Updates in COPD

CHRISTY WILSON PA-C, MPAS, DFAAPA

AAPA 2020

1

Disclosure

NONE

2

Topics to discuss

- Review the updated GOLD Guidelines
  - Diagnosis of COPD
- Signs and Symptoms of COPD AE
- Treatments for COPD AE
- Discuss how to formulate an individualized treatment plan
- Endobronchial valve placement for COPD patients

3

Facts about COPD – True / False

Single best predictor of exacerbations was a history of prior exacerbations regardless of COPD severity (TRUE) ECLIPSE study

Women are less susceptible to the effects of tobacco smoke compared to men

ATS states occupational exposure accounts for approx. 10-20% of symptoms / functional impairment in patients consistent with COPD

Cough with sputum production is present in only 10% of patients with COPD

4

COPD and COVID 19

"GOLD recognizes people with COPD are amongst the worst affected by COVID-19 and GOLD is working with WHO to try to minimize the impact of the infection."

GOLD states currently there is NOT any scientific evidence to support that inhaled (or oral) corticosteroids should be avoided in patients with COPD during the COVID-19 epidemic.

5

Role of Spirometry with COPD

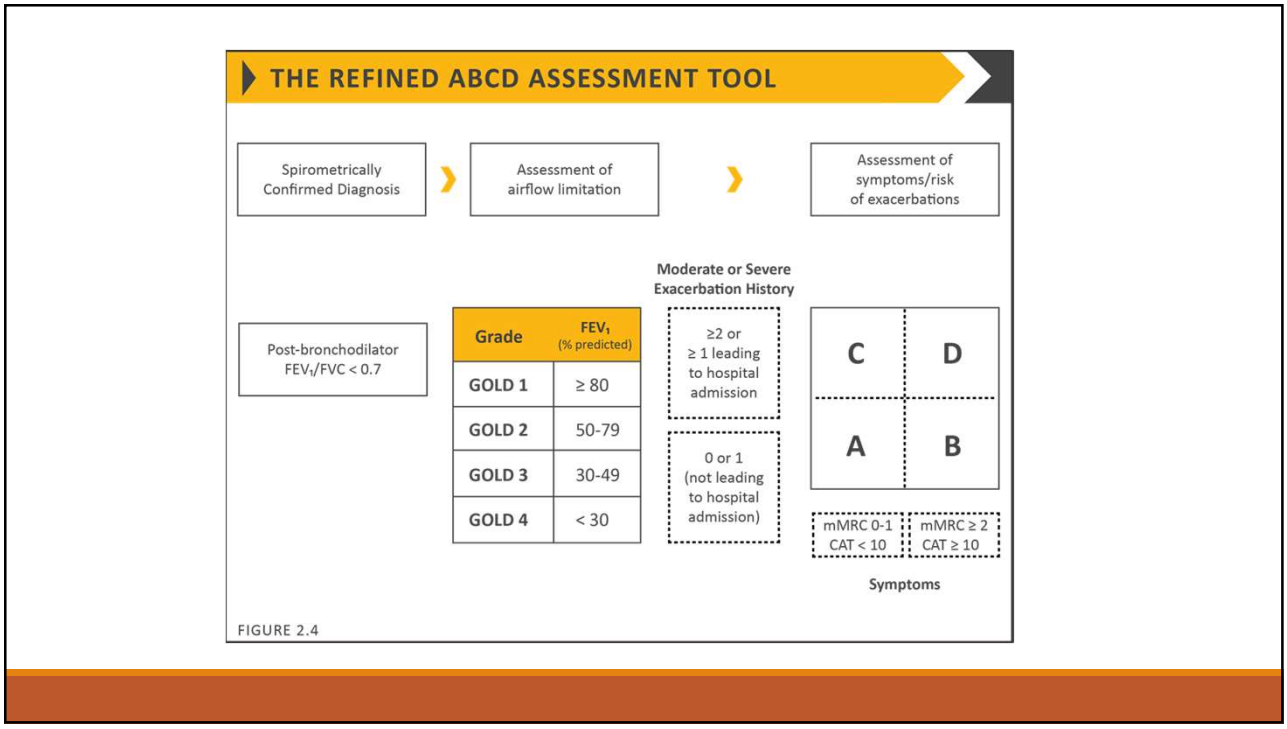
Needed to make the diagnosis

Assess the severity of airflow obstruction

Follow up Assessment of the patient:

- To determine appropriate therapy
- To evaluation for rapid decline

6


THE REFINED ABCD ASSESSMENT TOOL
Spirometrically Confirmed Diagnosis
Assessment of airflow limitation
Assessment of symptoms/risk of exacerbations
Post-bronchodilator FEV1/FVC < 0.7
Grade
FEV1 (% predicted)
GOLD 1
≥ 80
GOLD 2
50-79
GOLD 3
30-49
GOLD 4
< 30
Moderate or Severe Exacerbation History
≥2 or ≥ 1 leading to hospital admission
0 or 1 (not leading to hospital admission)
C
D
A
B
mMRC 0-1 CAT < 10
mMRC ≥ 2 CAT ≥ 10
Symptoms
FIGURE 2.4

7

Treatment Updates from GOLD

Combination SABA / SAMA are superior to either inhaler alone

LAMA has a greater effect on patients to reduce AECOPD and decreasing hospitalizations compared to LABA

Combination LAMA / LABA can increase FEV1 and decrease symptoms compared to monotherapy

8

COPD Acute Exacerbations (AECOPD)

- Acute change of one or more of the following:
  - Cough with increase in severity / frequency
  - Change in sputum production (amount / color / characteristics)
  - Worsening dyspnea
  - Risk factors for COPD AE
    - Severity of COPD
    - GERD
    - Pulmonary HTN
    - TRIGGERS - URI

9

COPD at Baseline

Sedentary Lifestyle

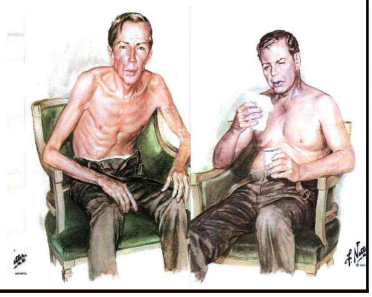
- avoid exertional dyspnea / can be unaware of their limitations

Respiratory symptoms

- dyspnea worse with exertion / chronic cough

Increasing cough / wheezing / fatigue / purulent sputum – INTERMITTENT

- often incorrectly diagnosed asthma



2019 GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE

10

AECOPD

Wheezing / Tachypnea

Conversational Dyspnea

Use of accessory muscles

Altered mental status – concern for hypercapnia / hypoxemia

Bronchospasms / coughing

11

AECOPD Evaluation / Diagnosis

Pulse oximetry

CXR

Labs: CBC / BMP

ABG

Sputum – typically not helpful

To admit or not to admit . . . That is the question!

12

AECOPD Treatment at home

Treatment Regimen:

- SABA (nebulizer vs MDI with spacer) +/- Short acting anticholinergic agent
- Oral Glucocorticoids
- Antibiotics
  - Recommended for moderate / severely ill patients with COPD AE with increase in cough / sputum
  - Up To Date recommendations: moderate / severe COPD AE with at least 2 of the following: increase dyspnea, increase sputum amount or increase in sputum purulence
    - Do not recommend anbx therapy in those with only ONE of the above / MILD COPD AE
  - GOLD Guidelines recommendations: give antibiotics for bacterial infection, duration 5-7 days
- Acute Hypoxemia – typically treated in the hospital

13

Antibiotics for AECOPD Outpatient

Determine risk factors for Poor Outcomes:

- FEV1 <50% / >/= 2 COPD AE past year
- Hospitalization for COPD past year
- Needing continuous oxygen
- Comorbidities
- Age >/= 65

- Risk for pseudomonas / Dx within past year?
- YES -> Ciprofloxacin or levofloxacin / obtain sputum culture
- NO -> amoxicillin-clavulanate or resp fluoroquinolone

