“Breathe Again”

2019 Update on AECOPD

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Disclosures

None

Objectives

- Accurately diagnose acute exacerbations of COPD
- Describe evidence based management of acute exacerbations of COPD
- Outline how care should be transitioned to the ambulatory setting from the hospital

You Take My Breath Away

Burden of COPD

1. Prevalence 13 million
2. ED visits 1.5 million
3. Hospitalizations 715, 000
4. Deaths 135,000
5. Cost $ 50 billion

CHEST April 2015; 147 (4):883-893

CC: Dyspnea, Wheezing, Cough x 4d

67 y/o man with COPD, dyslipidemia and HTN is in the ED with worsening dyspnea, increased productive cough with sputum color change from clear tan to greenish color and wheezing. He stated he was dyspneic on exertion but denied fevers, palpitations, chest pain or night sweats.

Social History

40 pack year smoking history but denied using alcohol or illicit drugs.

Medications

Lisinopril
Atorvastatin
Tiotropium
Levalbuterol inhaled
Ipratropium/albuterol
Fluticasone/salmeterol

BP 110/60 mm Hg, HR 110/min, T 98.7F,
RR 34/min, SpO2 is 81% on room air

Thin man who appeared awake and alert
He was in moderate respiratory distress
and using his accessory muscles.

CARDIAC-S1/S2, tachycardia, S3 gallop
LUNGS-Coarse rhonchi & diffuse wheezing
No cyanosis or lower extremity edema
The rest of the exam was unremarkable

Labs

pH 7.20, pCO2 67, pO2 61 HCO3 30

WBC: 14,000 cells/uL, H/H 15/48, Plts150K

Imaging

Sinus tach (115/min), no ST/T wave changes

CXR: Lungs hyperinflated with flattened Diaphragms. No acute infiltrates were seen

PFT:	FEV1	1.56 L (30% predicted)
	FVC	2.28 L (40% predicted)
	FEV1/FVC	0.68

Was the diagnosis accurate?

- **Yes.** COPD = **S**xs + **S**moking + **S**pirometry
  - **C**ough, **D**yspnea, **S**putum production
  - Beyond the normal day to day variation
  - Usually requires a change in treatment
- Smoking hx, multiple COPD admissions, worsening resp sxs → AECOPD
- Acute Resp Failure d/t resp sxs (difficulty breathing + hypoxemia and hypercapnea)

Fighting For Air

- Consider the diagnosis if age > 40 yrs
  - **C**ough, **D**yspnea, **C**hronic sputum
  - Smoking or other risk factors
  - Post BD FEV1/FVC < 0.7

- Diagnosis of COPD requires 3 S's
  - **S**ymptoms
  - **S**moking
  - **S**pirometry

THE GOLD REFINED ABCD ASSESSMENT TOOL

Diagnosis = **Assessment of airflow limitation** + **Assessment of symptoms/risk of exacerbations**

