PULMONARY MEDICATIONS

MATT KRIEBS, APRN, FNP-BC

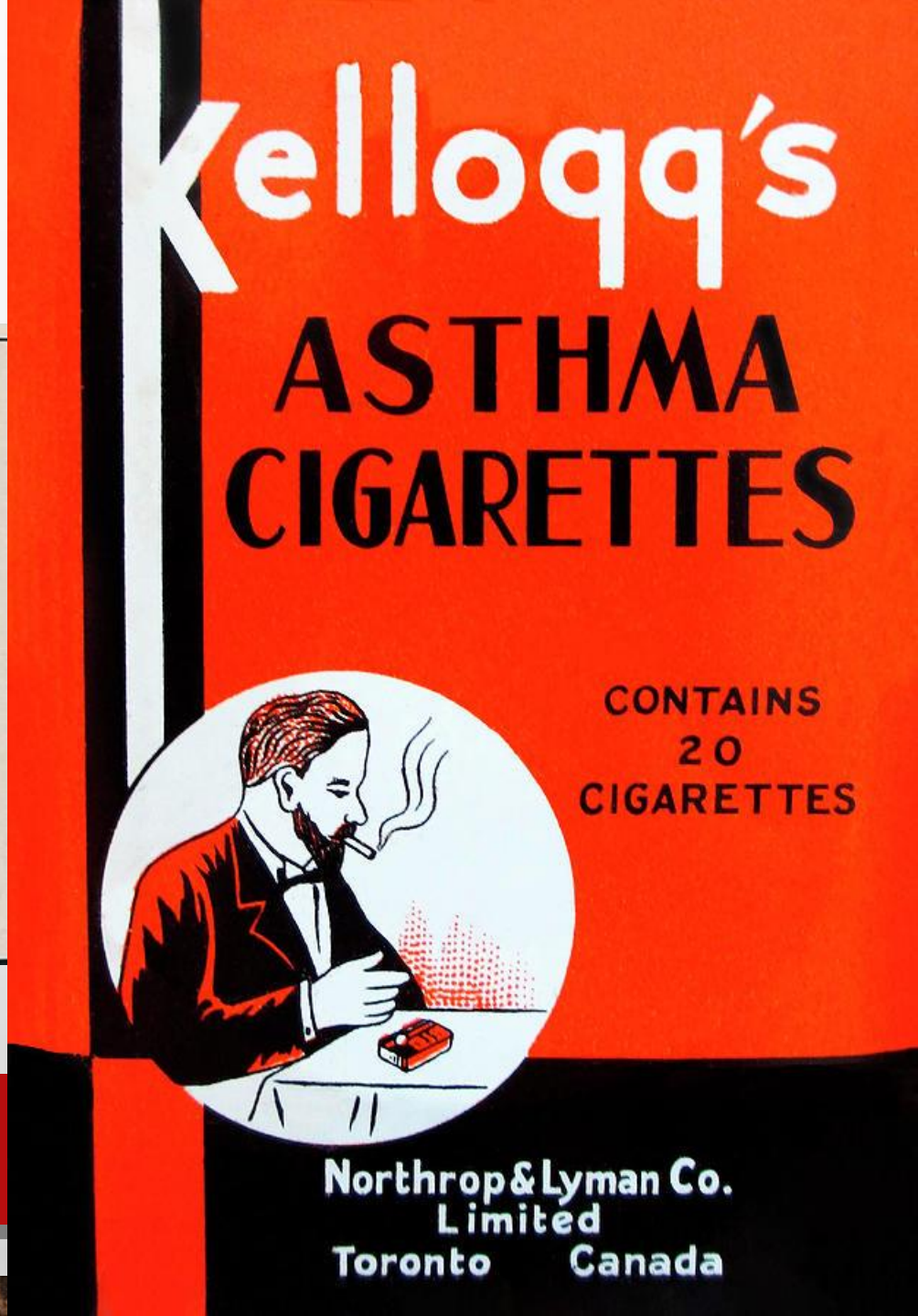
NOVEMBER 1, 2024

OVERVIEW

- FOCUS ON ASSESSMENT AND PHARMACOLOGIC THERAPIES FOR COMMON CONDITIONS LIKE OBSTRUCTIVE LUNG DISEASE, COPD, ASTHMA
- WILL TOUCH BRIEFLY ON COVID MANAGEMENT AS WELL.

HISTORICAL PERSPECTIVE

My, how far we've come!



OBSTRUCTIVE LUNG DISEASE

ASTHMA-

REVERSIBLE NARROWING OF THE AIRWAYS MARKED BY SMOOTH MUSCLE HYPERREACTIVITY AND INCREASED MUCUS PRODUCTION

COPD-

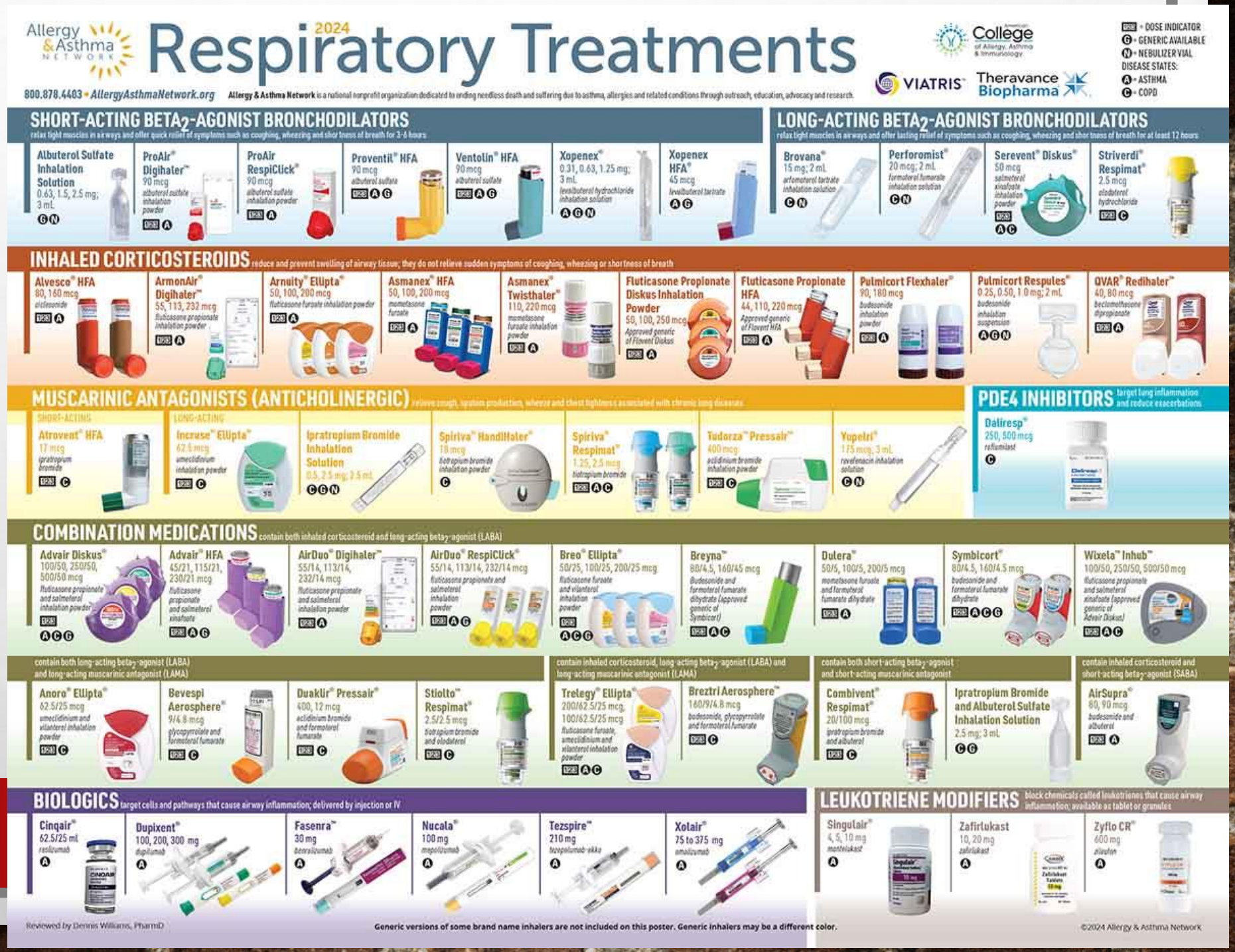
IRREVERSIBLE LOSS OF LUNG FUNCTION.

