



Risk stratification in Management of COPD

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This is my working place





Facts:

- Chronic obstructive pulmonary disease (COPD) is a lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible – WHO.



Facts:

- COPD in Bangladesh 13.4%.
 - Rural 16.8%, urban 10.1%.
 - Overall global incidence 15%.
- WHO estimates as 3rd leading cause of death by 2030.
- Life time risk of developing COPD – 27%.



Facts:

- Loss of support of small airways, chronic Inflammation or bronchiolitis and mucus in small airways – are main pathophysiology for 3 types of COPD: emphysema, ch. Bronchitis and small airway disease.
- Overlap syndrome -15-25%.

Facts:

- Considering etiology –
 - Smoking still primary cause
 - Exposure to wood flame cooking or biomass exposure
 - Cumulative exposure noxious agents
 - Genetic predisposition
 - Infectious agents
 - Airway hyperactivity



Facts:

- Half of overall cost of COPD treatment is exacerbation related.
- With each exacerbation mortality is high within 90 days.
- Exacerbation is mostly infection related.
- Frequent exacerbators has 2 or more exacerbation per year.



Facts:

- 22% of GOLD stage 2, 33% GOLD stage 3 & 45% GOLD stage 4 are frequent exacerbators.
- GERD & bronchiectasis correlates with AECOPD.



Facts:

- Associated co-morbidities with high risk are –
 - Myocardial infarction & angina
 - DM
 - Pulmonary HTN
 - Osteoporosis
 - Sleep disorder
 - CVD, PVD
 - Depression



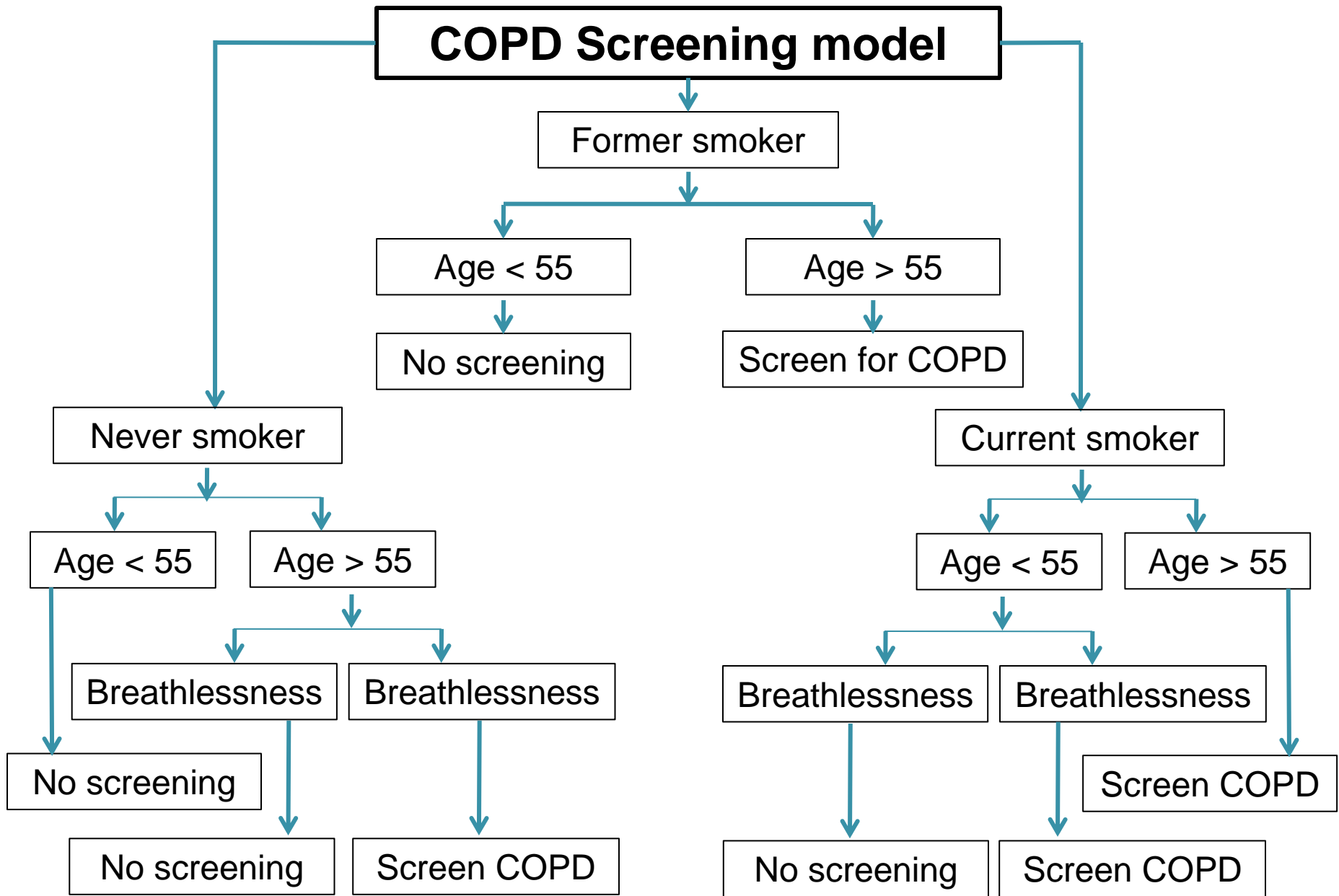
Facts:

- Now the drugs used for COPD are –
 - SABA, LABA, LAMA, Steroids (ICS or oral), LTOT, Phosphodiesterase inhibitors
- FDA approves new drugs –
 - Roflumilast, Indacaterol, Glycopyrrinium
- Utilizations of nanoparticles are future hope
- Chinese medical herb – Redsage is new



Facts:

- Antibiotics –
 - Macrolide (resistant strains develop in nasopharyngs)
 - Moxifloxacin (pulse therapy 5 days every 8 wks – 48 wks)
 - Cl. difficilli – surprising infection with GERD
- Vaccines - influenza ± pneumococcal vaccine





Stratification of COPD:

- Diagnosis & stratification of COPD is not simple for physician
- Aim is to relieve symptoms, reducing risk, improve exercise tolerance, preventing disease progression, preventing exacerbation & reducing mortality
- Overall to take suitable treatment option



Cont...

- GOLD guideline is excellent, unique initiative for stratification mainly based on spirometry – FEV_1 & FVC
- GOLD 2011 stratifies COPD as –

In patient with $FEV_1 / FVC < 0.70$:

GOLD 1: Mild $FEV_1 \geq 80\%$ predicted

GOLD 2: Moderate $50\% \leq FEV_1 < 80\%$ predicted

GOLD 3: Severe $30\% \leq FEV_1 < 50\%$ predicted

GOLD 3: Very severe $FEV_1 < 30\%$ predicted



Cont...

New GOLD classification of COPD

Patient	Characteristic	Spirometric classification	Exacerbations per year	mMRC	CAT
A	Low risk Less symptoms	GOLD 1-2	≤ 1	0-1	<10
B	Low risk More symptoms	GOLD 1-2	≤ 1	≥ 2	≥ 10
C	High risk Less symptoms	GOLD 3-4	≥ 2	0-1	< 10
D	High risk More symptoms	GOLD 3-4	≥ 2	≥ 2	≥ 10



Cont...

- Is GOLD update is Platinum standard ?
- It can predict mortality –
 - A 3.8% in 3 years to C 8.2%
 - B 10.6% in 3 years to D 20.1%
- Impact in grade D disease quality of life is impaired & AE are life threatening so utmost measures should be taken
- In grade A no hospitalization no ED visits
- In grade B & C ED visits, find co morbidity



Cont...