14

Case Study 1

AA is a 60-year-old male with pmhx of COPD / HIV presented to clinic with progressive sob and dyspnea x 2 weeks. Admits that over the past several months he has had worsening dyspnea with activity and has to stop often to "catch his breath"

40 pack hx quit 2013 / retired military

Home pulmonary medications:

Spiriva / Albuterol

Spirometry from previous visit:

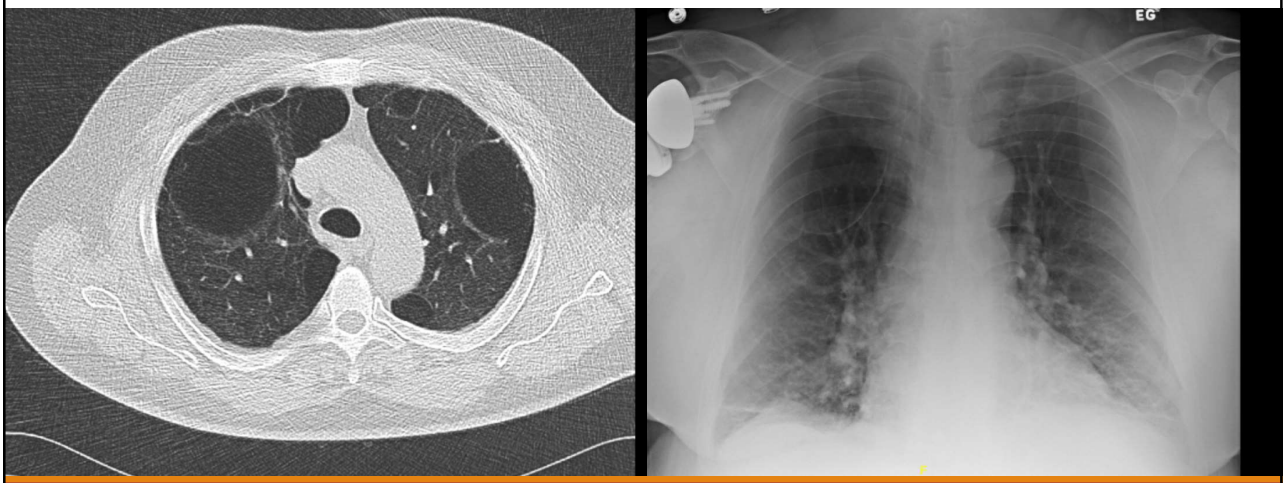
FEV1 51%

Ratio 63%

Due to severity of symptoms he was admitted to the hospital

15

Case Study 1



16

Case 1

Imaging Review

Patient with COPD AE GOLD Grade 2 Group D

Inpatient regimen:

- IV corticosteroids
- Oxygen as needed
- +/- antibiotics
- Home regimen: LABA / LAMA / ICS

17

AECOPD

Evaluation and Diagnosis:

- Assessment of respiratory effort / use of accessory muscles
- Oxygen saturation
- CXR to rule out other diagnoses (pneumonia / PTX / pulm edema / pleural effusion)
- ABG
- Sputum gram stain not useful

80% of AE can be managed as OP basis

Mild AE: SABA

Moderate AE: SABA + anbx +/- PO steroids

Severe AE: require hospitalization / ER visit +/- acute respiratory failure

2019 GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE

18

AECOPD

When to admit to the hospital:

- Failed OP treatment
- AMS / cyanosis / peripheral edema
- Increase oxygen requirements
- Severe underlying COPD (FEV1 < 50%)
- Frequent AE / prior hospitalizations
- Comorbidities such as pneumonia / CHF / DM / renal disease
- Lack of support at home

19

AECOPD

OUTPATIENT MANAGEMENT

SABA (albuterol)

Anticholinergic agents (ipratropium bromide)

PO glucocorticoids (prednisone 40 mg x 5 days)

Antibiotics (moderate to severe cases)

INPATIENT MANAGEMENT

Oxygen therapy (monitor for risk of hypercapnia)

SABA (via nebulizer)

Anticholinergic agents

Systemic glucocorticoids (methylprednisolone 60-125 mg QID)
- Duration: 5-14 days of steroids
- Improves FEV1

