not breathless 0 1 2 3 4 5 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 0 1 2 3 4 5 I am very limited doing activities at home	<input type="text"/>
I am confident leaving my home despite my condition 0 1 2 3 4 5 I am not at all confident leaving my home because of my lung condition	<input type="text"/>
I sleep soundly 0 1 2 3 4 5 I don't sleep soundly because of my lung condition	<input type="text"/>
I have lots of energy 0 1 2 3 4 5 I have no energy at all	<input type="text"/>
TOTAL SCORE	<input type="text"/>

 COPDAssessment Test and CAT logo is a trademark of the GlaxoSmithKline group of companies.
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www.catestonline.org

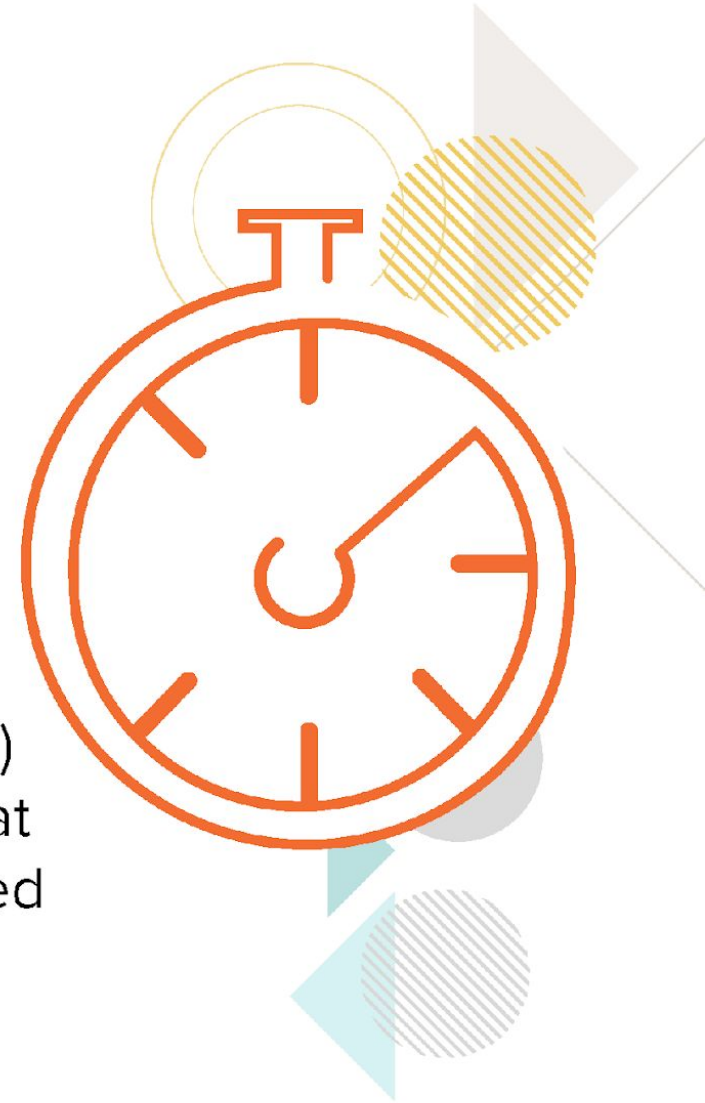
Medication Classes

- **Beta₂ Agonists:** These medications stimulate these receptors in the airways to increase intracellular cAMP and inhibit airway smooth muscle contraction, thereby reducing bronchospasm.
- **Muscarinic Antagonists:** These molecules bind muscarinic receptors on smooth muscle (and other) cells, reducing parasympathetic activity and therefore bronchospasm.
- **Inhaled Corticosteroids:** These moderate capillary permeability, as well as promote lysosomal membrane stabilization in the airways, reducing inflammation.



Duration of Action

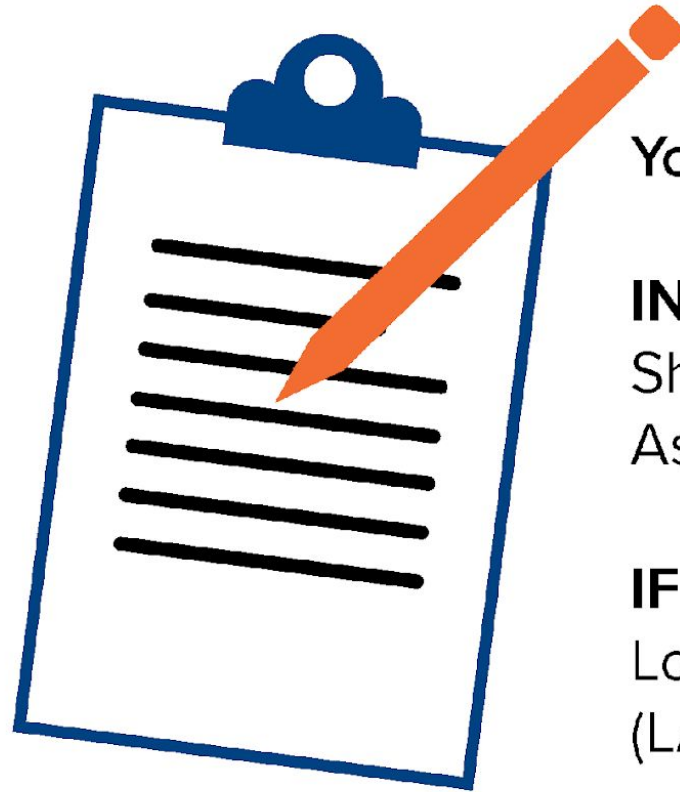
- **Short-Acting** (sometimes called “reliever” or “rescue”) medications: These are bronchodilators that have a limited duration (usually between 4-6 hours) and are used for reducing periodic increases in symptom burden due to various triggers (e.g., activity, odors/perfumes, and similar irritants).
- **Long-Acting** (sometimes called “controller” or “maintenance”) medications: These are bronchodilators or corticosteroids that are used every day to reduce baseline symptoms for improved quality of life.