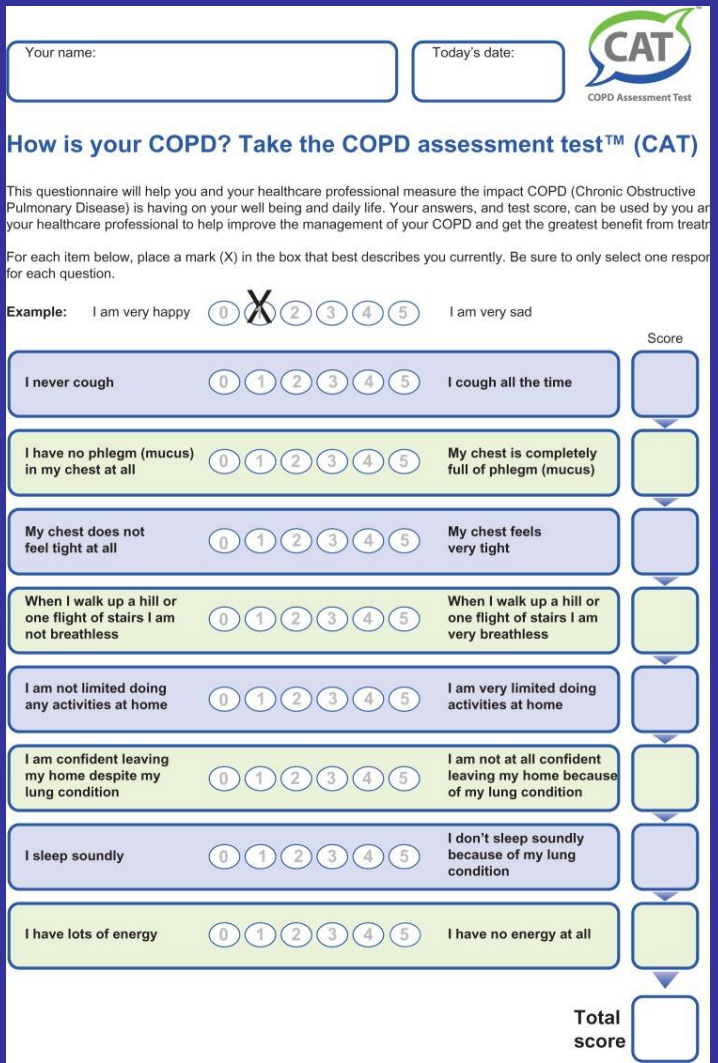
FEV1/FVC<0.7

Grade	FEV_1 (% pred.)
1	≥80
2	50-79
3	30-49
4	<30

Exacerbation History	
≥ 2 or ≥1 leading to hospitalization	C / D
0 or 1 (not leading to hospital admission)	A / B

mMRC 0-1 CAT < 10 CCQ < 1	mMRC 2+ CAT 10+ CCQ 1+

CAT Score mMRC Score



Your name:

Today's date:

CAT
COPD Assessment Test

How is your COPD? Take the COPD assessment test™ (CAT)

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 ar your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatr

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

Please tick in the box that applies to you (one box only)

mMRC grade 0. I only get breathless with strenuous exercise ☐

mMRC grade 1. I only get short of breath when hurrying on the level or walking up a slight hill ☐

mMRC grade 2. I walk slower than people of the same age on the level because of breathlessness, or I have to stop for breath when walking on my own pace on the level ☐

mMRC grade 3. I stop for breath after walking about 100 meters or after a few minutes on the level ☐

mMRC grade 4. I am too breathless to leave the house or I am breathless when dressing or undressing ☐

ACO

Asthma **C**OPD **O**verlap

- Significant overlap btn asthma & COPD
- Onset > 40 yrs with a FH asthma
- Past or current smoking history
- Atopy, Rhinitis, GERD history
- Freq & severe exacerbations
- Hyperresponsive ax (AHR)
- %FEV1<0.7+BD response

Acute Exacerbation

- **Definition**
  Acute event characterized by worsening respiratory symptoms that is beyond the normal day to day variations & leads to a change in medications

- **Triggers of COPD exacerbation**
  - Resp infxns, Air pollution, Comorbid dx

Exacerbations

- **Mild**
  Increase in quick relief bronchodilator
- **Moderate**
  Requires antibiotics &/or corticosteroids
- **Severe**
  ≥ 2 exacerbations/yr or ≥ 1 hospitalization

One Last Breath

- Severity of COPD (FEV1 30/50/80 rule)
- Prior intubations, ICU or hospital stay
- Chronic steroid use or O2 therapy
- Comorbidities (CAD, DM, HTN)
- Exacerbation frequency

Lose My Breath

- CXR
- ABG
- EKG
- CBC
- BMP
- Sputum gram stain & culture
  - If pt has failed home antibiotics
  - Severe airflow limitation
  - Pt is on a ventilator

Clinical course

Admitted to the wards with the diagnosis of COPD exacerbation and treated with oxygen 6L/min (N/C). He also got inhaled albuterol nebs 2.5mg every 2 hr and PO prednisone 60mg/d.

He deteriorated on D-2 with severe hypoxemia & increasing resp. mm fatigue leading to intubation, mech. ventilation and was transferred to the ICU.

He got IV steroids, albuterol/ipratropium nebs & IV antibiotics. He was weaned & extubated on D-8 & discharged home on a prednisone taper on D-10.

Was he managed effectively?