Antibiotics for moderate to severe COPD
- Shortens duration of illness

Mechanical Ventilation / NIPPV (first line use)

Avoid Methylxanthines due to side effects

20

AECOPD / Ways to Prevent Readmissions

Maintenance therapy with LABA should be initiated prior to discharge

Follow up visit within 1 week of AECOPD

Education about disease

Inhaler technique / education

Vaccinations / Nutrition

Pulmonary Rehabilitation

End of Life discussion

Tobacco Cessation education

21

Outpatient Management - MESSI

Measurement: Spirometry should be done at least ONCE a year to monitor FEV1

Exacerbations: monitor exacerbation history (frequency / severity)

Smoking status: – discuss at each visit

Symptoms: determine any changes in signs / symptoms

Imaging: if worsening of s/sx

22

GOLD Guideline Recommendations

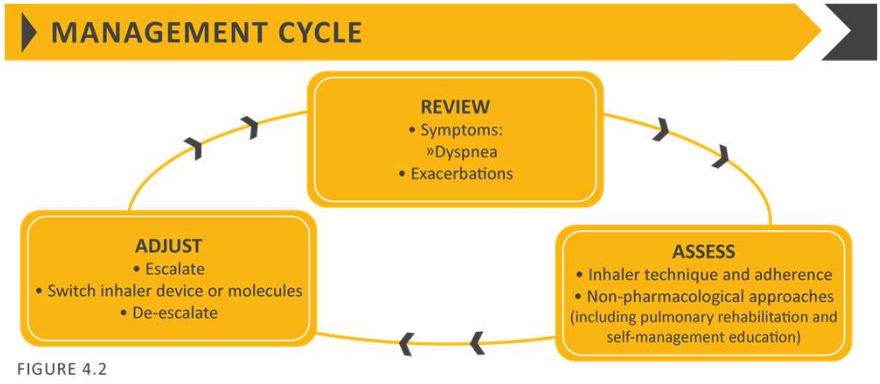


FIGURE 4.2

2019 GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE

23

Pharmacological Treatment

Based on GOLD Guideline staging

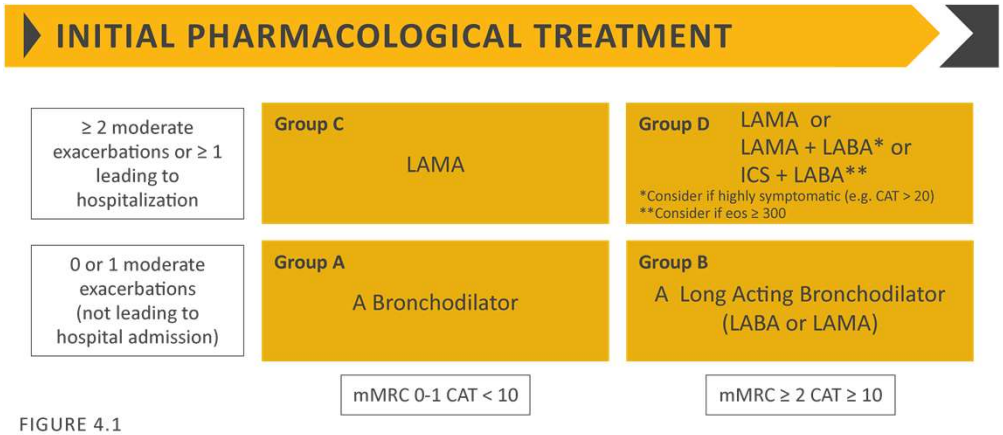


FIGURE 4.1

2019 GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE

24

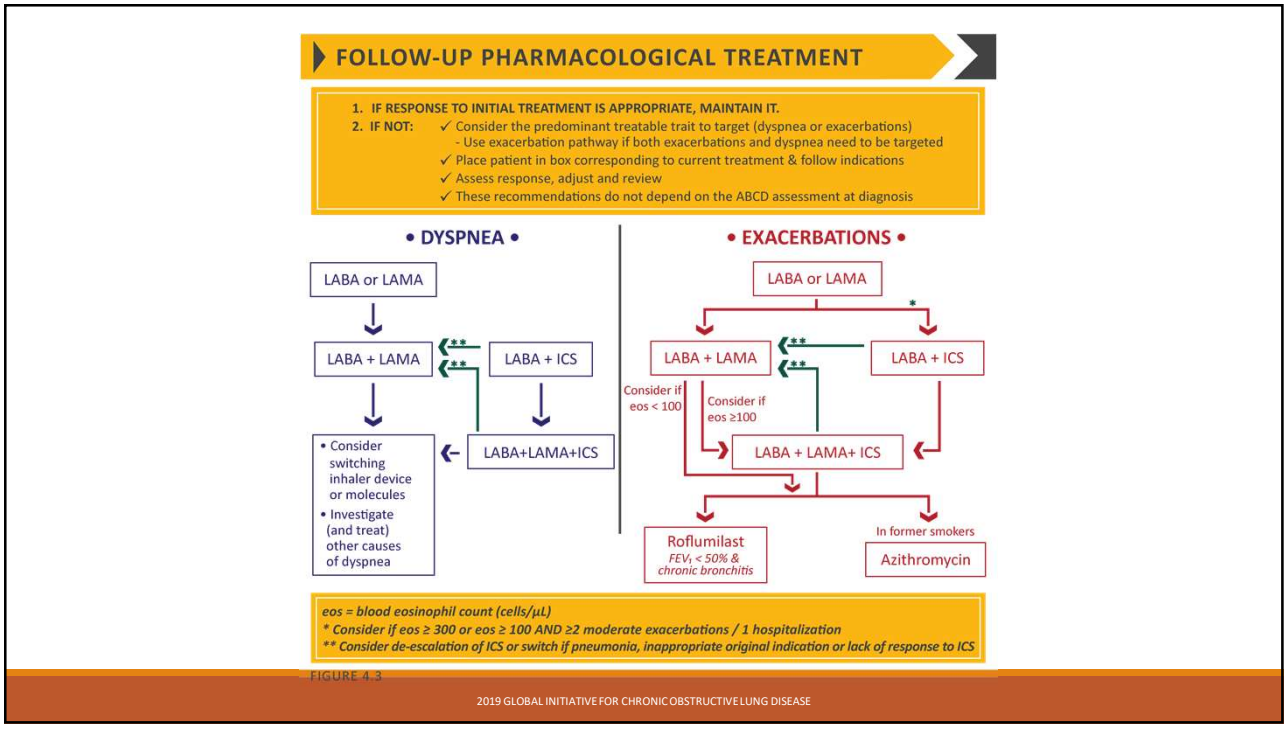


FIGURE 4.3

2019 GLOBAL INITIATIVE FOR CHRONIC OBSTRUCTIVE LUNG DISEASE

25

Non-Pharmacological Treatment

Pulmonary Rehabilitation

Vaccinations
- PPSV23 (< 65 yo with FEV1 <40)
- PCV13 (>/= 65 yo)
- Influenza vaccine

Inhaler education / Oxygen assessment

Palliative Care

Interventional Bronchoscopy / Surgery

Tobacco cessation education / counseling

26

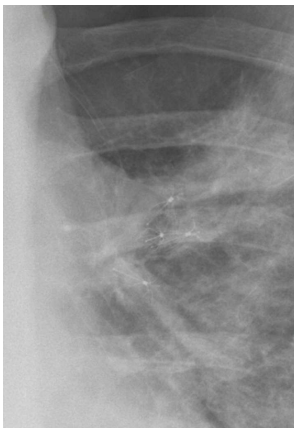
Interventional Bronchoscopy / Zephyr Valve

- Endobronchial Value (EBV) / Zephyr valve
  - FDA approved June 2018
  - Implanted via bronchoscope in patients with significant hyperinflation associated with severe emphysema
  - Criteria:
    - Diagnosis of emphysema via CT chest
    - BMI < 35 kg
    - Stable disease not on more than 20 mg prednisone daily
    - RV >/= 175% pred.
    - FEV1 15-45% pred.
    - TLC >/= 100% pred.
    - Quit smoking for at least 4 months
    - Target lobe with little to no collateral ventilation
  - Shown to clinically improve lung fx after 12 months
  - EMPROVE study / HRCT needed to help with selection of the lobe