Mild symptom burden with low risk of future exacerbations

If your patient has:

- CAT score < 10
- mMRC < 2
- <2 exacerbations in 12 months



You should consider:

INITIAL THERAPY:

Short Acting Bronchodilator (SABD)
As Needed

IF NO IMPROVEMENT:

Long-Acting Muscarinic Antagonist
(LAMA) Daily

Mild symptom burden with higher risk of future exacerbations

If your patient has:

- CAT score < 10
- mMRC < 2
- 2 or more exacerbations in 12 months OR 1 hospitalization for COPD

You should consider:

INITIAL THERAPY:

LAMA + Long-Acting Beta Agonist (LABA)
OR
LAMA + Inhaled Corticosteroid (ICS)
Daily

IF NO IMPROVEMENT:

LAMA + LABA + ICS Daily

Heavy symptom burden with low risk of future exacerbations

If your patient has:

- CAT score > 10
- mMRC \geq 2
- <2 exacerbations in 12 months

You should consider:

INITIAL THERAPY:

LAMA + LABA

Daily

IF NO IMPROVEMENT:

LAMA + LABA + ICS

Daily

Heavy symptom burden with higher risk of future exacerbations

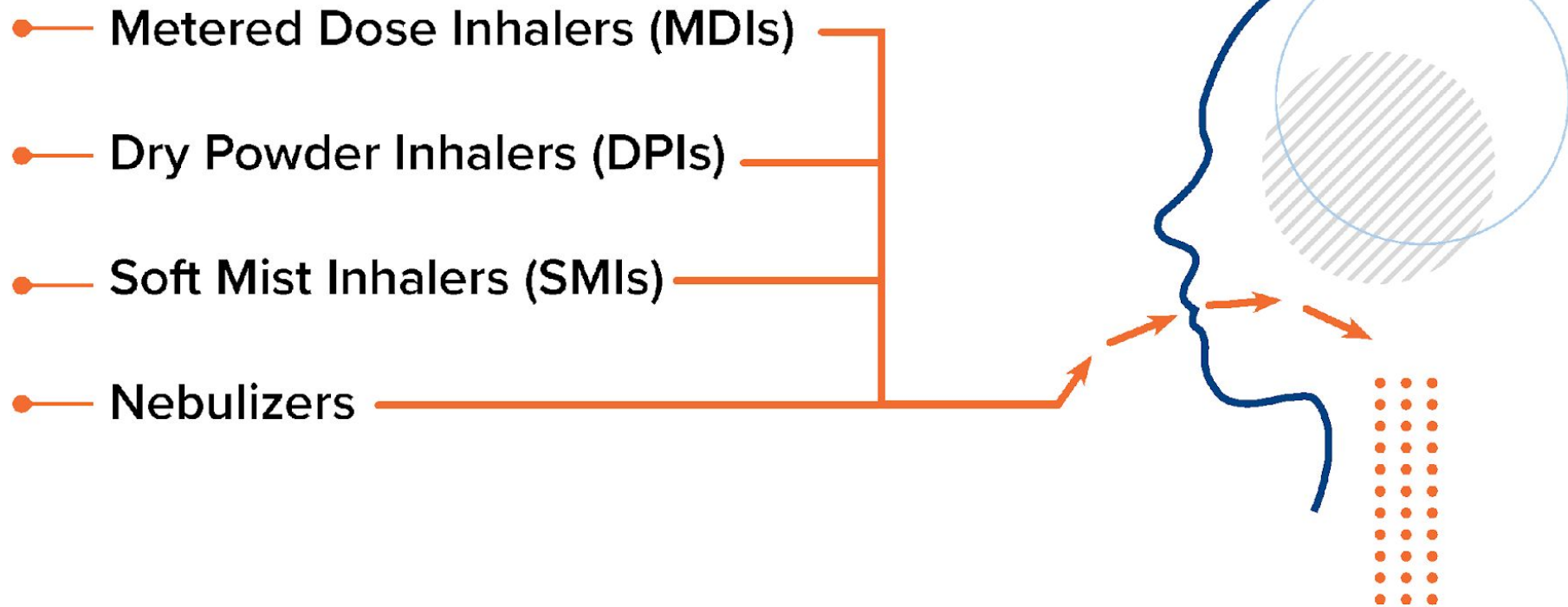
If your patient has:

- CAT score > 10
- mMRC ≥ 2
- 2 or more exacerbations in 12 months OR 1 hospitalization for COPD

You should consider:

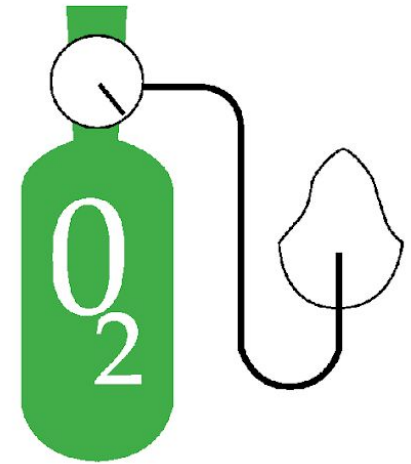
LAMA + LABA + ICS
Daily

Inhaled medications are delivered using a variety of devices

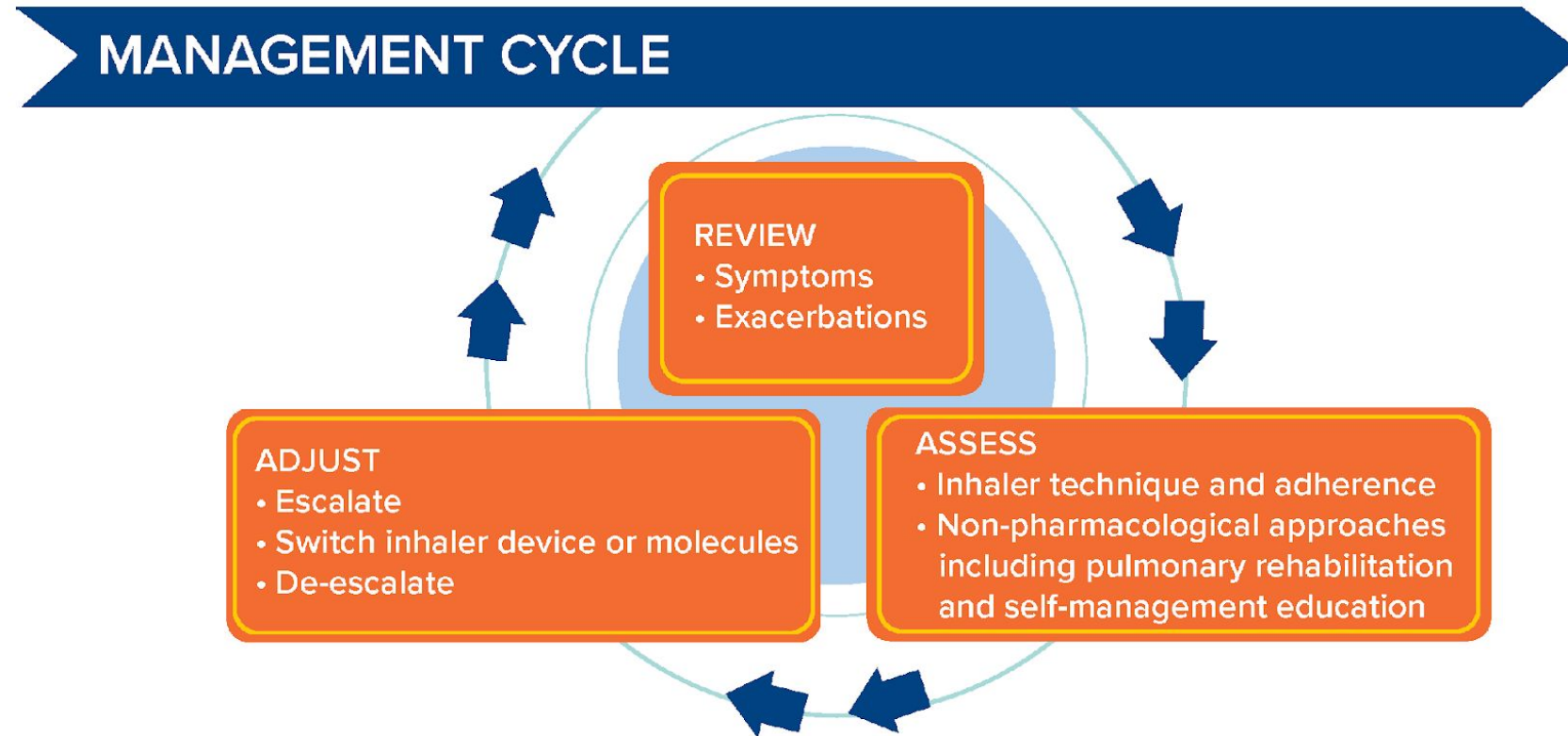


Long-Term Oxygen Therapy (LTOT)

- Supplemental oxygen therapy can be used to improve survival in patients with severe hypoxemia (commonly defined as oxygen saturation of <88% by pulse oximetry).¹¹
- When evaluating someone for LTOT, be sure to exercise them considering their home environment (e.g., if they have to climb stairs, have them do so in the office).
- When prescribing, consider what equipment patient will need to maximize mobility and quality of life.
- Be sure to educate patient/caregiver to monitor saturation levels and adjust equipment as necessary.



Ongoing disease management is essential to providing optimal outcomes for your COPD population. Review symptom burden and exacerbation history regularly, & assess adherence to all therapies before making any adjustments. However, do not hesitate to switch to therapies better aligned with your patient's needs, abilities, and goals!