- BODE index looks for 4 factors –
 - BMI >21 (0), ≤ 21 (1)
 - Dyspnoea 0-3 points
 - FEV₁ 0-3 points
 - 6 minutes walk performance on MRC scale 0-3Total= 0-10 points
- Approximate 4 years survival calculation is –
 - 0-2 (80%), 3-4 (67%), 5-6 (57%), 7-10 (18%)



Cont...

- mMRC scale –
 - Comprise 5 grades based on simple questionnaire to patients about breathlessness
 - This scale is widely used –
 - Co related with GOLD update for stratification of COPD



Cont...

- **CAT (COPD assessment tool)**
 - Better stratifies COPD independent of FEV₁
 - Online tool – www.catestonline.org/english/index.htm
 - Consist of 8 domains with 6 scales (0-5), total (0-40)
 - Good validity and acceptable test

Cont...



CAT Score	Impact level	Clinical picture	Possible management consideration
> 30	Very high	Bed bound, invalid	Referral to specialist care Additional pharmacological treatments, rehabilitations & approach to manage AE
> 20	High	Breathless with sleep disturbance not feel in control of chest problem	
10-20	Medium		Optimize management, review maintenance therapy, rehabilitation, manage AE & review aggravating factors
< 10	Low	Few problems, easily exhausted, no AE	Smoking cessation, influenza vaccine, therapy as clinical assessment, reduce risk factors
5		Upper limit of normal in non smoker	

MOSAIC & GLOBE study

Exacerbation

Mild

1 of 3 cardinal symptoms:
Increased dyspnea, sputum
volume & purulence

- No antibiotics
- Increase Bronchodilators
- Symptomatic therapy

Moderate or Severe

2-3 cardinal symptoms:, dyspnea,
sputum volume, sputum purulence

Simple COPD No risk factors

Age <65yrs, FEV₁ >50% predicted
<3 exacerbations/yr

- Advanced macrolide, Cephalosporin,
Ketolide, Doxycycline, Cotrimoxazole,
* If recent (<3 months) antibiotic
exposure, use alternative class

Complicated COPD

1 or more risk factors, Age >65yrs
FEV₁ <50% predicted
≥3 exacerbations/yr
Cardiac disease

- Fluoroquinolone, Amoxicillin /
clavunate
- If *Pseudomonas*, consider
ciprofloxacin and sputum culture
- * If recent (<3 months) antibiotic
exposure, use alternative class

Worsening clinical status or inadequate response in 72 hrs

Re-evaluate, Consider sputum culture

Cont...

- Canadian thoracic society recommendation for management of COPD – 2007 update
 - Stages as –
 - Mild
 - Moderate
 - Severe &
 - Very severe
- Considering mMRC & FEV₁ as parameter