- **No**. Due to resp failure ? need for NIV & abx RR 34, SpO2 81% (RA) pH 7.20 pCO2 67
- Antibiotics should be given in AECOPD if
  - Worsening dyspnea
  - Purulent sputum production
  - Increased sputum production
- Indications for Non Invasive Ventilation
  - RR > **25**/min, pH < 7.**35**, pCO2> **45**
  - Persistent resp acidosis after 1 hr of max medical rx

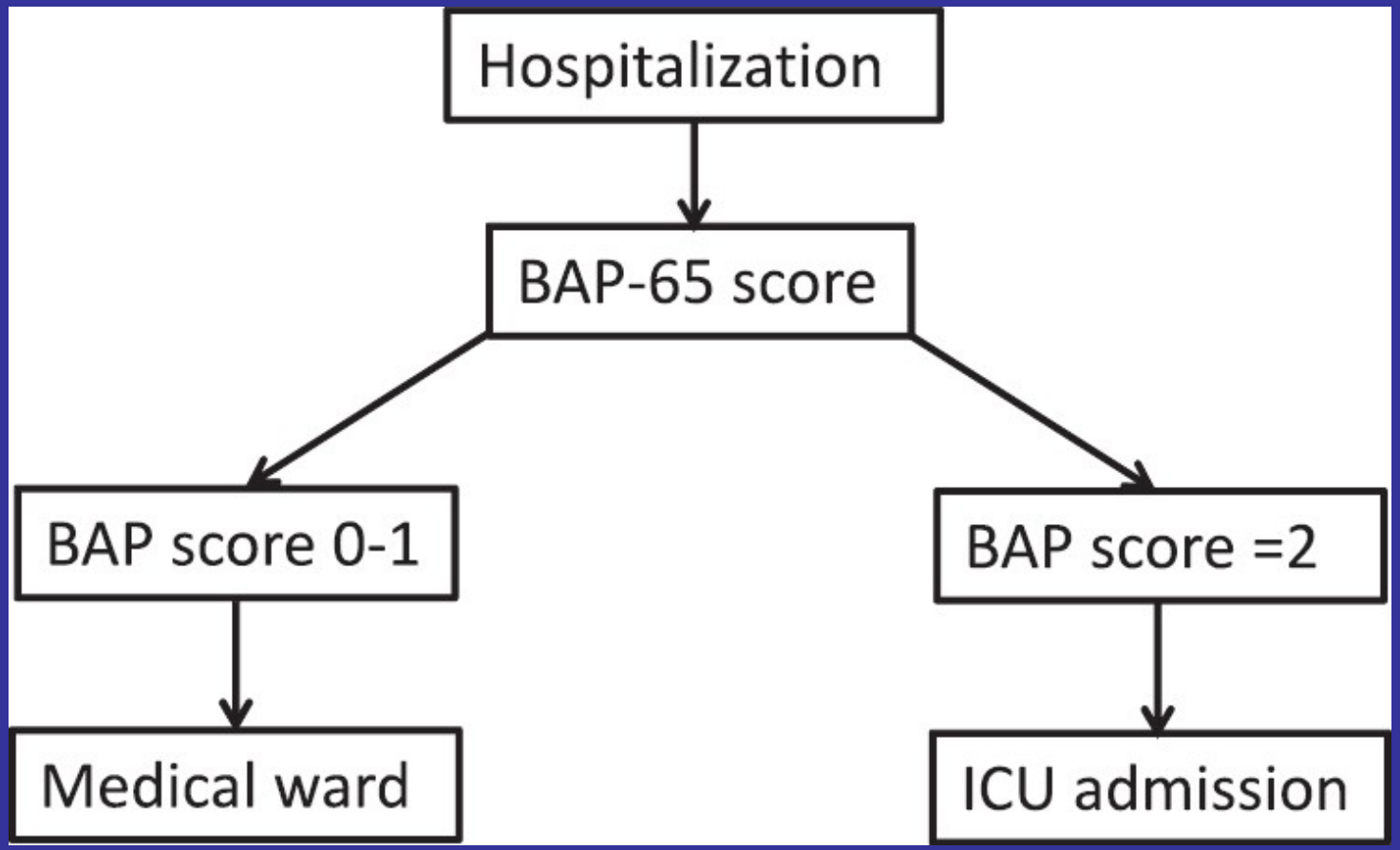
ICU Admission

- Severe dyspnea unresponsive to the initial rx
- Persistent hypoxemia (pO2< 40 on O2 rx)
- Severe resp acidosis (pH < 7.25 on NIV)
- Presence of other end organ failure
- Hemodynamic instability
- Mental status changes