A Bad Day...Or An Exacerbation?


- Action plans can help determine when a change in symptoms exceeds an individual's baseline variance and becomes an acute exacerbation.
- Action plans can provide clear reminders and instructions on how to proceed.
- A written action plan is important because it empowers patients to better manage their symptoms.

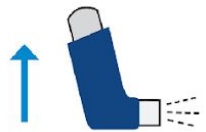


Exacerbations

Key early warning signs

 Changes in mucus color, consistency, or amount

 Increased dyspnea (at rest or with activity)


 Increased short-acting medication usage


 Increased fatigue

Other potential indicators

 Headaches/dizziness

 Fever

 Increased pulse rate

 New/increased edema in lower extremities

Managing Exacerbations

Maximize bronchodilator therapy

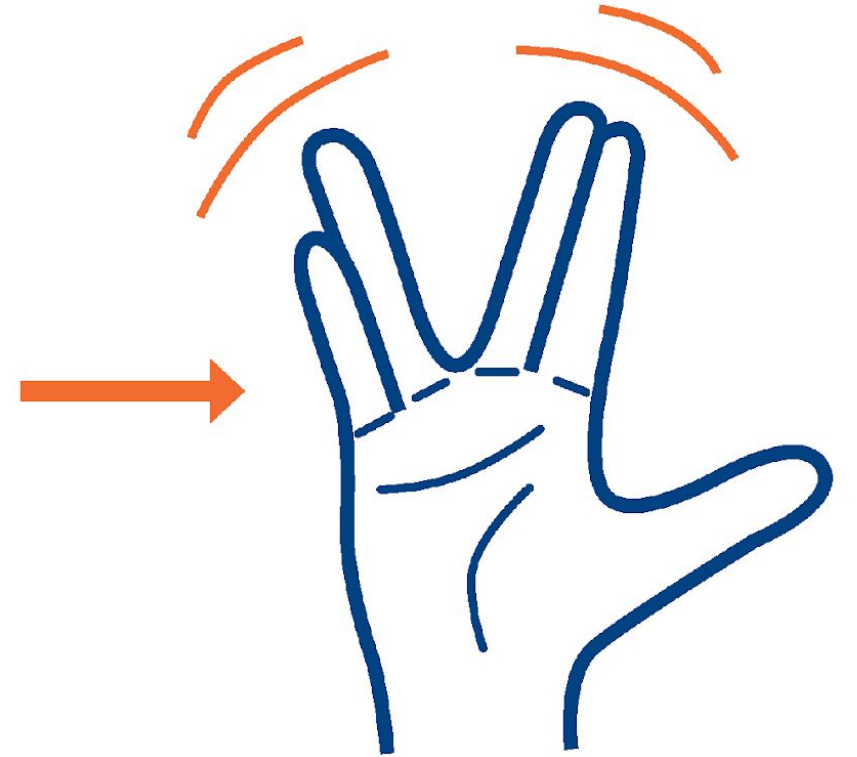
Consider antibiotic therapy if dyspnea AND sputum production are increased

Consider corticosteroid burst

Consider increased oxygen therapy

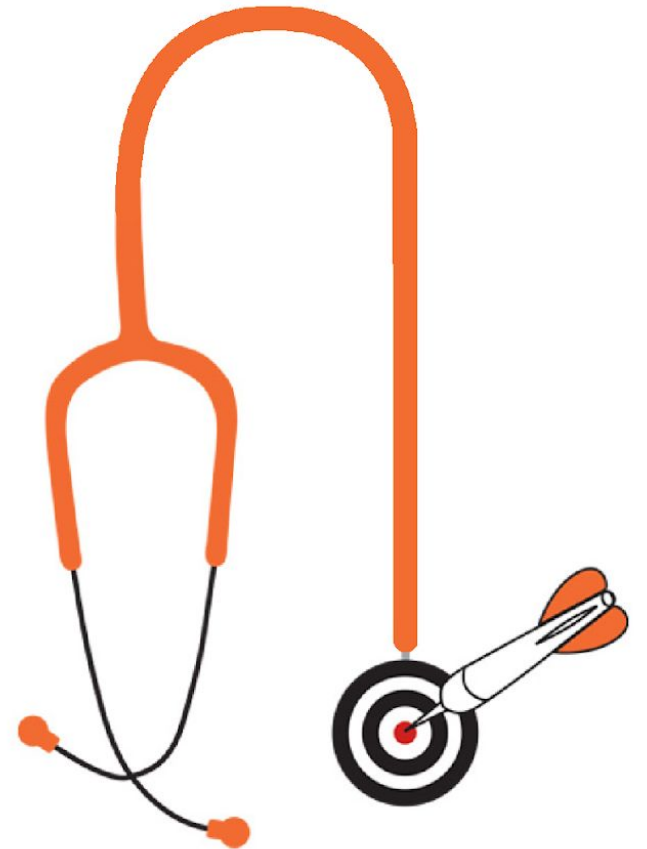
Preventing Exacerbations

- The best treatment is prevention!
 - Vaccines
 - Hand hygiene
 - Handwashing/sanitizer
 - Don't shake hands!
 - Adherence to maintenance therapy
 - Avoiding sick contacts
 - Avoiding inflammation triggers



Summary

- COPD is underdiagnosed AND misdiagnosed!
- More frequent screening and diagnostic tests are essential to finding the “missing millions.”
- Comprehensive symptom management may include pharmacological and non-pharmacological interventions.
- The overall management goal is to improve quality of life and reduce risk of acute exacerbations.