THREE BROAD TYPES OF MEDICATIONS

- Beta Agonists- SABA and LABA
- Inhaled Corticosteroids- ICS
- Muscurinic Antagonists- SAMA and LAMA

Respiratory Treatments
Rescue meds
Maintenance meds

SABA
ICS
LAMA
PDE4 Inhibitor
Combo meds
Biologics
Leukotriene Modifiers



ASSESSMENT

- SPIROMETRY
- CLINICAL INDICATORS - GOLD
- AMERICAN LUNG ASSOCIATION - RULE OF TWOS
- GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE – GOLD ABE
- MODIFIED MRC – DYSPNEA SCALE
- COPD ASSESSMENT TEST – CAT ASSESSMENT
- COPD ETIOTYPES

SPIROMETRY

- **STANDARD ASSESSMENT – NOT ALWAYS FEASIBLE**

A. Spirometry - Normal Trace **B. Spirometry - Airflow Obstruction**

Figure 2.5

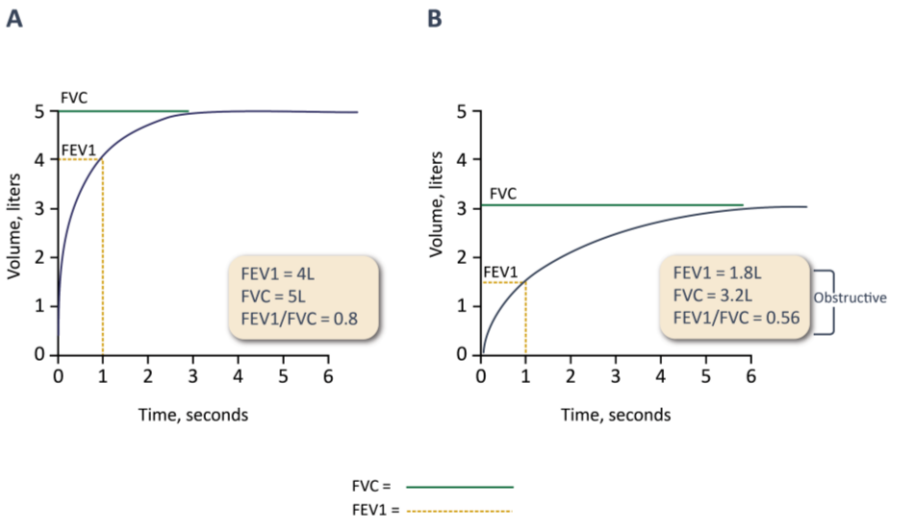


Image Source: https://goldcopd.org/gold-teaching-slide-set/

Role of Spirometry in COPD

Figure 2.6

- **Diagnosis**
- **Assessment of severity of airflow obstruction (for prognosis)**
- **Follow-up assessment**
  - Therapeutic decisions
    - Pharmacological in selected circumstances (e.g., discrepancy between spirometry and level of symptoms)
    - Consider alternative diagnoses when symptoms are disproportionate to degree of airflow obstruction
    - Non-pharmacological (e.g., interventional procedures)
  - Identification of rapid decline

Image Source: https://goldcopd.org/gold-teaching-slide-set/

CLINICAL INDICATORS

- FIRST SUSPICION OF COPD BASED ON SYMPTOMS
- ALSO CONSIDER RISK FACTORS INCLUDING SMOKING (FIRST AND SECOND HAND), OCCUPATIONAL EXPOSURE, ALPHA-1 ANTITRYPSIN DEFICIENCY, ETC.

Clinical Indicators for Considering a Diagnosis of COPD

Figure 2.1

Consider the diagnosis of COPD, and perform spirometry, if any of these clinical indicators are present: (these indicators are not diagnostic themselves, but the presence of multiple key indicators increases the probability of the presence of COPD; in any case, spirometry is required to establish a diagnosis of COPD)

Dyspnea that is	Progressive over time Worse with exercise Persistent
Recurrent wheeze	
Chronic cough	May be intermittent and may be non-productive
Recurrent lower respiratory tract infections	
History of risk factors	Tobacco smoke (including popular local preparations) Smoke from home cooking and heating fuels Occupational dusts, vapors, fumes, gases and other chemicals Host factors (e.g., genetic factors, developmental abnormalities, low birthweight, prematurity, childhood respiratory infections etc.)

Image Source: https://goldcopd.org/gold-teaching-slide-set/

RULE OF TWOS
QUICK ASTHMA ASSESSMENT

American Lung Association.

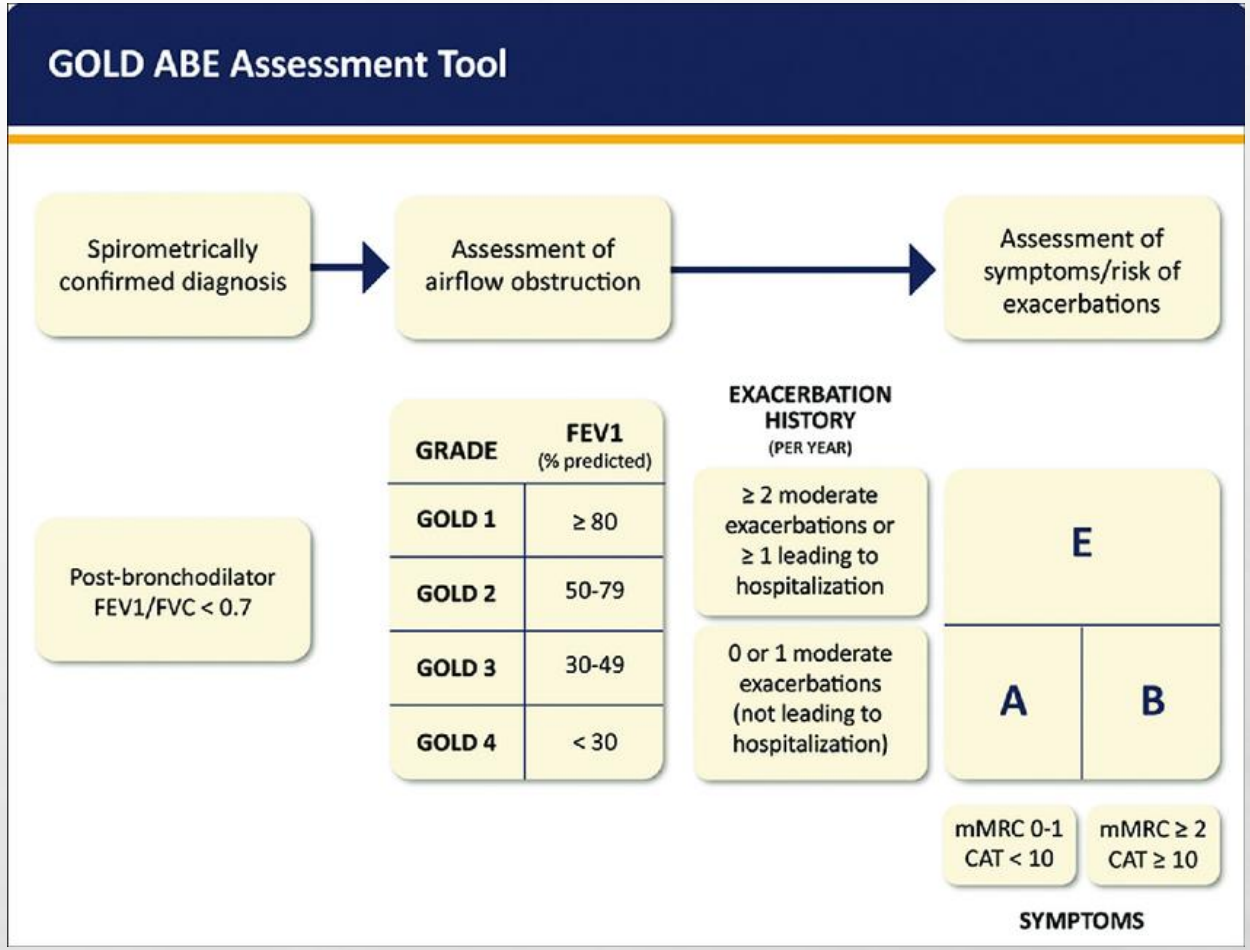
1. Baylor College of Medicine's Rules of Two®

- Do you have asthma symptoms or use your quick-relief inhaler more than two times per week?
- Do you awaken at night with symptoms more than two times per month?
- Do you refill your quick-relief inhaler more than two times per year?

If you answer "yes" to one or more questions, your asthma may not be well controlled. Plan a visit with your healthcare provider and share your results.

GOLD ABE

- CONFIRM DIAGNOSIS
- ASSESS SYMPTOMS
- ASSESS HISTORY/RISK OF EXACERBATION



MODIFIED MRC DYSPNEA 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 [91 meters] or after a few minutes on level ground
4	I am too breathless to leave the house or I am breathless when dressing

Adapted from: Fletcher CM, Elmes PC, Fairbairn AS, Wood CH. The significance of respiratory symptoms and the diagnosis of chronic bronchitis in a working population. Br Med J 1959; 2:257.