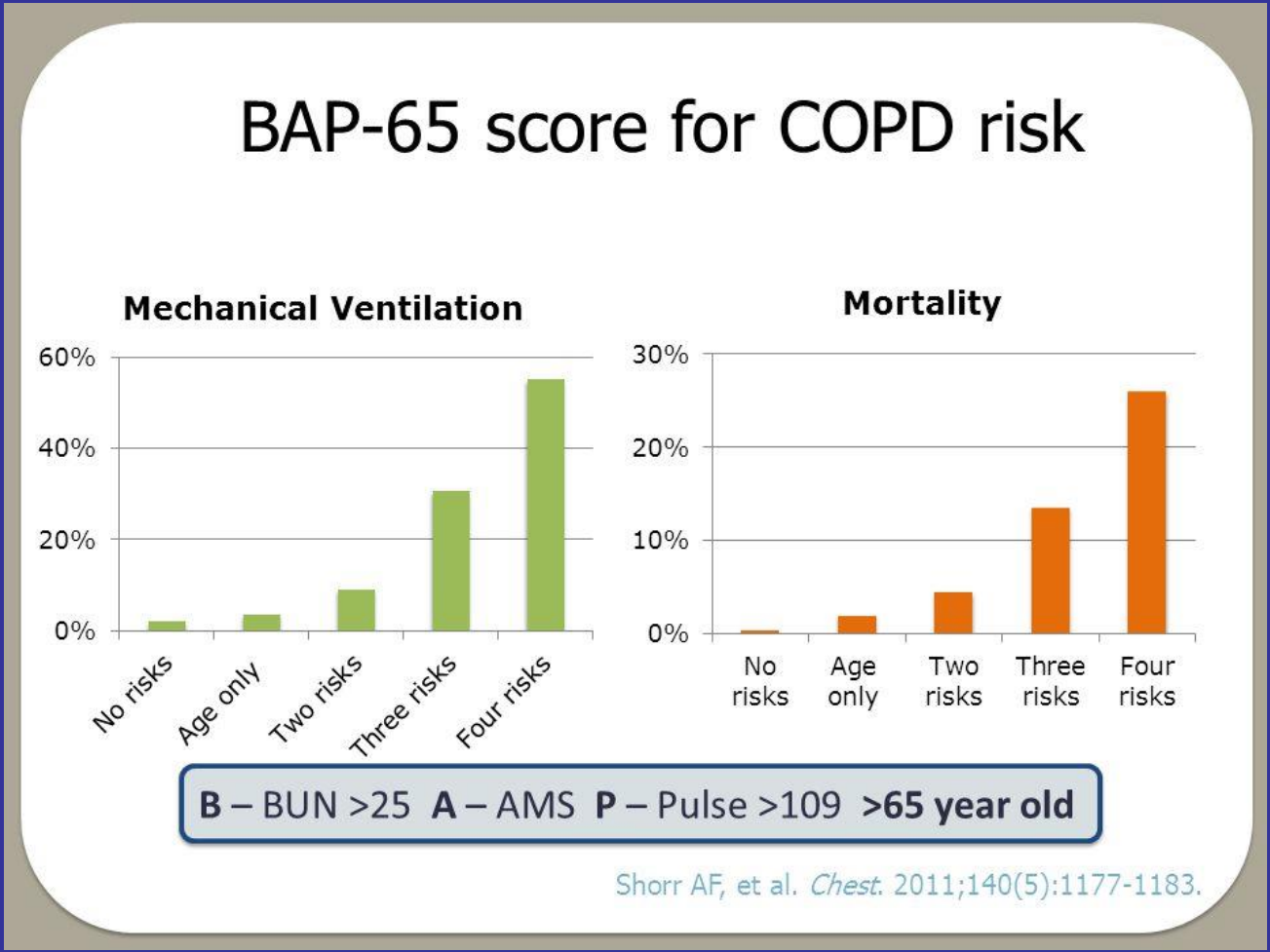
Hospitalization

- High risk comorbidities
- Altered mental status
- Respiratory distress
- Unclear diagnosis
- Failed outpt mx
- Hypercapnea
- Hypoxemia