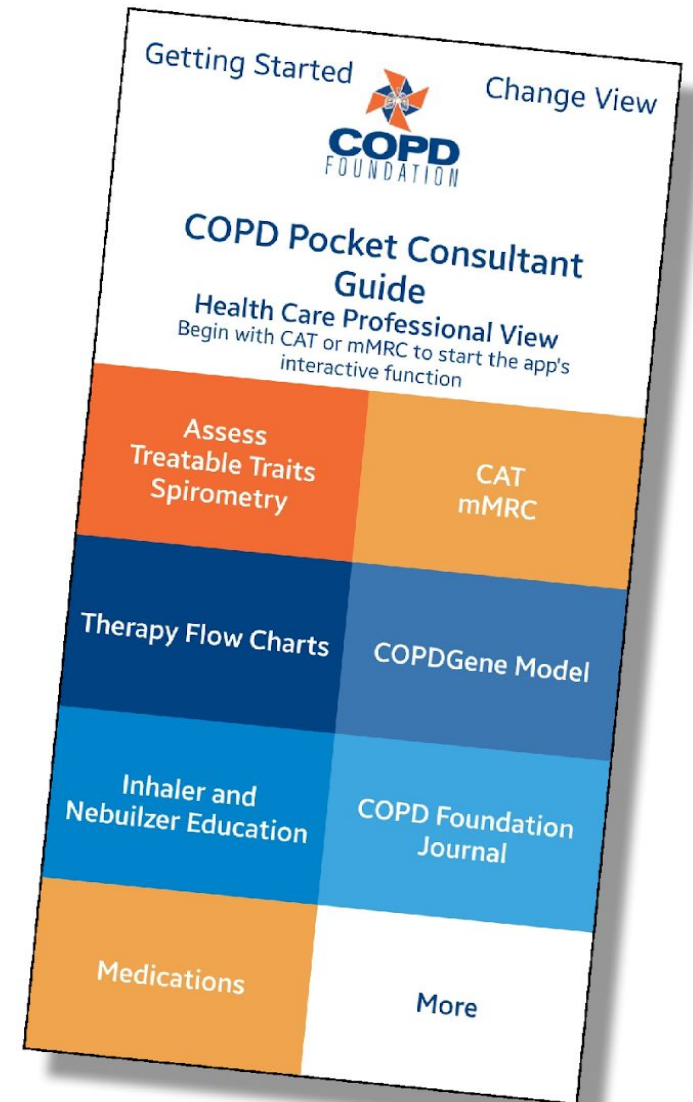


Additional Resources



COPD Pocket Consultant Guide

- Free
- Available for [iOS](#) and [Android](#)
- Contains both Provider View & Patient/Caregiver View to facilitate communication



GOLD Strategy Report

- The Global Initiative for Chronic Obstructive Lung Disease (GOLD) publishes an annual report with the latest research updates and therapy recommendations.
- <https://www.goldcopd.org>



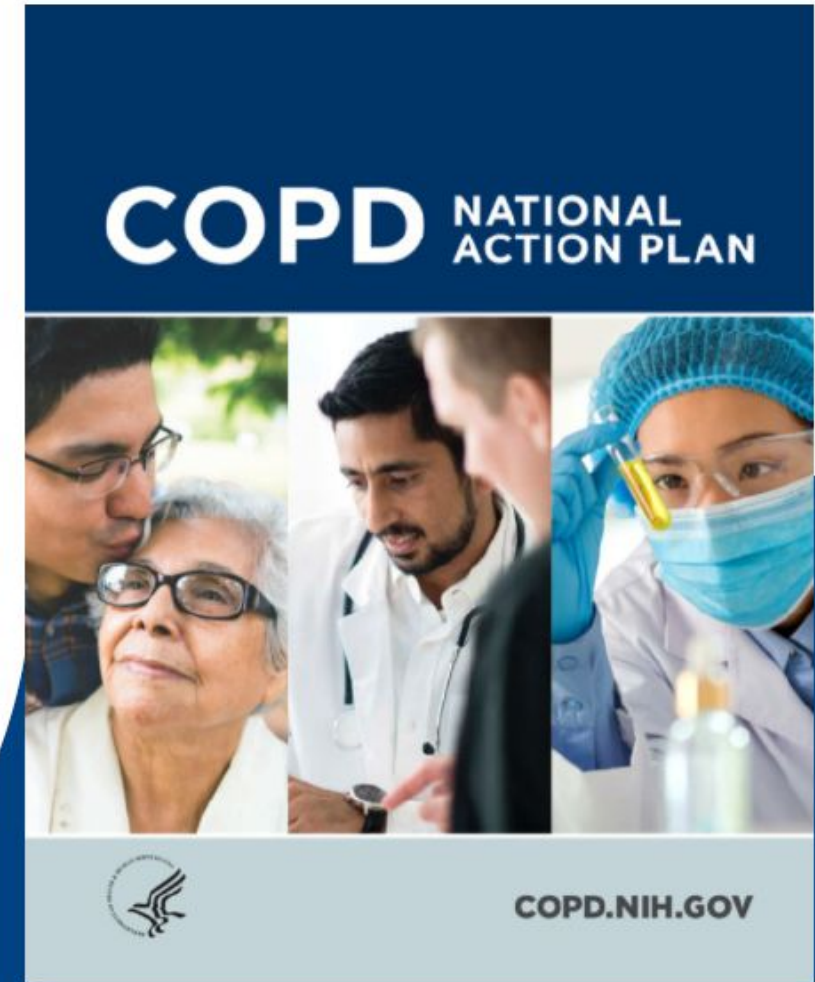
ATS/ERS Clinical Practice Recommendations