HTTPS://WWW.FDA.GOV/MEDICALDEVICES/PRODUCTSANDMEDICALPROCEDURES/DEVICEAPPROVALSANDCLEARANCES/RECENTLY-APPROVEDDEVICES/UCM614563.HTM

27

Zephyr Valve



Patient Workup

- complete PFTs

- HRCT chest / perfusion scan

- ABG on RA to rule out severe hypercapnia / hypoxemia

- 6MW

- Echo to rule out LVEF < 40% / RVSP > 45 mmHg

#1 Risk – Pneumothorax

28

Endobronchial Valve

Image of Device in Lung Airway

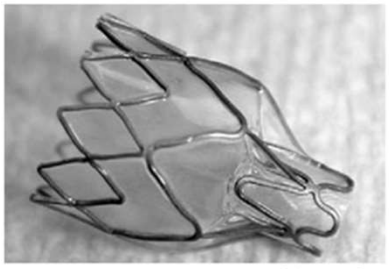


Image of the Device

29

Case Study

67-year-old male presents with worsening sob and dyspnea. He was diagnosed with COPD several years ago and finally quit smoking 6 months ago.

COPD Gold Grade 4 Group D

Remote hx of tobacco abuse

Home pulmonary meds:

Trelegy

Albuterol nebulizer

Home oxygen 2 L continuous via NC

30

Complete PFTs

	Pre - Bronchodilator				Post - Bronchodilator		
--- SPIROMETRY ---	Pred	Actual	%Pred	LLN	Actual	%Pred	Change
FVC (L)	3.72	1.99	53	2.92			
FEV1 (L)	2.75	0.71	26	2.07			
FEV1/FVC (%)	74	36		65			
FEF 50% (L/sec)		0.29					
FEF 75% (L/sec)		0.16					
FEF 25-75% (L/sec)	2.17	0.27	13	0.80			
FEF Max (L/sec)	7.55	1.92	25	5.56			
FIVC (L)		2.12					
FIF Max (L/sec)		3.50					

--- LUNG VOLUMES ---	Pred	Actual	%Pred	LLN - ULN
SVC (L)	3.72	2.52	68	2.92
IC (L)	2.52	1.33	53	1.78
ERV (L)	1.26	1.21	96	0.89
TGV (L)	3.10	7.54	243	1.64
RV (Pleth) (L)	2.11	6.33	300	1.35 - 2.87
TLC (Pleth) (L)	6.00	8.85	148	4.39 - 7.61
RV/TLC (Pleth) (L)	35	72		26 - 44
Trapped Gas (L)				

--- DIFFUSION ---	Pred	Actual	%Pred	LLN
DLCOunc (ml/min/mmHg)	27.6	8.3	30	19.4
DLCOcor (ml/min/mmHg)	27.6	8.3	30	19.4
DL/VA (ml/min/mmHg/L)	4.80	1.84	38	3.40
VA (L)	6.00	4.51	75	4.39

Quantitative VQ scan

Right lung:

3.9 % to the right upper lung zone

23.2 % to the right mid lung zone

23.9 % to the right lower lung zone

Left lung

3.5 % to the left upper lung zone

23.8 % to the left mid lung zone

22.6 % to the left lower lung zone

IMPRESSION:

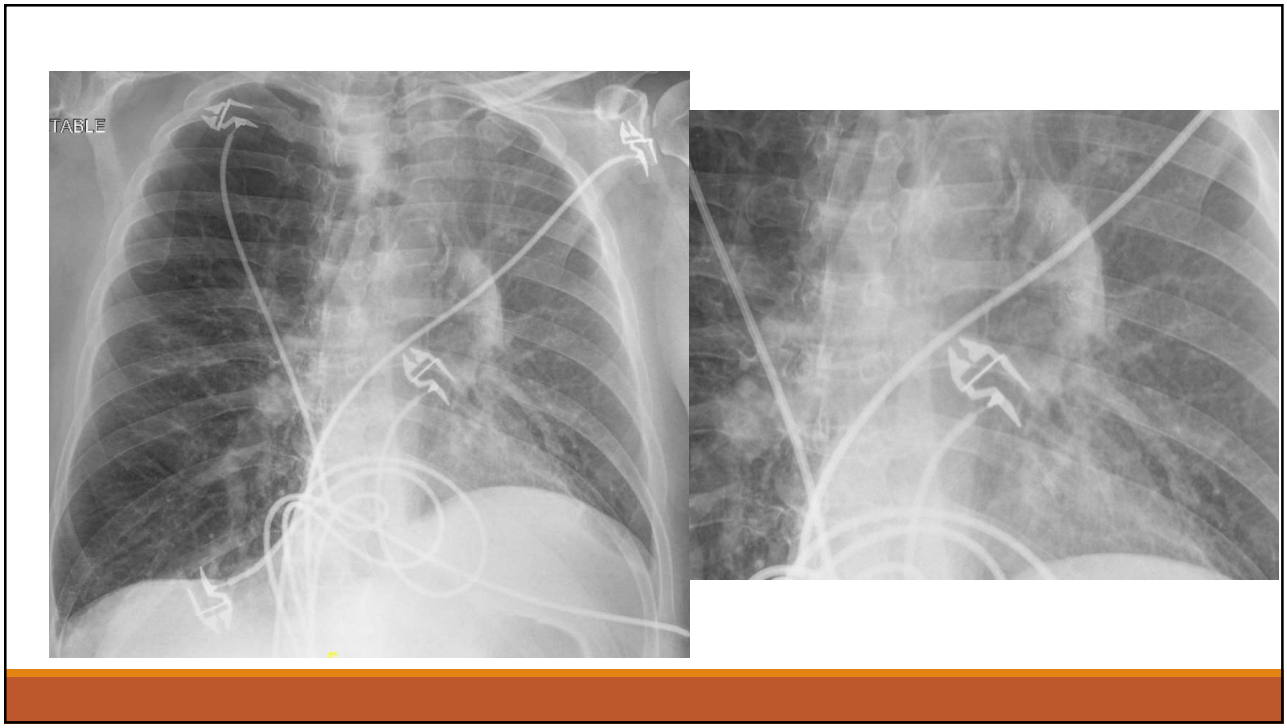
Diminished upper lung zone perfusion due to severe emphysema.