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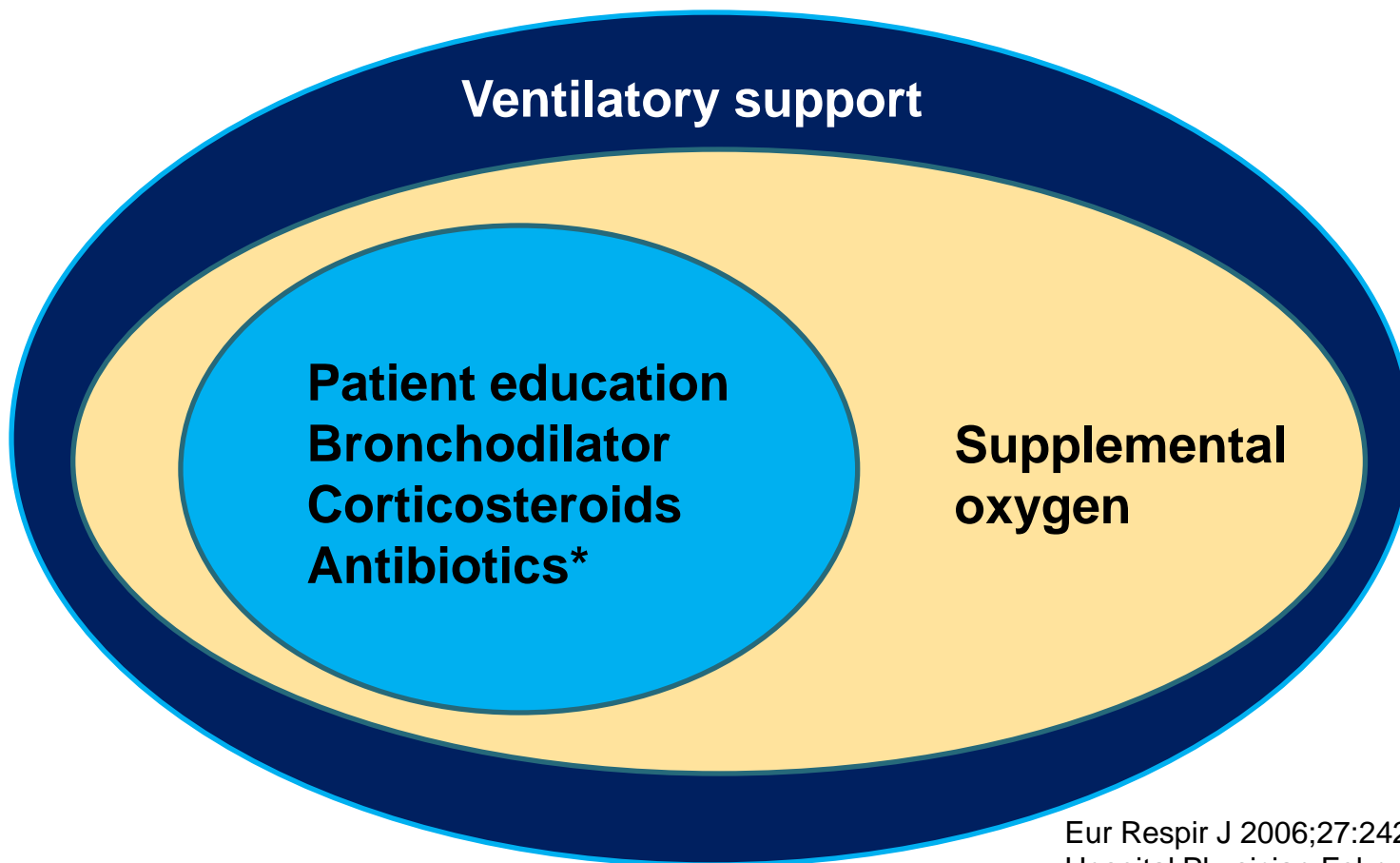
AE COPD exacerbation stratification

Clinical history	Level 1	Level 2	Level 3
Co morbid conditions	Unlikely	Likely	Very likely
Frequent exacerbations	Unlikely	Likely	Very likely
Baseline COPD severity	Mild-moderate	Mod-severe	Severe
Physical findings			
Hemodynamic evaluation	Stable	Stable	Unstable
Tachypnea, use of accessory respiratory muscles	None	Present	Present
Persistent symptoms after initial therapy	None	Present	Present

Contd...



- Level 1: Mild to moderate COPD exacerbation
- Level 2: Moderate to severe COPD exacerbation
- Level 3: Severe COPD exacerbation





Contd...

- UPLIFT study –
 - Tiotropium can reduce exacerbation.
 - Multiple drugs act less on symptoms but reduce exacerbation – as Roflumilast



Conclusion

- COPD is a global disease that interferes with breathing and not fully reversible.
- A simple, multi dimensional stratification of COPD is required to combat COPD and its complications.
- It appears complex but is feasible to have a good stratification for the management of COPD
- Proper stratification will improve management quality and reduce treatment cost.



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