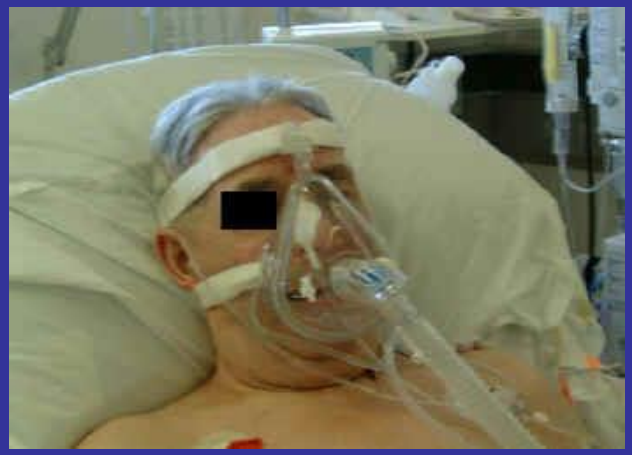
Hospitalization



BAP-65 Score


BAP-65 score for COPD risk
Mechanical Ventilation
60%
40%
20%
0%
No risks
Age only
Two risks
Three risks
Four risks
Mortality
30%
20%
10%
0%
No risks
Age only
Two risks
Three risks
Four risks
B – BUN >25 A – AMS P – Pulse >109 >65 year old
Shorr AF, et al. Chest. 2011;140(5):1177-1183.

Non Invasive Ventilation



INDICATIONS

» Exacerbation of COPD

» Cardiogenic pulm edema

» PNA in immunocomp. pts

» Post extubation resp failure

Avoid Complications

- **F**eeding
- **A**nalgesia
- **S**edation
- **T**hromboprophylaxis

Bowel regimen

Indwelling catheters

De-escalation of abx

- **H**OB > 30º
- **U**lcer prophylaxis
- **G**lucose control
- **S**BT

Take My Breath Away

- Antibiotics

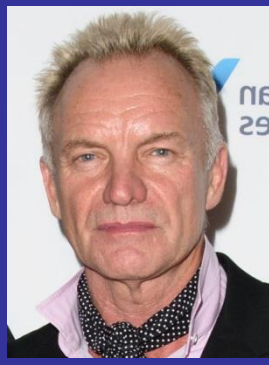
  Severe exacerbation (FEV1< 35%, MV, > 65yr, >3E's/yr)

  - Ceftriaxone 1 – 2g or Levofloxacin 750mg q 24hr IV
  - Piperacillin/Tazobactam 4.5g every Q 6hr IV
  - Cefepime 1 – 2g every 8 – 12 hr IV
  - Aztreonam 2g every 8 hrs IV

  Moderate exacerbations (FEV1 35-50% + above criteria)

  - Amoxicillin-clavulanate 875/125 mg BID PO
  - Doxicycline 100 mg BID PO
  - Azithromycin 500 mg daily
  - Moxifloxacin 400 mg daily

Every Breath You Take



- **B**ronchodilators
  1. Albuterol 2.5mg/3ml (0.083%) neb q 4hr
  2. Ipratropium 0.5mg/2.5ml (0.02%) neb q 6hr
  3. Albuterol + Ipratropium (2.5mg + 0.5mg) 3ml q 6hr

- **C**orticosteroids
  1. Methylprednisone 40mg IV daily or until they can take PO
  2. Prednisone 40mg daily PO x 5 - 7 day