COPD ASSESSMENT TOOL

CAT™ ASSESSMENT

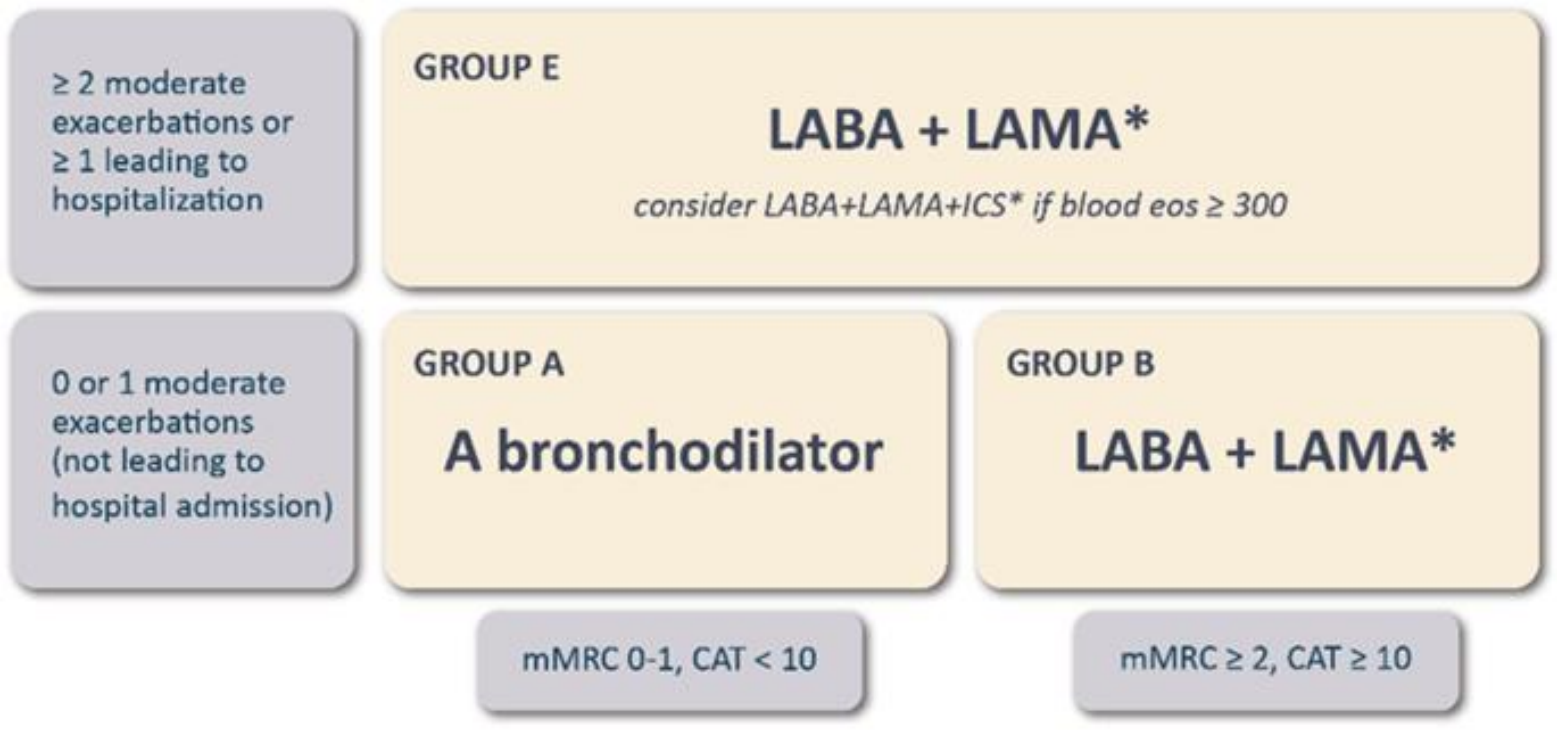
For each item below, place a mark (x) in the box that best describes you currently.
Be sure to only select one response for each question.

EXAMPLE: I am very happy	0 (X) 2 3 4 5	**I am very sad**	**SCORE**
I never cough	0 1 2 3 4 5	I cough all the time	
I have no phlegm (mucus) in my chest at all	0 1 2 3 4 5	My chest is completely full of phlegm (mucus)	
My chest does not feel tight at all	0 1 2 3 4 5	My chest feels very tight	
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	
I am not limited doing any activities at home	0 1 2 3 4 5	I am very limited doing activities at home	
I am confident leaving my home despite my lung condition	0 1 2 3 4 5	I am not at all confident leaving my home because of my lung condition	
I sleep soundly	0 1 2 3 4 5	I don't sleep soundly because of my lung condition	
I have lots of energy	0 1 2 3 4 5	I have no energy at all	

Reference: Jones et al. ERJ 2009; 34 (3); 648-54.

TOTAL SCORE: ( )

PUTTING IT ALL TOGETHER



COPD ETIOTYPES

- VARIOUS TYPES OF COPD MAY RESPOND BETTER/WORSE TO DIFFERENT TREATMENTS

Proposed Taxonomy (Etiotypes) for COPD

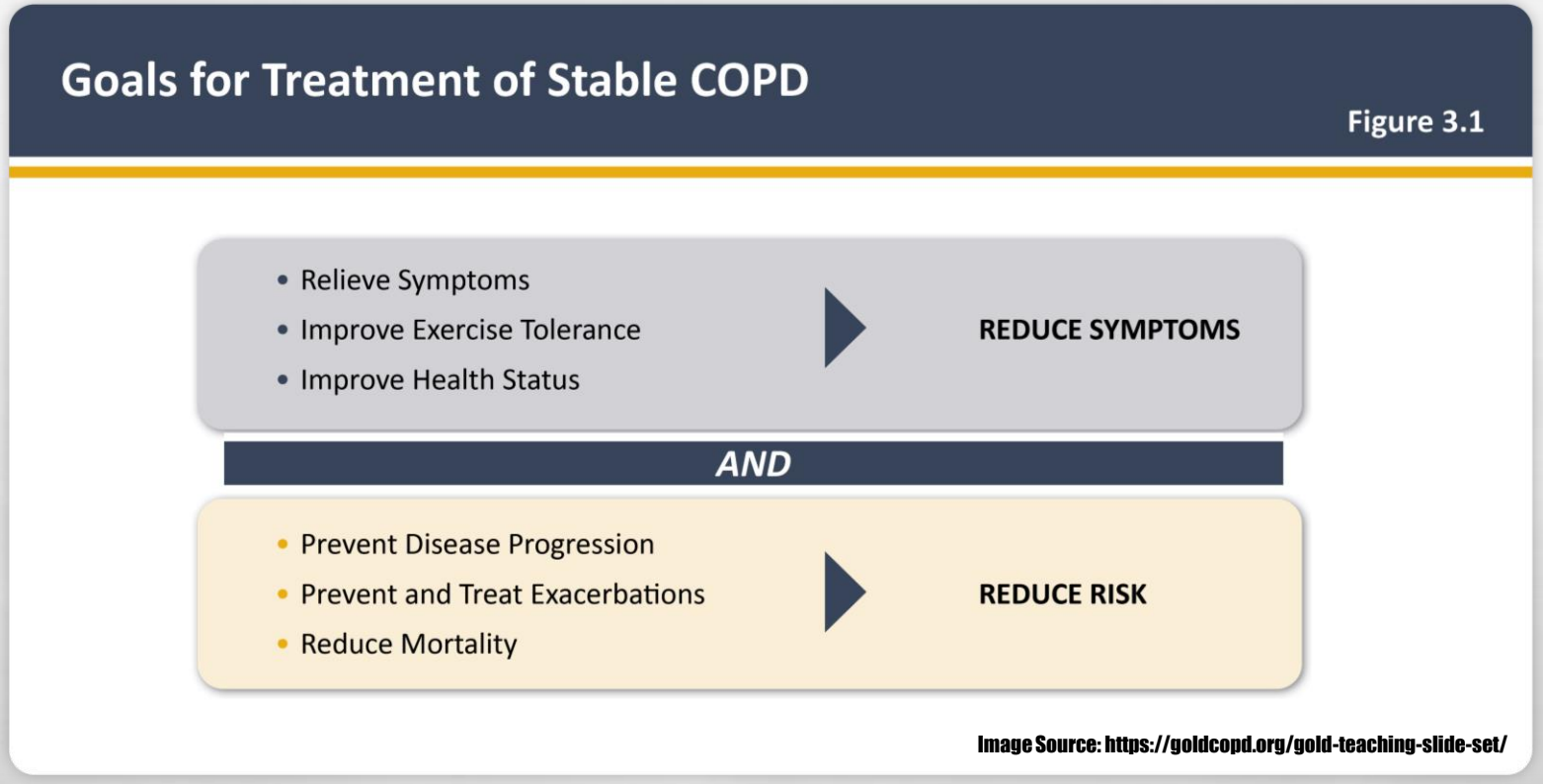
Figure 1.2

Classification	Description
Genetically determined COPD (COPD-G)	Alpha-1 antitrypsin deficiency (AATD) Other genetic variants with smaller effects acting in combination
COPD due to abnormal lung development (COPD-D)	Early life events, including premature birth and low birthweight, among others
Environmental COPD	
Cigarette smoking COPD (COPD-C)	• Exposure to tobacco smoke, including *in utero* or via passive smoking • Vaping or e-cigarette use • Cannabis
Biomass and pollution exposure COPD (COPD-P)	Exposure to household pollution, ambient air pollution, wildfire smoke, occupational hazards
COPD due to infections (COPD-I)	Childhood infections, tuberculosis-associated COPD, HIV-associated COPD
COPD & asthma (COPD-A)	Particularly childhood asthma
COPD of unknown cause (COPD-U)	

*Adapted from Celli et al. (2022) and Stolz et al. (2022)