32

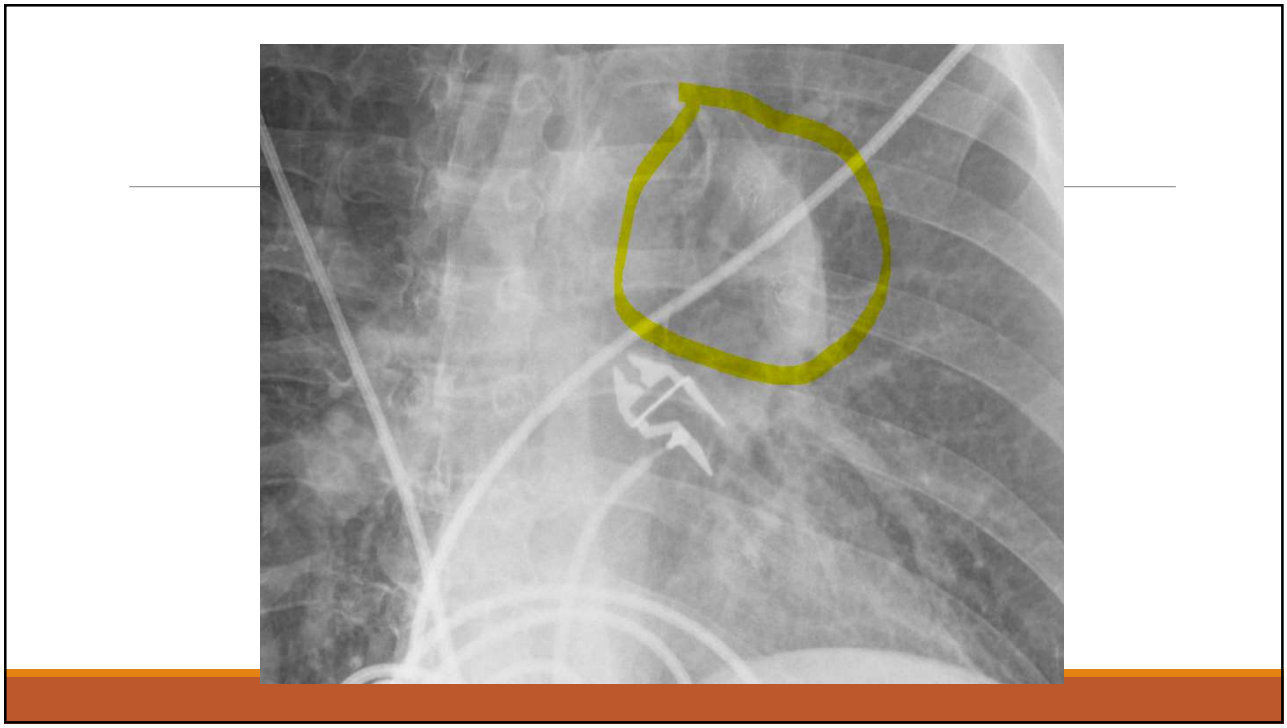
33

5 valves were placed via bronchoscopy

34

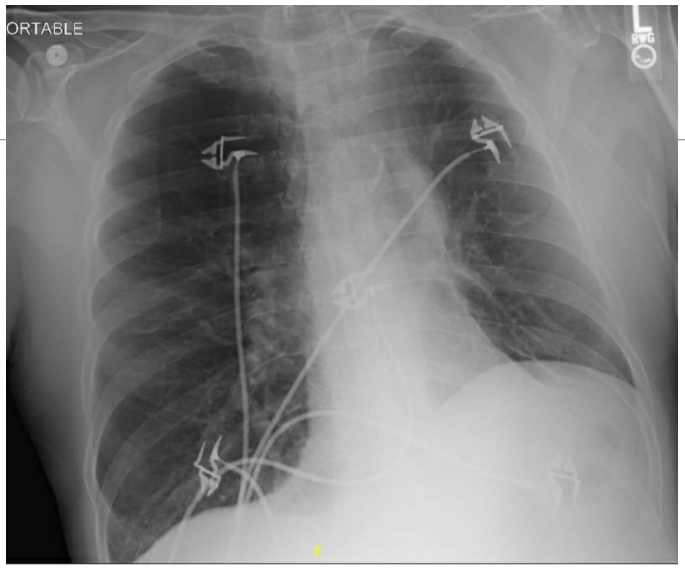


35



36

CXR



37

38

COPD and Comorbidities

Atrial Fibrillation:
- Watch closely when using SABA and theophylline
- No change in treatment of COPD in patients with A fib

PAD / PVD:
- 8.8% of patients with COPD (all severities) were diagnosed with PAD
- 1.8% of patients without COPD had PAD

HTN:
- Should not be treated differently in patients with COPD

Osteoporosis:
- COPD is a significant risk factor

Anxiety and Depression:
- Patients with COPD are 1.9x more likely to commit suicide

Check anemia and Vit D Deficiency in patients with COPD

39

Clinical Citations

2019 Global Initiative for Chronic Obstructive Lung Disease

https://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/DeviceApprovalsandClearances/Recently-ApprovedDevices/ucm614563.htm

Up-to-Date Chronic Obstructive Pulmonary Disease: Definition, clinical manifestations, diagnosis, and staging. Authors: Han, MeiLan King et. Al. Accessed February 2020.

Suissa S, Dell'Aniello S, Ernst P. Comparative effects of LAMA-LABA-ICS versus LAMA-LABA for COPD: cohort study in real world clinical practice [published online November 21, 2019]. *CHEST*. doi:10.1016/j.chest.2019.11.007

40

THE END

41