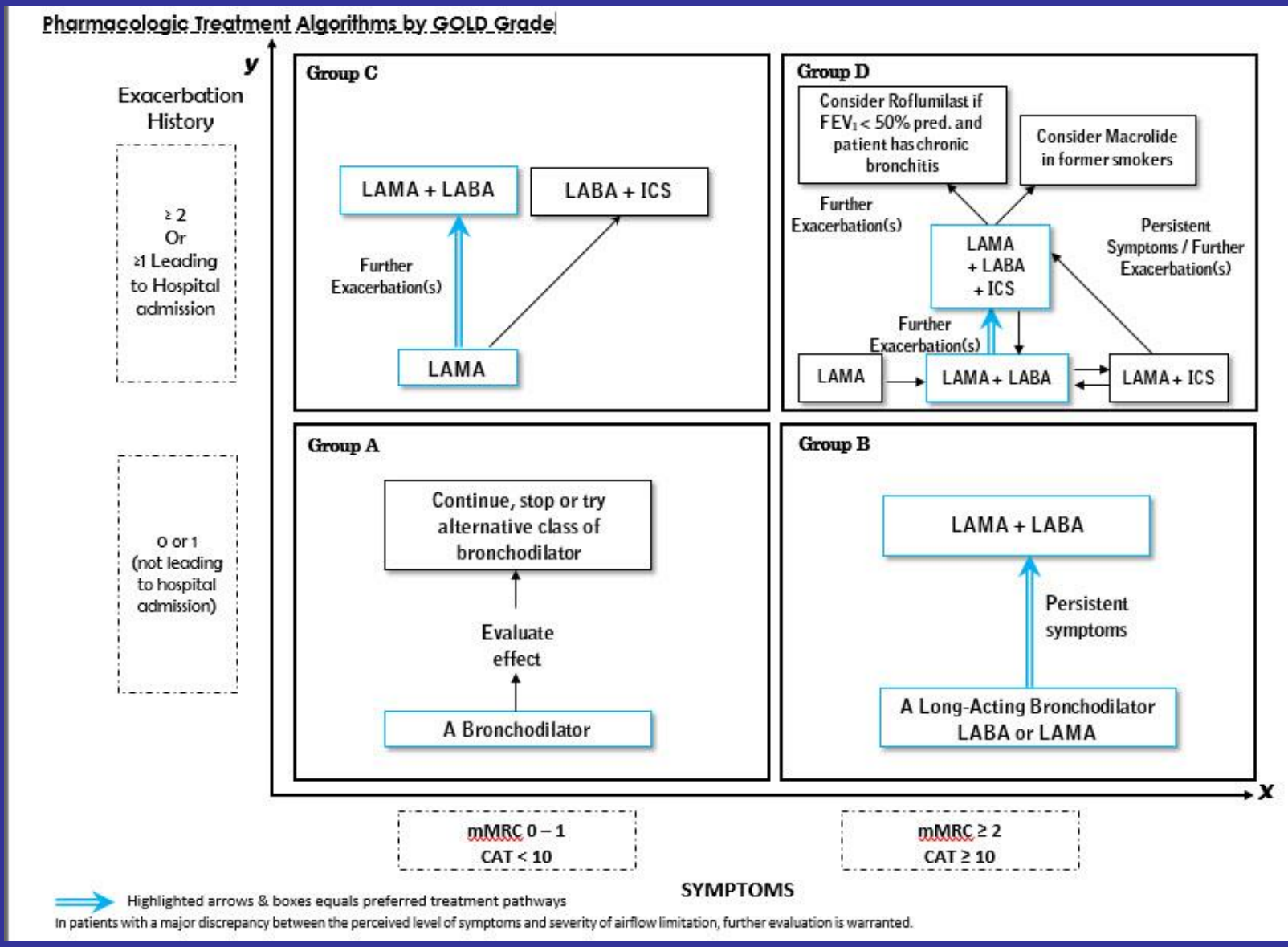
- **D**evices
  1.Oxygen --- L/min via nasal cannula to keep SpO2 86-92%
  2. NIV if RR >**25** & < 35, pH < 7.**35** & > 7.25, p CO2 > **45** & < 60

Was his discharge appropriate?

- **No.** Our pt fits the criteria for stage D GOLD. He should be on the following medications
  - Short and long acting bronchodilators
  - Inhaled corticosteroid
  - ? Oxygen therapy
- He shd have been assessed for home O2
  - PaO2 < 55 mm Hg or SpO2 < 88% at rest
  - PaO2 56 – 59 mm Hg with **P**olycythemia, **P** pulmonale or **P**edal edema

Indications for discharge

- Dyspnea symptoms return to baseline
- Oxygenation returns to baseline
- Tolerating oral meds and intake
- Inhalers no more than q 4hrs
- Hemodynamic stability
- Ambulating