- The American Thoracic Society (ATS) and European Respiratory Society (ERS) have a number of clinical practice guidelines and other recommendations for diagnosis and management of COPD.
- <https://www.thoracic.org/statements/copd.php>



NIH COPD National Action Plan

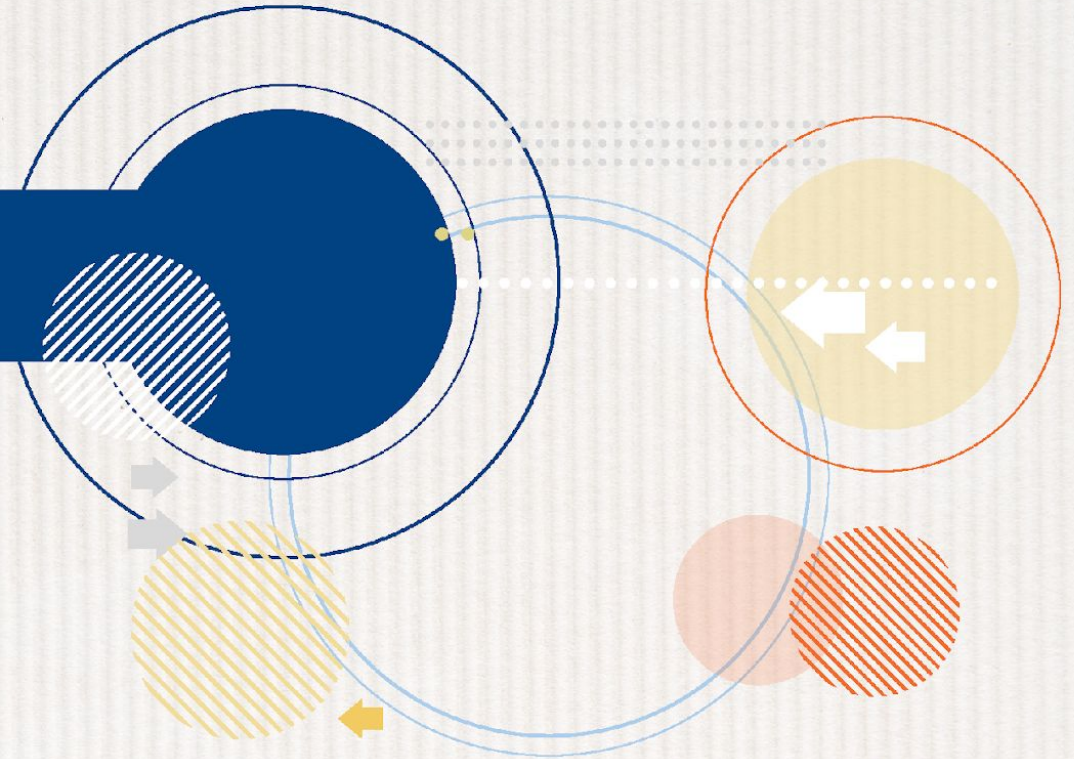
- A multifaceted “blueprint” to reduce the impact of COPD on individuals and the healthcare system.
- <https://copd.nih.gov>



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Patient Materials



What is COPD?

Chronic obstructive pulmonary disease (COPD) is a term used to describe chronic lung diseases including emphysema and chronic bronchitis. COPD is characterized by breathlessness. Some people with COPD also experience tiredness and chronic cough with or without mucus. Let's break down this complicated name into smaller pieces:



C

HRONIC

This means this disease is not curable. The symptoms of COPD may take years to develop. Symptoms can vary from person to person and they may be more or less severe at times. It is important to remember that while COPD isn't curable, it is treatable.



BSTRUCTIVE

This means that the airflow through your lungs is blocked (obstructed). This can be caused by swelling and extra mucus in the tubes inside your lungs. These airways are called bronchial tubes. They look like the roots of a tree, with larger tubes leading to smaller ones.



P

ULMONARY

This means that the disease is in your lungs.



D

ISEASE

This means that your lungs have some damage. But with the right treatment, your symptoms can be managed and the progression of the disease can be slowed.