Image Source: https://goldcopd.org/gold-teaching-slide-set/

GOALS OF COPD TREATMENT



NON-PHARMACOLOGIC MANAGEMENT

- LESS MEDICINE IS ALWAYS BEST
- SMOKING CESSATION IS THE FIRST STEP
  - DON'T FORGET VAPES, MARIJUANA, PIPES, CIGARS
  - SECONDHAND SMOKE
- PROMOTE VACCINATIONS
- PROMOTE PHYSICAL ACTIVITY
- OXYGEN FOR HYPOXEMIC PATIENTS, NONINVASIVE POSITIVE PRESSURE VENTILATION (NPPV) – SHOWN TO REDUCE MORTALITY

Non-Pharmacological Management of COPD*

Figure 3.12

Patient Group	Essential	Recommended	Depending on Local Guidelines
A	Smoking cessation (can include pharmacological treatment)	Physical activity	Influenza vaccination COVID-19 vaccinations Pneumococcal vaccination Pertussis vaccination Shingles vaccination RSV vaccination
B and E	Smoking cessation (can include pharmacological treatment) Pulmonary rehabilitation	Physical activity	Influenza vaccination COVID-19 vaccinations Pneumococcal vaccination Pertussis vaccination Shingles vaccination RSV vaccination

*Can include pharmacological treatment

MANAGEMENT OF COPD

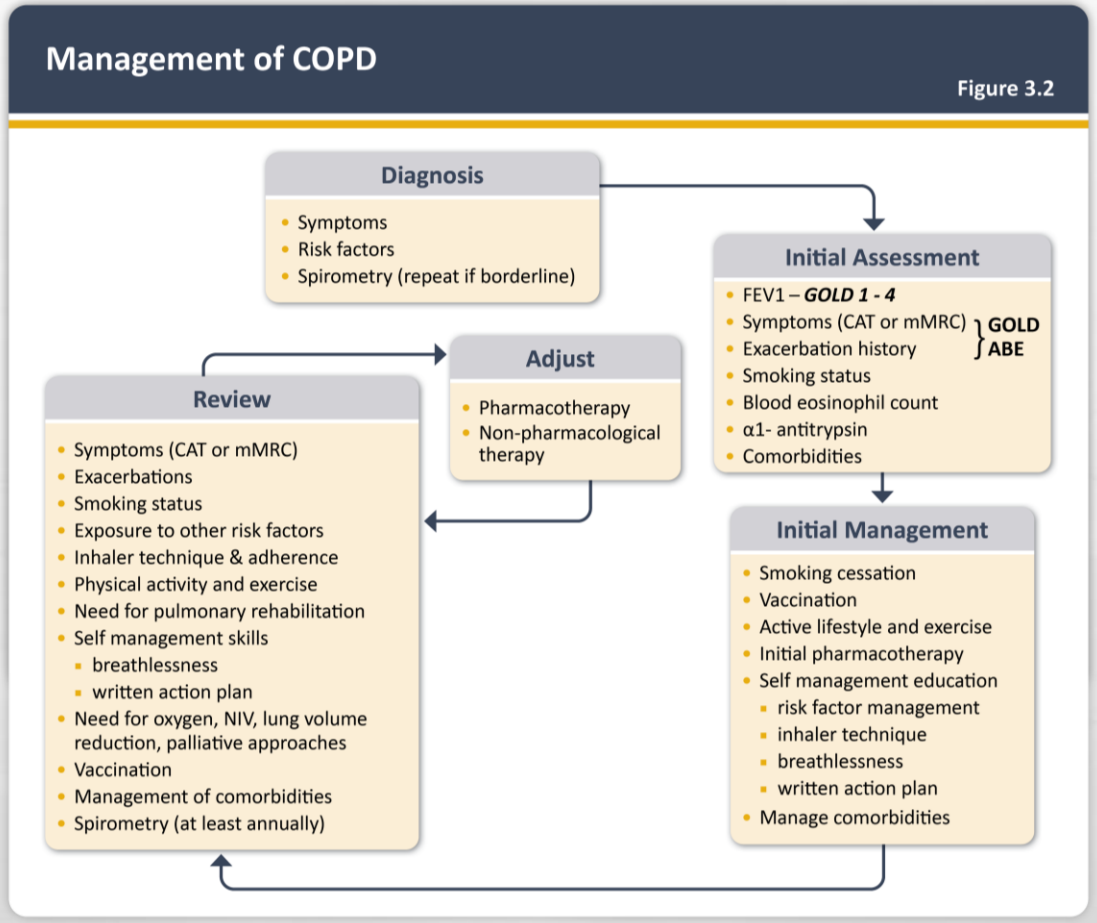


Image Source: https://goldcopd.org/gold-teaching-slide-set/

MEDICATION CLASSES

- BETA AGONISTS
- INHALED CORTICOSTEROIDS
- MUSCARINIC ANTAGONISTS
- PHOSPHODIESTERASE
- SMOKING CESSATION
- ALLERGY MEDICATIONS
- BIOLOGICS

Commonly Used Maintenance Medications in COPD*

Figure 3.18

Generic Drug Name	Inhaler Type	DELIVERY OPTIONS: Nebulizer	Oral	Injection	Duration of Action
$BETA_2$-Agonists					
Short-acting (SABA)					
Fenoterol	MDI	✓	pill, syrup		4-6 hours
Levalbuterol	MDI	✓			6-8 hours
Salbutamol (albuterol)	MDI & DPI	✓	pill, syrup, extended release tablet	✓	4-6 hours 12 hours (ext. release)
Terbutaline	DPI		pill	✓	4-6 hours
Long-acting (LABA)					
Arformoterol		✓			12 hours
Formoterol	DPI	✓			12 hours
Indacaterol	DPI				24 hours
Olodaterol	SMI				24 hours
Salmeterol	MDI & DPI				12 hours
Anticholinergics					
Short-acting (SAMA)					
Ipratropium bromide	MDI	✓			6-8 hours
Oxitropium bromide	MDI				7-9 hours
Long-acting (LAMA)					
Aclidinium bromide	DPI				MDI 12 hours
Glycopyrronium bromide	DPI		solution	✓	12-24 hours
Tiotropium	DPI, SMI, MDI				24 hours
Umeclidinium	DPI				24 hours
Glycopyrronium		✓			12 hours
Revefenacin		✓			24 hours
Combination Short-Acting $Beta_2$-Agonist Plus Anticholinergic in One Device (SABA+SAMA)					
Fenoterol/ipratropium	SMI	✓			6-8 hours
Salbutamol/ipratropium	SMI, MDI	✓			6-8 hours
Combination Long-Acting $Beta_2$-Agonist Plus Anticholinergic in One Device (LABA+LAMA)					
Formoterol/aclidinium	DPI				12 hours
Formoterol/glycopyrronium	MDI				12 hours
Indacaterol/glycopyrronium	DPI				12-24 hours
Vilanterol/umeclidinium	DPI				24 hours
Olodaterol/tiotropium	SMI				24 hours
Methylxanthines					
Aminophylline			solution	✓	Variable, up to 24 hours
Theophylline (SR)			pill	✓	Variable, up to 24 hours
Combination of Long-Acting $Beta_2$-Agonist Plus Corticosteroid in One Device (LABA+ICS)					
Formoterol/beclometasone	MDI, DPI				12 hours
Formoterol/budesonide	MDI, DPI				12 hours
Formoterol/mometasone	MDI				12 hours
Salmeterol/fluticasone propionate	MDI, DPI				12 hours
Vilanterol/fluticasone furoate	DPI				24 hours
Triple Combination in One Device (LABA+LAMA+ICS)					
Fluticasone/umeclidinium/vilanterol	DPI				24 hours
Beclometasone/formoterol/glycopyrronium	MDI, DPI				12 hours
Budesonide/formoterol/glycopyrrolate	MDI				12 hours
Phosphodiesterase-4 Inhibitors					
Roflumilast			pill		24 hours
Mucolytic Agents					
Erdosteine			pill		12 hours
Carbocysteine†			pill		
N-acetylcysteine†			pill		

*Not all formulations are available in all countries. In some countries other formulations and dosages may be available. †Dosing regimens are under discussion. MDI = metered dose inhaler; DPI = dry powder inhaler; SMI = soft mist inhaler. Note that glycopyrrolate & glycopyrronium are the same compound.

