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Standard Treatment Workflow (STW) for the Management of
CHRONIC OBSTRUCTIVE PULMONARY DISEASE

ICD-10-J44.9

WHEN TO SUSPECT?

Symptoms – chronic cough, progressively worsening breathlessness

Risk factors – tobacco smoking, use of solid fuels for cooking, occupational exposures, Age - >35 years

Supportive features: Barrel shaped chest, hyperresonant note , diminished breath sounds and rhonchi on chest auscultation, forced expiratory time > 6 seconds, features of cor pulmonale (loud P2, elevated JVP, edema) in advanced cases

No other alternative explanation for these symptoms

TRY AND RULE OUT

Other obstructive airway disorders – Refer Asthma STW (Table 1) for features that favour COPD over asthma

Pulmonary tuberculosis – sputum AFB examination in case of cough (>2 weeks)

Consider alternative diagnosis/- complication– presence of fever, hemoptysis, orthopnea, chest pain, significant weight loss, focal chest signs on physical examination, abnormal chest radiograph, etc.

DIAGNOSIS & SEVERITY ASSESSMENT

Airway obstruction should be documented on spirometry on all patients provisionally diagnosed as having COPD – refer if necessary, Post-bronchodilator FEV1/FVC <0.70 defines airflow obstruction

Assess severity based on spirometry, severity of dyspnea (mMRC scale, Table 1), exacerbation frequency and presence of complications (see Table 2)

TREATMENT

- Advice smoking cessation and counsel for other risk factors
- Inhaled drugs are the mainstay
- Treatment based on severity assessment (See adjacent figure)
- Follow up: Mild to moderate disease - 3 to 6 Months; Severe disease - 1-3 months
- Ensure compliance and proper inhaler technique at each visit.
- If uncotrolled/complications develop, refer to higher center

Disease progession

Mild COPD	Moderate COPD	Severe COPD
Levosalbutamol (50 µg) 2 puffs prn	Tiotropium (9 µg) 2 puffs OD plus Levosalbutamol (50 µg) 2 puffs prn	Formoterol/Budesonide (6/200 µg) as a single inhaler 2 puffs BD plus Levosalbutamol (50 µg) 2 puffs prn
Persistent Symptoms	Persistent Symptoms	Persistent Symptoms
Add Tiotropium (9 µg) 2 puffs OD	Add low dose methylxanthines	Add Tiotropium (9 µg) 2 puffs OD and/or low dose methylxanthines

Refer if inadequate response, onset of new complications, or suspicion of alternative diagnosis

DISEASE EXACERBATION

Three cardinal symptoms:
- Increase in dyspnea
- Increase in sputum volume and/or
- Increse in sputum purulence

Classify As:
- Mild Exacerbation
- Severe Exacerbation

Features Of Severe Exacerbation:
- Cyanosis
- Respiratory rate >30/min
- Heart rate >110/min
- Systolic blood pressure <90 mm Hg
- SpO2 <90%
- Paradoxical respiratory movements
- Altered sensorium
- Asterixis
- Presence of severe co-morbid conditions (e.g. heart failure, arrhythmia)

MILD EXACERBATION
- Increase dose and/or frequency of levosalbutamol and/or ipratropium inhalation, or nebulized levosalbutamol/ipratropium (1.25 mg/0.5 mg), repeated as needed at 20-minute interval
- Amoxycillin 500 mg TDS/ Azithromycin 500 mg OD/ Doxycycline 100 mg OD (BD on day 1) X 5 Days
- Oral prednisolone 30 mg daily X 5 days

SEVERE EXACERBATION
Treatment as under Mild Exacerbation

+

Supplement oxygen with target spO2 of 92% (if spO2 monetoring available)

TABLE 1. GRADING OF BREATHLESSNESS USING MODIFIED MEDICAL RESEARCH COUNCIL (MMRC) 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 or after a few minutes on level ground.
4	I am too breathless to leave the house or I am breathless when dressing.

TABLE 2. SEVERITY CLASSIFICATION FOR COPD

SEVERITY	POSTBRONCHODILATOR FEV1 (% PREDICTED)	DYSPNEA (MMRC GRADE)	EXACERBATIONS IN LAST ONE YEAR	COMPLICATIONS*
MILD	≥ 80	<2	<2	NO
MODERATE	50-79	≥ 2	<2	NO
SEVERE	<50	≥ 2	≥ 2	YES

The category with the worst value should be used for severity classification
*Complications include respiratory failure, cor pulmonale, and secondary polycythemia

RED FLAG SIGNS FOR PEOPLE HAVING EXCERBATION
- Altered sensorium
- spO2 <88% despite therapy
- Heart rate >110 bpm
- Systolic blood pressure <90 mm Hg
- High risk comorbid conditions (arrhythmia, congestive cardiac failure, poorly controlled diabetes, renal or liver failure)

Refer to higher centre for further management, and ensure continued supplemental oxygen and nebulization during transfer

SCHEDULE FOLLOW UP VISIT ONE WEEK AFTER DISCHARGE

ADMISSION CRITERIA
1. Severe symptoms; sudden worsening of resting dyspnea,
2. Fall in oxygen saturation, cyanosis, confusion, drowsiness.
3. Failure of an exacerbation to respond to initial medical management.
4. Presence of serious comorbidities (heart failure, newly occurring arrhythmias, etc.)

DISCHARGE CRITERIA
1. Normalization of clinical and laboratory data to pre-admission levels
2. Patient able to follow maintenance therapy
3. Completion of acute medications
4. Adequate control of comorbidities

KEEP A HIGH THRESHOLD FOR INVASIVE PROCEDURES

REFERENCES

1. *Gupta D, et al. Guidelines for diagnosis and management of chronic obstructive pulmonary disease: Joint ICS/NCCP(I) recommendations. Lung India 2013;30:228-67*
2. *Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease. 2019 report.*
3. *National Institute for Health and Care Excellence (NICE). Chronic obstructive pulmonary disease in over 16s: diagnosis and management. 2018.*