Most people with COPD have a combination of:

Emphysema

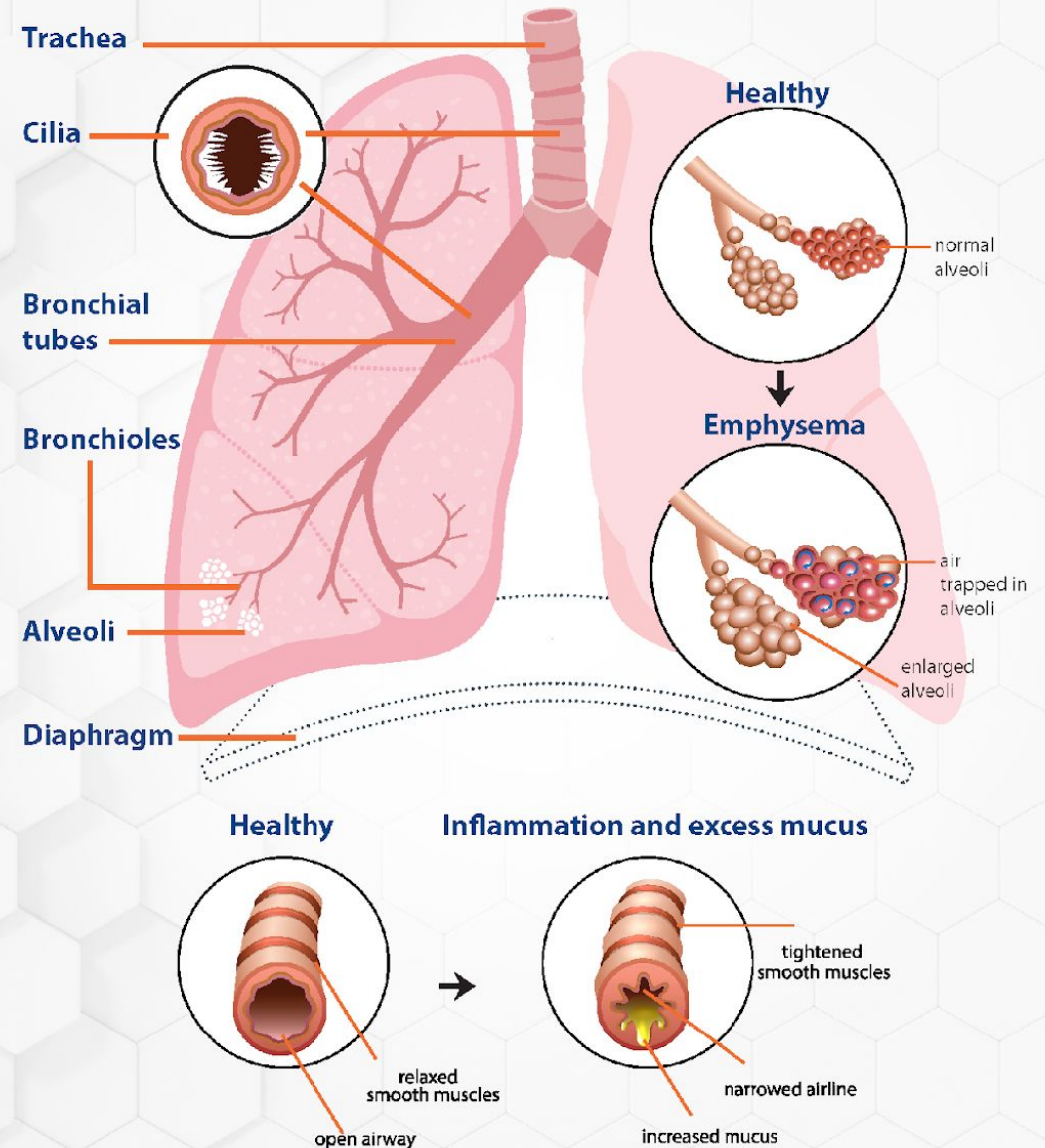
(where the air sacs in your lungs become damaged and do not move oxygen into the blood or carbon dioxide out as well).

And

Chronic bronchitis


(where the airways become narrow and produce too much mucus).

COPD is most often caused by breathing in smoke (including tobacco smoke) or fumes over a long time. It is not contagious, but some kinds of genetic COPD can be passed from parent to child.




Watch Out for Exacerbations/Flare-Ups!

- It is not always easy to tell the difference between a “bad day” and the start of an exacerbation or flare-up, **but it is important.**
- Many things can cause a “bad day:”
 - Weather
 - Head or chest colds
 - Emotions, stress, or anxiety
- An exacerbation or flare-up usually continues to get worse over the day and does not clear up with rest or extra short-acting meds (like albuterol).
- Using your [My COPD Action Plan](#) can make it easier to know when to call your clinician or get emergency help!



COPD FOUNDATION
IT'S MY COPD ACTION PLAN
www.copdfoundation.org

My Name: _____ Date: _____
 My Doctor's Name: _____ Phone: _____
 Emergency Contact: _____ Phone: _____



COPD360action
www.copd360social.org

Please complete the section below. Bring all your medicines and inhalers along with a complete list to doctor's office visits. Think about your ability to perform these activities on a typical "green" day. Place one check mark in each column. In the last (blank) column write in an activity you would like to be able to do again. Check the box below it to show how difficult it is to do that activity now. Share this goal with you healthcare team and your family.

	CLEANING	MAKING MY BED	BRUSHING MY TEETH	BATHING/ SHOWERING	WALKING	CLIMBING STAIRS	WORKING	SLEEPING	EXERCISING	COOKING	
I can do this											
I can do this w/minor limitations											
I struggle to do this											
I cannot do this											

Instructions: Work with your doctor to complete this section on special medications for use on your Yellow and Red days.