Image Source: https://goldcopd.org/gold-teaching-slide-set/

BETA AGONISTS

- DRUGS:
  - SHORT-ACTING (SABA): ALBUTEROL, LEVALBUTEROL
  - LONG-ACTING (LABA): SALMETEROL, FORMOTEROL, OLDATEROL
  - NEBULIZED MEDS: ALBUTEROL SULFATE (SABA), LEVALBUTEROL (SABA), ARFORMOTEROL/BROVANA (LABA), FORMOTEROL/PERFOROMIST (LABA)
- MECHANISM OF ACTION: STIMULATES THE BETA-2 RECEPTORS IN THE LUNGS AND RELAXES AND DILATES THE SMOOTH MUSCLE
- SIDE EFFECTS: CROSSOVER EFFECT TO BETA-1 RECEPTORS – TACHYCARDIA, TREMULOUSNESS

INHALED CORTICOSTEROIDS

- DRUGS: FLUTICASONE, BUDESONIDE
  - NEBULIZED MEDS: BUDESONIDE/PULMICORT
- MECHANISM OF ACTION: SUPPRESSES THE INFLAMMATORY RESPONSE AND DECREASES MUCOUS IN THE AIRWAY
- SIDE EFFECTS: INCREASED RISK OF PNEUMONIA (RARE), THRUSH, OSTEOPOROSIS, OPEN ANGLE GLAUCOMA, CATARACTS

US Trade Name	Manufacturer	Dosage Form/Device	Strength	Labeled Uses
QVAR®	Ivax / 3M	MDI (HFA)	40 mcg/puff 80 mcg/puff	Asthma (age ≥ 5 yrs) - Maintenance - Systemic corticoste reduction
Vanceril®†	Schering-Plough	MDI*	42 mcg/puff 84 mcg/puff	Asthma (age ≥ 5 yrs) - Maintenance - Systemicl corticoste reduction
Pulmicort Turbuhaler®	AstraZeneca	DPI	200 mcg/dose	Asthma (age ≥ 6 yrs) - Maintenance - Systemic corticoste reduction
Pulmicort Respules®	AstraZeneca	Inhalation suspension	500 mcg 1,000 mcg 2,000 mcg	Asthma (age 1-8 yrs)
AeroBid® AeroBid®-M	Forest / 3M	MDI* MDI-menthol*	250 mcg/puff	Asthma (age ≥ 6 yrs) - Maintenance - Systemic corticoste reduction
Bronalide††	Boehringer Ingelheim (Canada)	MDI*	250 mcg/puff	Asthma (age ≥ 6 yrs) - Maintenance - Systemic corticoste reduction
Flovent®	GlaxoSmithKline	MDI*	44 mcg/puff 110 mcg/puff 220 mcg/puff	Asthma (age ≥ 12 yrs - Maintenance - Systemic corticoste reduction
Flovent®††† Rotadisk	GlaxoSmithKline	DPI – blister pack (4) for use in diskhaler	50 mcg/dose 100 mcg/dose 250 mcg/dose	Asthma (age ≥ 12 yrs - Maintenance - Systemic corticoste reduction
Flovent® Diskus†	GlaxoSmithKline	DPI – breath activated inhalation device	50 mcg/dose 100 mcg/dose 250 mcg/dose	Asthma (age ≥ 12 yrs - Maintenance - Systemic corticoste reduction
Asmanex® Twisthaler	Schering-Plough	DPI	220 mcg/dose	Asthma (age ≥ 12 yrs - Maintenance - Systemic corticoste reduction
Azmacort®	Aventis	MDI* – with spacer mouthpiece	100 mcg/dose	Asthma (age ≥ 6 yrs) - Maintenance - Systemic corticoste reduction

INHALED CORTICOSEROIDS

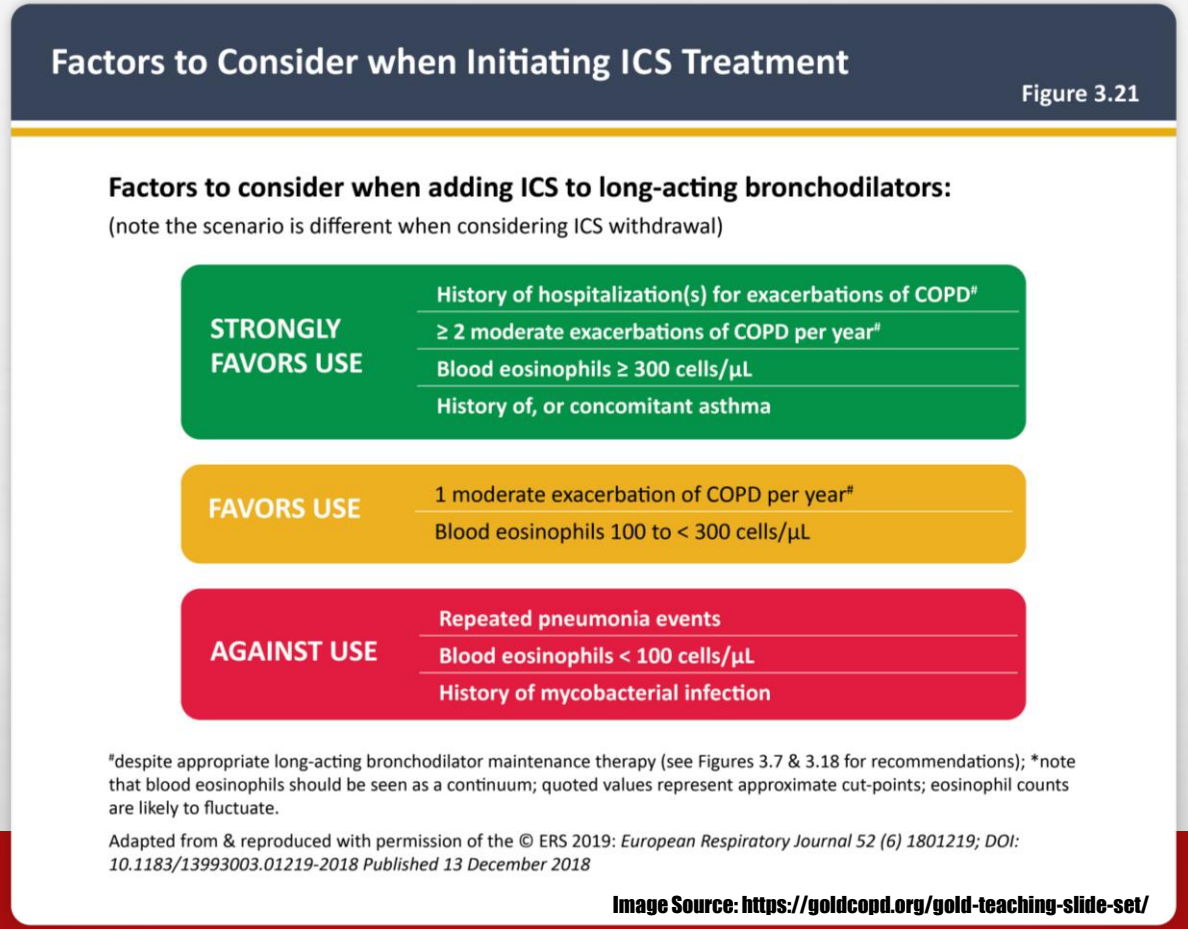


Image Source: https://goldcopd.org/gold-teaching-slide-set/

MUSCARINIC ANTAGONISTS (ANTICHOLINERGICS)

- DRUGS:
  - SHORT-ACTING (SAMA): IPRATROPRIUM BROMIDE
  - LONG-ACTING (LAMA): TIOTROPIUM, ACLIDINIUM, UMECLIDINIUM, GLYCOPYRRONIUM
  - NEBULIZED MEDS: IPRATROPIUM/ATROVENT (SAMA), REVAFENACIN/YUPELRI (LAMA)
- MECHANISM OF ACTION: BINDS TO THE M1-5 RECEPTORS CAUSING SMOOTH MUSCLE RELAXATION IN THE AIRWAY
- SIDE EFFECTS: DRY MOUTH, HEADACHE, URINARY RETENTION
- OF NOTE: WHEN USING LAMA, AVOID USING SAMA CONCURRENTLY TO PREVENT RECEPTOR COMPETITION

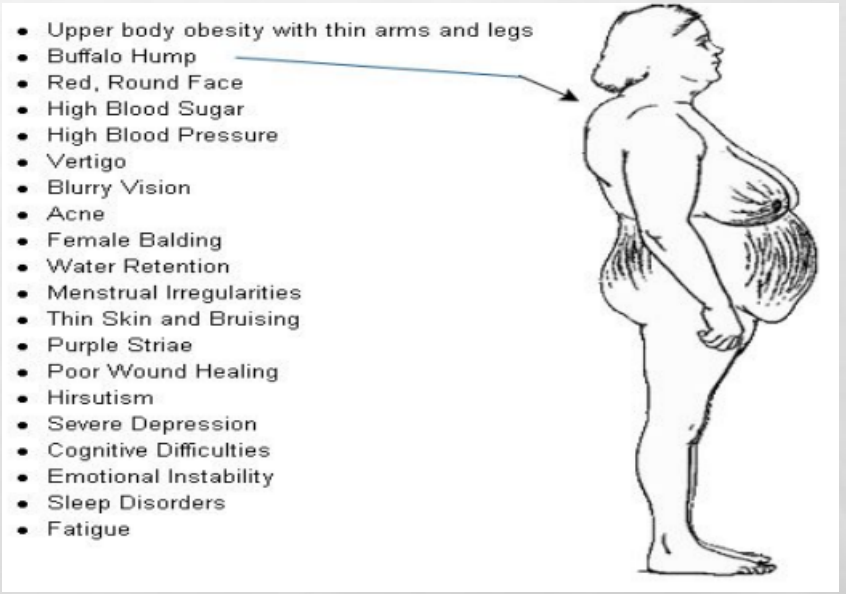
PHOSPHODIESTERASE INHIBITORS

- DRUGS: ROFLUMILAST (SELECTIVE), THEOPHYLLINE (NONSELECTIVE)
- MECHANISM OF ACTION: WORK BY BLOCKING INFLAMMATORY MEDIATORS
- SIDE EFFECTS: GI ISSUES, HEADACHE, WEIGHT LOSS, DEPRESSION, ANXIETY
- WHEN TO USE? ADD-ON WHEN TRIPLE THERAPY IS NOT EFFECTIVE IN PREVENTING EXACERBATION OR HOSPITALIZATION