Pharmacologic Treatment Algorithms by GOLD Grade
y
Exacerbation History
≥ 2
Or
≥1 Leading to Hospital admission
0 or 1
(not leading to hospital admission)
Group C
LAMA + LABA
LABA + ICS
Further Exacerbation(s)
LAMA
Group D
Consider Roflumilast if FEV1 < 50% pred. and patient has chronic bronchitis
Consider Macrolide in former smokers
Further Exacerbation(s)
LAMA + LABA + ICS
Persistent Symptoms / Further Exacerbation(s)
Further Exacerbation(s)
LAMA
LAMA + LABA
LAMA + ICS
Group A
Continue, stop or try alternative class of bronchodilator
Evaluate effect
A Bronchodilator
Group B
LAMA + LABA
Persistent symptoms
A Long-Acting Bronchodilator LABA or LAMA
x
mMRC 0 – 1
CAT < 10
mMRC ≥ 2
CAT ≥ 10
SYMPTOMS
Highlighted arrows & boxes equals preferred treatment pathways
In patients with a major discrepancy between the perceived level of symptoms and severity of airflow limitation, further evaluation is warranted.

Chelsea and Westminster Hospital NHS
NHS Foundation Trust

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD) DISCHARGE CARE BUNDLE

Summary – This care bundle is a group of evidence based items that should be delivered to all patients being discharged from the hospital following an Acute Exacerbation of Chronic Obstructive Pulmonary Disease (AECOPD). The care bundle aims to improve quality of care, patient experience and minimise the risk of re-hospitalisation. To ensure the bundle can apply to all we have prepared a combination of actions and documents to facilitate the discharge process.

Inform the COPD CNS of all COPD patients within 24 hours of arrival including patients discharged . Extension 55362 or 58472.

CARE BUNDLE STEPS
All required documents are included in package.

Patient Sticker

PRIOR TO DISCHARGE

1. If patient is a smoker offer smoking cessation assistance
For community referral Fax **020 8962 4135**
For C&W clinic referral Fax **020 8746 5684**
Completed ☐ Declined ☐ N/A ☐ Not Done ☐

2. Pulmonary rehabilitation -assessed for suitability
First point of contact, either by the CNS Nurses or Physiotherapist, who will assess and refer patient. Nurse to contact if not done prior to discharge (fax referral form)
Completed ☐ Declined ☐ N/A ☐ Not Done ☐

3. Written COPD patient information given including :
•British Lung Foundation Self Management Book
•Oxygen alert WALLET card
•Information about the Breathe Easy Group
Completed ☐ Not Done ☐

4. Satisfactory use of inhalers demonstrated and understood
Please assess during medication rounds. Observe the patients using the device's) and document on electronic prescribing record adequate technique demonstrated. (Refer to pharmacist or CNS if extra support is needed).
Completed ☐ Not Done ☐

5. Follow up arrangements after discharge.
An out-patient appointment within 30 days of discharge should be arranged via ward clerk and patient informed.
Completed ☐ Not Done ☐

DAY OF DISCHARGE

The discharging nurse checks that all steps in the care bundle are completed

Nurse (Initials) ☐

Date of discharge
__/__/__

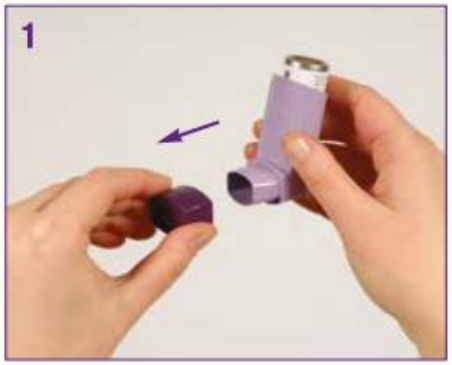
Place the faxed referral form(s) in the plastic sleeve during the patients stay, at discharge place with the COPD Discharge Checklist in the 'Completed' COPD Care Bundle Box located;
AMU /David Erskine: Nurses Station (Maroon coloured boxes)

Care bundle components are based on:
NICE COPD guidelines 2004 (1-5)
A Patient Experience Survey CLAHRC team April 2009 (6)
Systematic Literature Review supported by CLAHRC April 2009 (1-6)

Transitions of Care

- Guideline directed rx protocols for pts
  - ED visits and hospitalized patients
- Patient and caregiver education on
  - Smoking cessation, Inhaler use, Action plan
- Patient assessment of
  - Comorbidities, O2 needs, Goals of care, Spirometry
- Follow up plan
  - Follow-up plan (**Provider** 7-10d, **Phone call** 48-72hr) Community Home Services and Pulmonary Rehab