My
Green
Days

A Normal Day for Me

- My breathing is normal
- My cough and mucus are normal
- My sleeping is normal
- My eating and appetite are normal
- My activity level is normal

Take Action

- I will take all medications as prescribed
- I will keep routine doctor appointments
- I will use oxygen as prescribed
- I will exercise and eat regularly
- I will avoid all inhaled irritants & bad air days
- I will update my COPD Action Plan every 6 months

My
Yellow
Days

A Bad Day for Me

- I have a low grade fever that doesn't go away
- I have increased use of rescue medications without relief
- I have a change in color, thickness, odor or amount of mucus
- I am more tired than normal or have trouble sleeping
- I have new or more ankle swelling
- I am more breathless than normal
- I feel like I am catching a cold

Take Action

- I will limit my activity and use pursed-lips breathing
- I will take regular medications as prescribed
- I will report these changes to my doctor today
- I will start special medications* prearranged with my doctor which includes: _____

My
Red
Days

A Bad Day When I Need Help Right Away

- I have disorientation, confusion or slurring of speech
- I have severe shortness of breath or chest pain
- I have a blue color around my lips or fingers
- I am coughing up blood

Take Action

- I will call 911 right away
- I will start these special medications*: _____

* If symptoms are not improved in one day after taking special medications, consult your doctor. The contents of My COPD Action Plan is for information purposes only and is not intended to be a substitute for professional medical advice, diagnosis or treatment.

My COPD Action Plan can be used daily and should be updated every 6 months. Next update: _____

Keys to Living Well with COPD



- — Get help quitting smoking
- — Take your medications as prescribed
- — Stay as active as possible
- — Learn to recognize symptom flare-ups (exacerbations)

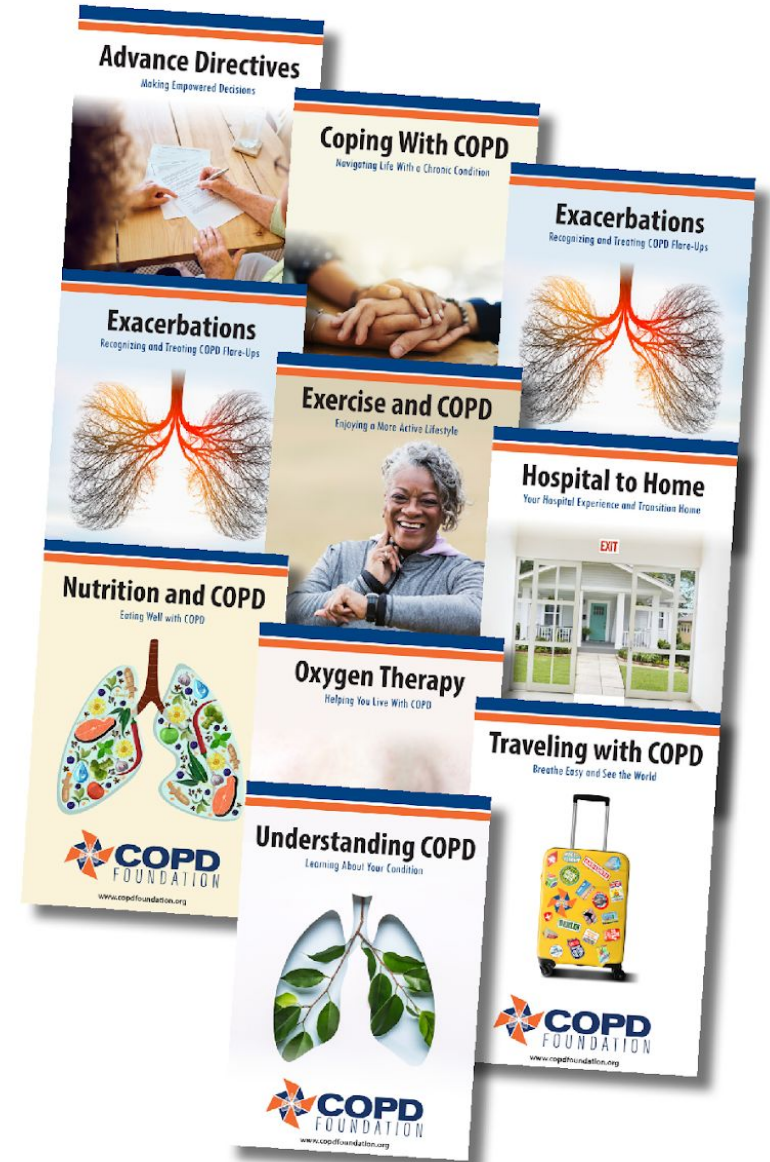
Additional Resources

The COPD Foundation invites you to check out our resources to help you learn more about COPD!

Guides for Better Living: Learn about different aspects about COPD, including how to cope with symptoms, therapies to improve your quality of life, and how to recognize flare-ups. <https://copdf.co/guides>

COPD360social: Connect with others on the COPD journey, share thoughts and ideas, and ask questions to both peers and clinical experts in our specialized online community. <https://copdf.co/COPD360social>

Download our COPD Pocket Consultant Guide app (free for both [Android](#) and [iOS](#)) to develop an individual COPD action plan, get prompts and reminders for your next office visit, and much more.



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