STEROIDS

- DRUGS: PREDNISONE, MEDROL, DECADRON
- MECHANISM OF ACTION: SYSTEMICALLY REDUCES INFLAMMATORY CYTOKINES, REDUCES EOSINOPHILS IN THE LUNGS, UPREGULATES PROTEINS THAT REDUCE PROSTAGLANDIN AND LEUKOTRIENE SYNTHESIS

Side effects:



OTHER MEDICATIONS

- SMOKING CESSATION – NICOTINE REPLACEMENT, BUPROPION/ZYBAN, VARENICLINE/CHANTIX
- ALLERGY MEDICATIONS – ANTIHISTAMINE PILLS/SPRAYS, NASAL STEROID SPRAY, MONTELUKAST/SINGULAIR
- BIOLOGICS – EOSINOPHILIC ASTHMA/IGE – LIKELY BEST TO CONSULT AN IMMUNOLOGIST

OTHER MEDICATIONS

Other Pharmacological Treatments

Figure 3.22

Alpha-1 Antitrypsin Augmentation Therapy	• Intravenous augmentation therapy may slow down the progression of emphysema **(Evidence B)**
Antitussives	• There is no conclusive evidence of a beneficial role of antitussives in people with COPD **(Evidence C)**
Vasodilators	• Vasodilators do not improve outcomes and may worsen oxygenation **(Evidence B)**
Opioids	• Low-dose long acting oral and parenteral opioids may be considered for treating dyspnea in COPD patients with severe disease (**Evidence B**)
Pulmonary Hypertension Therapy	• Drugs approved for primary pulmonary hypertension are not recommended for patients with a pulmonary hypertension secondary to COPD (**Evidence B**)

Image Source: https://goldcopd.org/gold-teaching-slide-set/

METHODS OF ADMINISTRATION

- HANDHELD DEVICES – METERED DOSE INHALERS (MDI), BREATH ACTUATED DRY POWDER (I.E.: BREO), HANDHELD MIST (I.E.: COMBIVENT)
- DON'T FORGET THE SPACER! HELPS IMPROVE RESPIRATORY DEPOSITION
- NEBULIZED THERAPY

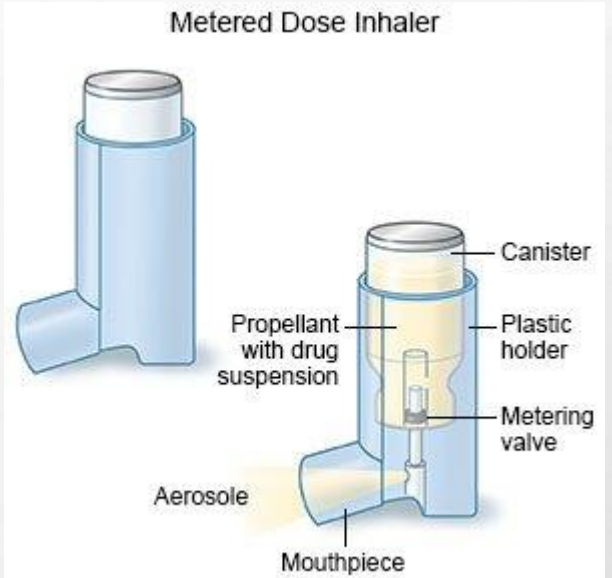


Image Source: https://www.drugs.com/

Image Source: https://aafa.org/asthma-medicine/ipratropium-bromide-albuterol-sulfate-combivent-respimat/

Image Source: https://en.wikipedia.org/wiki/Dry-powder_inhaler

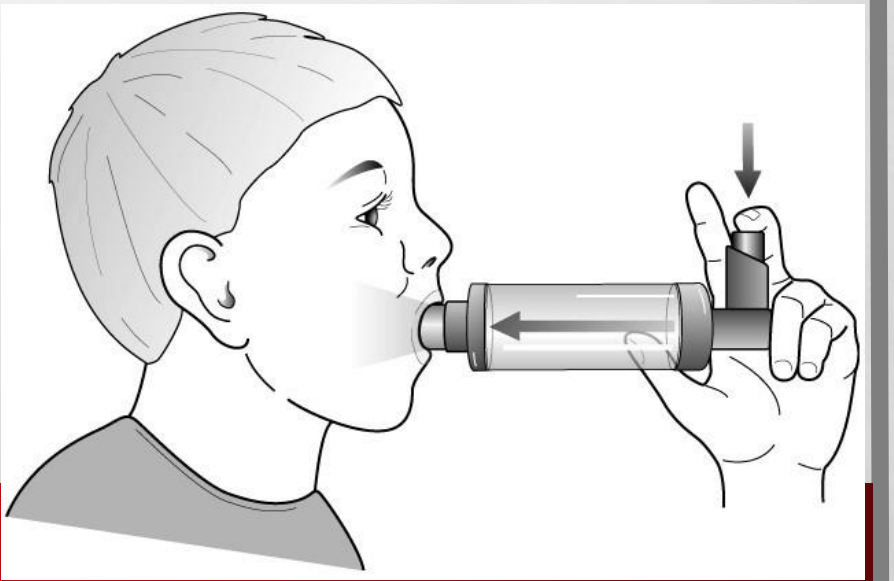
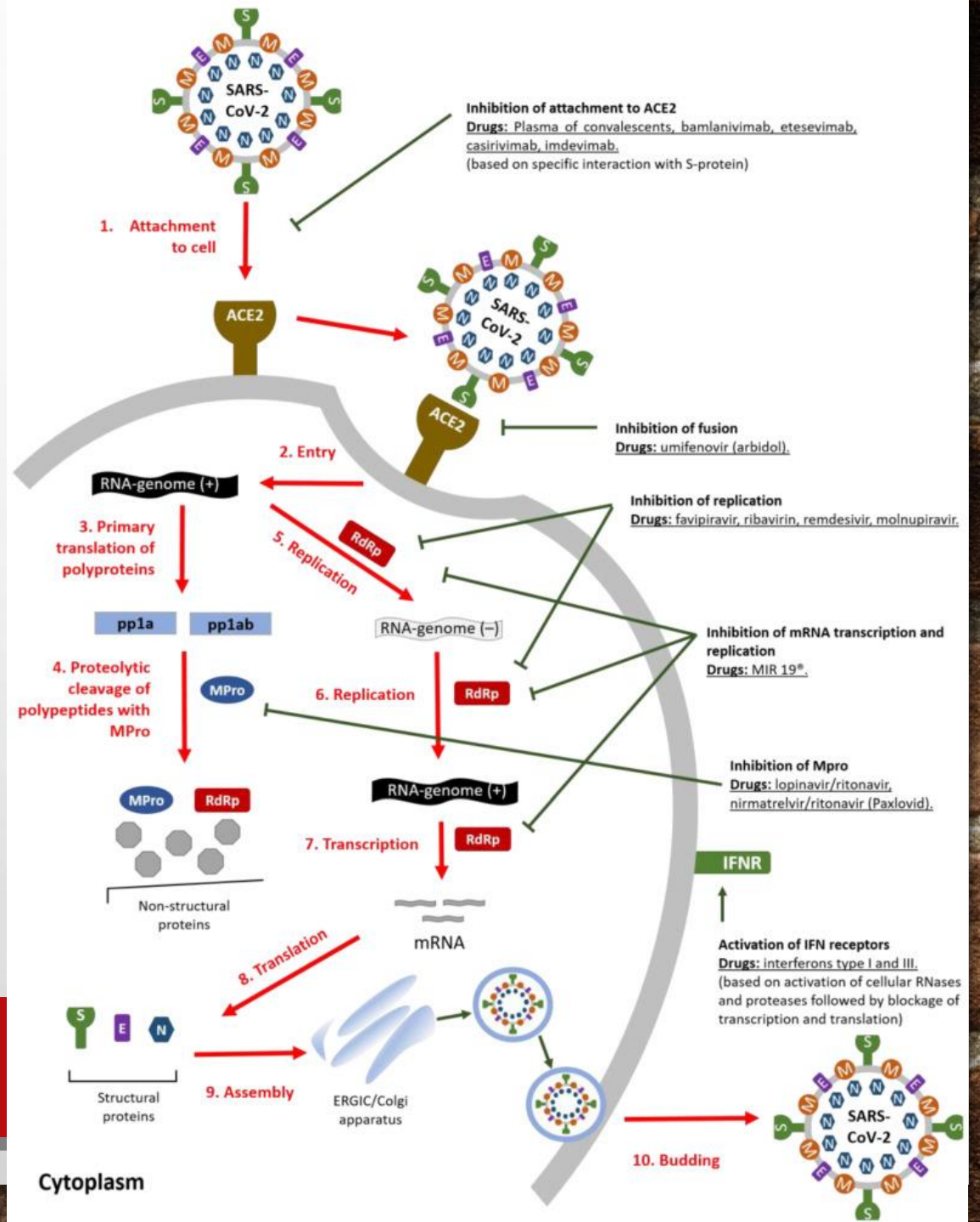