Breathe In and Out



- Remove the mouthpiece cover and check the mouthpiece inside and outside to see that it is clean and free of objects. It is important to breathe as slowly as possibe before using your inhaler

- Shake the inhaler 4 or 5 times to ensure that any loose objects are removed and that the contents of the inhaler are evenly mixed

- Hold the inhaler upright with your thumb on the base, below the mouthpiece. Breathe out as far as is comfortable

- Place the mouthpiece in your mouth between your teeth and close your lips firmly around it, **do not bite**

- Breathe in through your mouth. Just after starting to breathe in, press firmly down on the top of the canister to release a puff of medicine Do this while still breathing in **steadily and deeply**

- Hold your breath, take the inhaler from your mouth and your finger from the top of the inhaler. Continue holding your breath a few seconds, or as long as is comfortable

- If you are to take a second puff **keep the inhaler upright** and wait about half a minute before repeating steps 2 to 6
- Afterwards, rinse your mouth with water and spit it out. This may help to stop you getting thrush and being hoarse
- After use always replace the mouthpiece cover to keep out dust. When the mouthpiece cover is fitted correctly it will 'click' into position. If it does not 'click' into place, turn the mouthpiece cover the other way round and try again. Do not use too much force

Post Discharge Care

- **Manage comorbid diseases**
  - Median number of comorbidities is **9**
  - Majority of 30d readmissions is are not d/t COPD
- **Transitional care CPT codes for billing**
  - Includes office and certain non face to face contact
  - Codes are 99495 and 99496 billable by the 1st MD
- **Telehealth/DME Programs/Home Health**
  - What to monitor, who reviews data, what action to take
  - Org work with hospitals using common approaches

AMERICAN LUNG ASSOCIATION®

MY COPD ACTION PLAN

Actions to take if my symptoms get worse
Bring this plan with you every time you visit your doctor

General Information	
Name:	Date of Birth:
Emergency Contact:	Phone Number:
Physician/Healthcare Provider Name:	Phone Number:
Physician Signature:	**Date:**

Inhaled Daily Medicines

	Name of Medicine	How Much to Take	When to Take It
Quick Relief			
Long-Acting			
Inhaled Steroid			
Combination			
Nebulizer			

Green Zone: I am doing well today	Actions
• Usual activity and exercise level	• Take daily medicines
• Usual amounts of cough and phlegm/mucus	• Use oxygen as prescribed
• Sleep well at night	• Continue regular exercise/diet plan
• Appetite is good	• At all times avoid cigarette smoke, inhaled irritants

Yellow Zone: I am having a bad day or a COPD flare	Actions
• More breathless than usual	• Continue daily medications
• I have less energy for my daily activities	• Use quick relief inhaler every _____ hours
• Increased or thicker phlegm/mucus	• Start Prednisone: _____
• Change in color of phlegm/mucus	• Start Antibiotic: _____
• Using quick relief inhaler/nebulizer more often	• Use oxygen as prescribed
• Swelling of ankles more than usual	• Get plenty of rest
• More coughing than usual	• Use pursed lip breathing
• I feel like I have a "chest cold"	• At all times avoid cigarette smoke, inhaled irritants
• Poor sleep and my symptoms woke me up	• Call provider if symptoms don't improve
• My appetite is not good	
• My medicine is not helping	

Red Zone: I need urgent medical care	Actions
• Severe shortness of breath even at rest	• **Call 911 or have someone take you to emergency room**
• Not able to do any activity because of breathing	• **Increase oxygen to:** _____
• Not able to sleep because of breathing	• **Take Prednisone:** _____
• Fever or shaking chills	
• Feeling confused or very drowsy	
• Chest pains	
• Coughing up blood	

For more information visit www.lungusa.org or call 1-800-LUNGUSA (586-4872)

With Every Breath I Take

- **Recognize acute exacerbations**
  - Acute, worsening resp sxs → medication change
  - Pulm infxns, Pollutants, Comorbid dx, h/o AECOPD
- **Management of AECOPD pts**
  - Antibiotics, BD, CS, Devices
  - SC, Immunizations, Pulm rehab, Oxygen therapy
- **Transitions of Care**
  - Address checklist and comorbid dxs
  - Follow-up visit, Education, Guideline directed rx