Image Source: https://patient.uwhealth.org/healthfacts/6841

OTHER CONSIDERATIONS

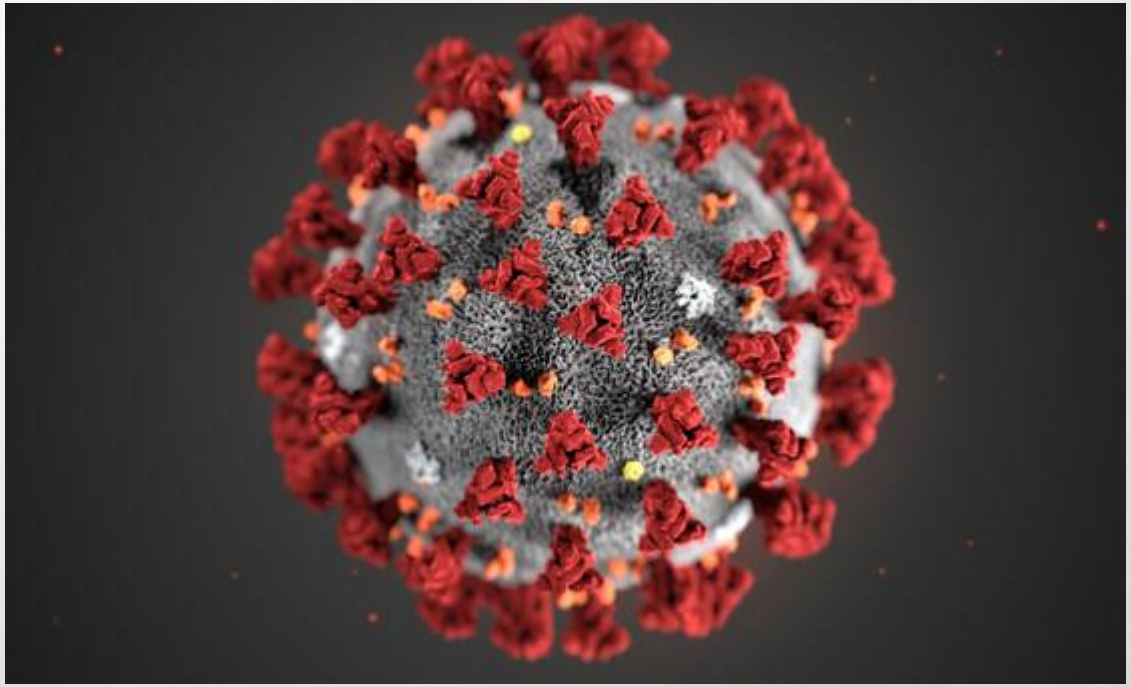
- CONVENIENCE – FREQUENCY, NEB VS MDI AS A TIME COMMITMENT
- EXPENSE – FORMULARY CONTROLS ALL…
- AVAILABILITY – FORMULARY… AGAIN
- SEVERITY OF DISEASE – PREFER NEBS OR MIST FOR THOSE WITH VERY SEVERE COPD

COVID-19 TREATMENT

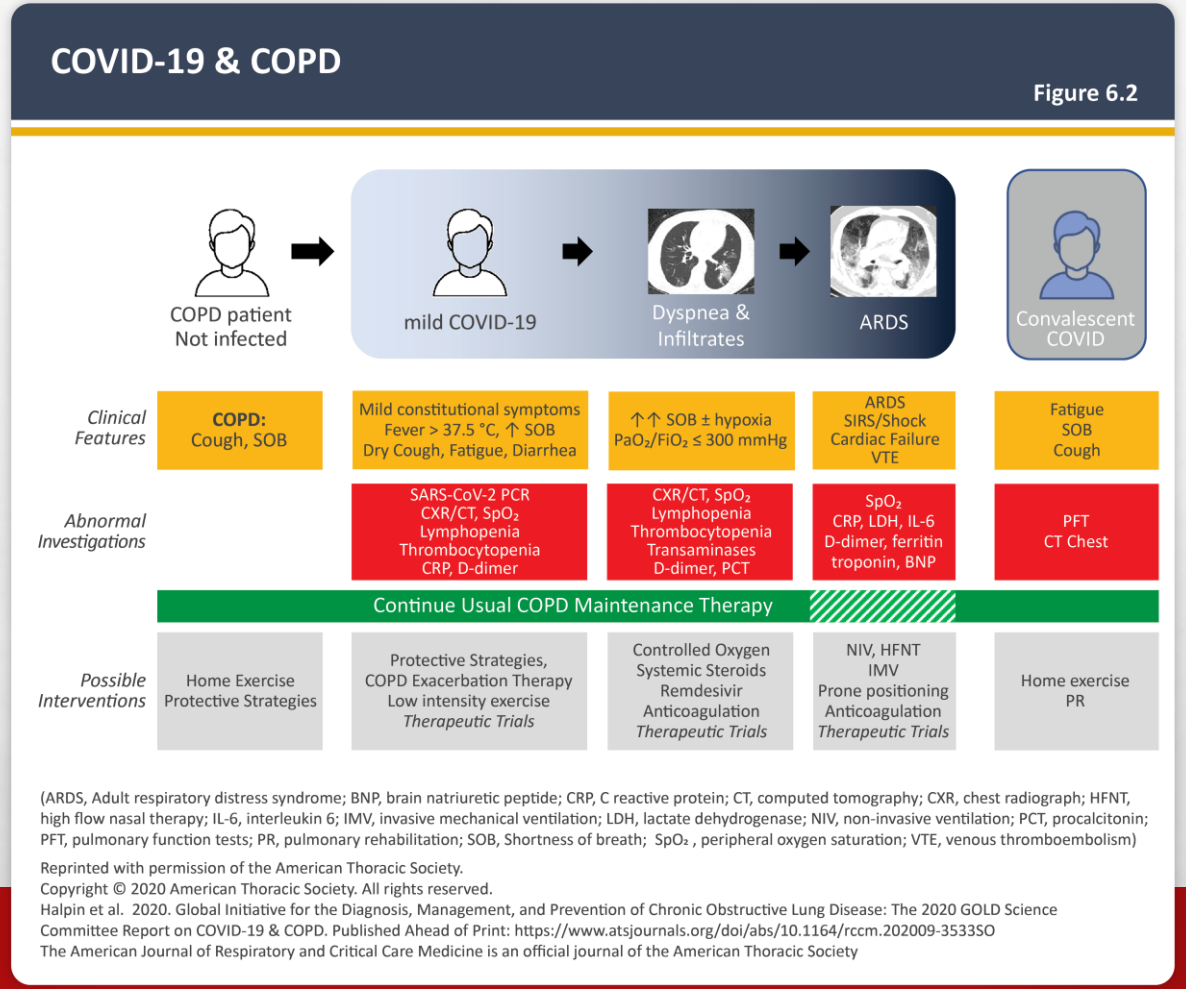


COVID-19 TREATMENT

- ANTIVIRALS
- MONOCLONAL ANTIBODIES
- SYMPTOMATIC TREATMENT



COPD AND COVID



(ARDS, Adult respiratory distress syndrome; BNP, brain natriuretic peptide; CRP, C reactive protein; CT, computed tomography; CXR, chest radiograph; HFNT, high flow nasal therapy; IL-6, interleukin 6; IMV, invasive mechanical ventilation; LDH, lactate dehydrogenase; NIV, non-invasive ventilation; PCT, procalcitonin; PFT, pulmonary function tests; PR, pulmonary rehabilitation; SOB, Shortness of breath; SpO_2 , peripheral oxygen saturation; VTE, venous thromboembolism)

Halpin et al. 2020. Global Initiative for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease: The 2020 GOLD Science Committee Report on COVID-19 & COPD. Published Ahead of Print: https://www.atsjournals.org/doi/abs/10.1164/rccm.202009-3533SO
The American Journal of Respiratory and Critical Care Medicine is an official journal of the American Thoracic Society

Image Source: https://goldcopd.org/gold-teaching-slide-set/

ANTIVIRALS

- ANTIVIRALS: PAXLOVID
  - MECHANISM OF ACTION: BIND TO AMINO ACIDS RESULTING IN FUNCTIONAL INACTIVATION
- NUCLEOSIDE ANALOGS: FAVIPIRAVIR, RIBAVIRIN, REMDESIVIR, MOLNUPORAVIR
  - MECHANISM OF ACTION: INHIBITION OF VIRAL REPLICATION
- DOWNFALLS: MANY DRUG INTERACTIONS WITH PAXLOVID (LESS WITH MOLNUPORAVIR)

Treatment	Who (Among people who are at high risk of getting sick)	When	How
Nirmatrelvir with Ritonavir (Paxlovid) Antiviral	Adults; children ages 12 years and older	Start as soon as possible; must begin within 5 days of when symptoms start	Taken at home by mouth (orally)
Veklury (remdesivir) Antiviral	Adults and children	Start as soon as possible; must begin within 7 days of when symptoms start	Intravenous (IV) infusions at a healthcare facility for 3 consecutive days
Molnupiravir (Lagevrio) Antiviral	Adults	Start as soon as possible; must begin within 5 days of when symptoms start	Taken at home by mouth (orally)

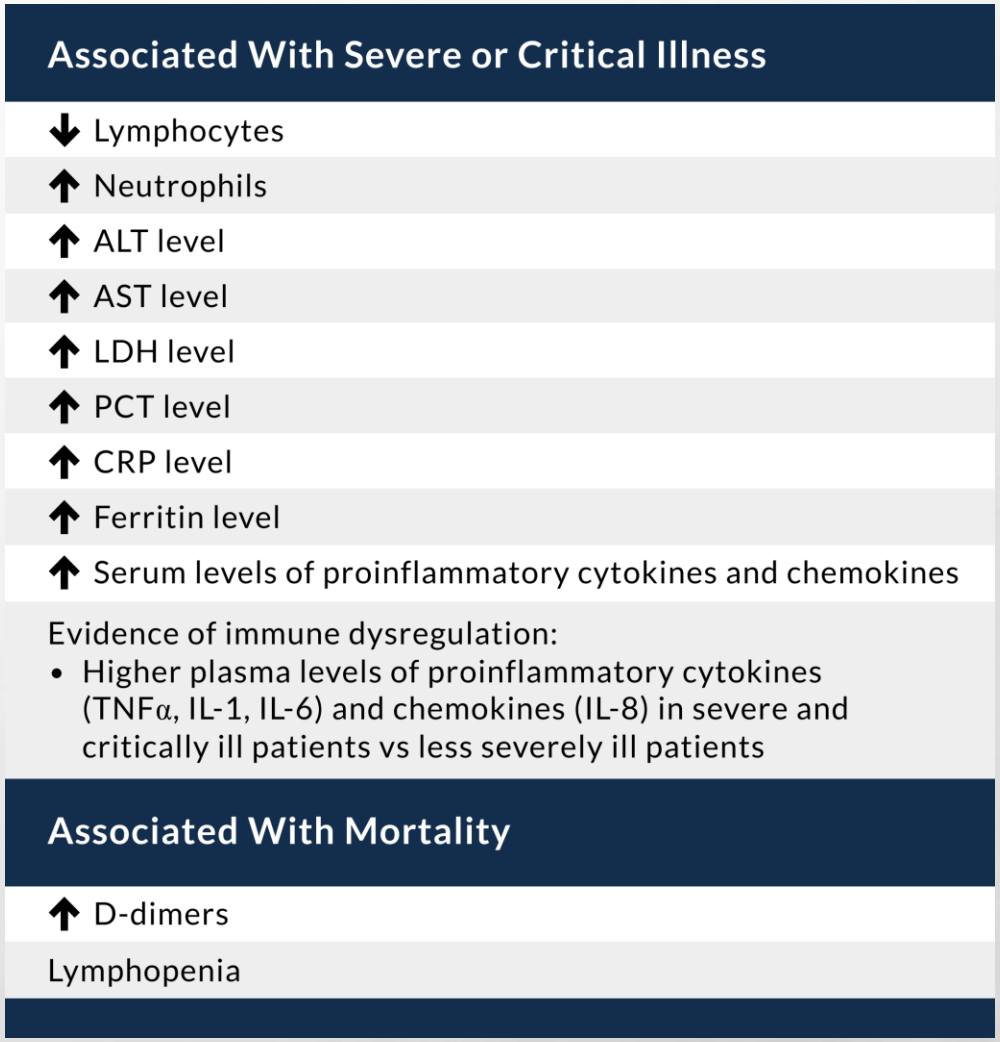
https://www.cdc.gov/covid/treatment/index.html

MONOCLONAL ANTIBODIES

- DRUGS:
  - BAMLANIVIMAB + ETESEVIMAB
  - CASIRIVIMAB + IMDEVIMAB
  - SOTROVIMAB
  - REGDANVIMAB
  - TOCILIZUMAB
  - SARILUMAB
- MECHANISM OF ACTION: VIRUS BINDING BY S-PROTEIN-SPECIFIC MONOCLONAL ANTIBODIES OR SUPPRESSION OF THE SARS-COV-2 INFECTION INDUCED INFLAMMATION BY IL-6 RECEPTOR INHIBITION
- DOWNFALLS: EXPENSIVE, HARD TO COME BY

SYMPTOM MANAGEMENT

- ORAL STEROIDS – DECADRON 6MG-12MG FOR 7-10 DAYS
  - ESPECIALLY WITH CRP >12
  - HIGHER CRP = HIGHER DOSE
- NEBULIZED BETA AGONISTS
- INHALED CORTICOSTEROIDS
- EXPECTORANTS – MUCINEX 600MG 3-4X DAILY FOR 14 DAYS
- COUGH MEDICATION – TESSALON, ROBITUSSIN
- LABS: CBC/CMP, ESR, CRP, COAGS



Associated With Severe or Critical Illness
↓ Lymphocytes
↑ Neutrophils
↑ ALT level
↑ AST level
↑ LDH level
↑ PCT level
↑ CRP level
↑ Ferritin level
↑ Serum levels of proinflammatory cytokines and chemokines
Evidence of immune dysregulation: • Higher plasma levels of proinflammatory cytokines (TNFα, IL-1, IL-6) and chemokines (IL-8) in severe and critically ill patients vs less severely ill patients
Associated With Mortality
↑ D-dimers
Lymphopenia

Image Source: https://www.acep.org/corona/covid-19-field-guide/assessment/laboratory-abnormalities

WHEN IN DOUBT… CHECK IT OUT!

Also known as references

- AMERICAN LUNG ASSOCIATION - HTTPS://WWW.LUNG.ORG/LUNG-HEALTH-DISEASES
- GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE - HTTPS://GOLDCOPD.ORG/
- CENTERS FOR DISEASE CONTROL - HTTPS://WWW.CDC.GOV/COPD/PHP/KEY-RESOURCES/INDEX.HTML
- COPD FOUNDATION - HTTPS://WWW.COPDFOUNDATION.ORG/PRAXIS/ABOUT-PRAXIS/WHAT-IS-PRAXIS.ASPX

CASE STUDY

- MR. B IS A 67-YEAR-OLD MALE WHO PRESENTS TO THE CLINIC WITH COMPLAINTS OF A 6-MONTH HISTORY OF PROGRESSIVELY WORSENING COUGH WHICH IS PRODUCTIVE OF LIGHT COLORED MUCOUS. HE A FARMER AND TELLS YOU HE IS HEALTHY OTHER THAN HTN AND A 60 PACK-YEAR HISTORY OF SMOKING, CURRENTLY HE HAS CUT BACK AND IS SMOKING HALF A PACK PER DAY.
- MR. B. TELLS YOU HE IS ONLY HERE BECAUSE HIS WIFE INSISTED. HIS LAST FOLLOW UP WAS ON HIS 65TH BIRTHDAY. HE NOTES NO CHANGE IN HIS HEALTH SINCE THEN, EXCEPT THIS COUGH.
- WHAT STANDS OUT TO YOU?

CASE STUDY - ASSESSMENT

- MR. B REPORTS DYSPNEA GOING UP THE STAIRS, AND NOTES WHEN WALKING ON A FLAT SURFACE, HE IS NOT AS FAST AS MOST PEOPLE BUT NOTES IT DOES NOT INHIBIT HIS ADLS.
  - WHAT IS MR. B'S MMRC?
- HE REPORTS THE COUGH IS PERSISTENT, IT INTERRUPTS YOUR HISTORY AND ROS SEVERAL TIMES THROUGHOUT THE VISIT.
  - FOR THE SAKE OF COMPLEXITY, MR. B. HAS A CAT ASSESSMENT SCORE OF 19
- WHAT IS YOUR NEXT STEP?

CASE STUDY - TREATMENT

- YOU SEND MR. B. FOR A SCREENING CT AND SPIROMETRY, HIS CT IS CLEAR, BUT HIS SPIROMETRY SHOWS AND FEV1 46% PREDICTED (GOLD 3).
  - WHAT IS/ARE YOUR FIRST LINE TREATMENT(S)?
  - REMEMBER, CAT 19, MMRC 2, NO HOSPITALIZATIONS = ABE GROUP B
- YOU DISCUSS YOUR TREATMENT PLAN WITH MR. B., WHAT ELSE WOULD YOU DISCUSS WITH HIM?

CASE STUDY FOLLOW-UP

- MR. B. SHOULD FOLLOW UP IN 4-6 WEEKS TO ASSESS EFFICACY OF MEDICATIONS.
  - ALLOW 4-6 WEEKS FOR FULL EFFECT OF ICS
- CONTINUE TO FOLLOW THE TREATMENT ALGORITHM FOR CHANGING SYMPTOMS.
- TREAT SYMPTOMS, NOT TEST RESULTS.
- CONTINUE TO PROMOTE SMOKING CESSATION AND PPE FOR ENVIRONMENTAL EXPOSURES.
- REFER TO PULMONOLOGY IF NEEDED!