Section-14 Medical Services Resource Manual	**MSRM 140137-08**	**Page: 1**	**Effective Date: 05/21/2018**
Management of Chronic Obstructive Pulmonary Disease	**ACA Standards: 4-4359M, 4-4367**		
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Management of Chronic Obstructive Pulmonary Disease

Chronic Obstructive Pulmonary Disease (COPD) is a treatable and preventable disorder characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and associated with an abnormal inflammatory response of the lung to noxious particles or gases.

The chronic airflow limitation characteristic of COPD is caused by a mixture of airway inflammation (chronic bronchitis) and parenchymal destruction (emphysema), the relative contributions of which vary from person to person.

I. Identification of Chronic Obstructive Pulmonary Disease

The characteristic symptoms of COPD are cough, sputum production, and dyspnea on exertion. Symptoms must be chronic (present for at least 3 months) and progressive (not reversible to the point of no symptoms).

The definitive diagnosis of COPD is based on spirometry. A decrease in FEV_1/FVC to <70% is the essential abnormality, and the degree of reversibility distinguishes COPD from asthma.

II. Initial Evaluation

The initial evaluation should establish the diagnosis of COPD and identify factors that contribute to the condition. Current and previous treatments should be reviewed.

Documentation of the chronic illness will be documented in accordance with OP 140137 entitled "Chronic Illness Management" and utilizing the "Chronic Illness Note and/or Physical Examination" DOC 140137A

A. History

1. Smoking – and other risk factors (occupational exposures, environmental tobacco smoke exposure, family history).
2. Cough – and dyspnea the primary symptoms of COPD. Frequency, duration, sputum production and sputum character are important.
3. Concurrent medical illnesses – particularly coronary artery disease, asthma and diabetes, as these conditions affect treatment decisions
4. Current medications and previous treatments
5. Allergies – particularly environmental

B. Examination

1. Complete set of vital signs
2. Chest-wheezing, increased expiratory time, increased anteroposterior diameter, use of accessory respiratory muscles
3. Extremities – Clubbing, cyanosis, edema

C. Lab and Other Diagnostic Studies

1. Spirometry – essential for diagnosis; spirometry is available at Lindsay Municipal Hospital and OU Medical Center. Full Pulmonary Function Testing is not typically needed. The two (2) key numbers from the spirometry report are:

    a. FEV_1/FVC – for diagnosis (<0.70)

    b. FEV_1 – for classification (>80% predicted, 50-80% predicted, <50% predicted)

2. Chest X-ray – to exclude other diseases such as pneumonia or tumors. Diagnostic of emphysema only in severe cases. Non diagnostic in chronic bronchitis.

3. CBC – polycythemia is common. Anemia exacerbates hypoxia. Leukocytosis may indicate infection

4. ABG- should be considered in all patients with FEV_1 < 50% predicted or with clinical signs of respiratory failure. Respiratory failure indicated by PaO_2 < 60 mmHg and/or $PaCO_2$ > 50 mmHg.

5. Alpha-1-antitrypsin level-in patients who develop COPD at age <45 or who have a strong family history of COPD.

D. Determine the Severity of Chronic Obstructive Pulmonary Disease

CLASS	Chronic Obstructive Pulmonary Disease
Mild	• No dyspnea with daily activities • GOLD Stage I - FEV_1/FVC < 0.70; FEV_1 > 80% predicted
Moderate	• Dyspnea with daily activities • Requires routine steroids or long-acting bronchodilators • GOLD Stage II - FEV_1/FVC < 0.70; FEV_1 50-80% predicted
Severe	• Oxygen dependent • GOLD Stage III & IV- FEV_1/FVC < 0.70; FEV_1 <50% predicted

III. Treatment

A. Smoking Cessation – the only intervention proven to halt the decline in lung function in COPD.

B. Medication Therapy – Medications are used in a step-wise fashion to control symptoms and improve functioning. Reduction of therapy once symptom control has been achieved is not normally possible in COPD, as it is in asthma. Treatment tends to be cumulative with more medications being required as the disease state worsens. Bronchodilator medications are central to symptom management in COPD. Inhaled therapy is preferred. The choice between Beta 2 agonist, anticholinergic, theophylline, or combination therapy depends on availability and individual response in terms of symptom relief and side effects. Long-acting inhaled bronchodilators are more effective and convenient. Combining bronchodilators of different pharmacological classes may improve efficacy and decrease the risk of side effects compared to increasing the dose of a single bronchodilator.

1. Mild Disease (GOLD Stage 1, Group A - FEV_1 > 80% predicted) – short acting Bronchodilators.

    a. Smoking cessation. Immunizations.

    b. Short acting - anticholinergic - Atrovent (ipratropium) OR

    c. Short acting - $beta_2$ – agonist – Xopenex (levalbuterol) OR

    d. Combination – Combivent (ipratropium/albuterol) OR

2. Moderate Disease (GOLD Stage II, Group B - FEV_1 50-80% predicted) – routine long acting bronchodilators.

    a. Long acting - anticholinergic – Spiriva (tiotropium) OR

    b. Methylxanthine – Theo-Dur (theophylline SR)

    Exercise prescription – routine, symptom – limited aerobic exercise 3 - 5 times per week is shown to reduce symptoms, improve quality of life, increase physical conditioning, and respiratory muscle strength.

3. Severe Disease (Gold Stage III & IV, Groups C and D - FEV_1 <50%)

    a. Add - inhaled steroids – Alvesco (ciclesonide) OR

    b. Combination long – acting bronchodilators/steroid – Fluticasone Propionate Salmeterol.

    c. Exercise prescription.

    d. Consider pulmonary medicine consultation. Consider Phosphodiesterease 4 inhibitor if recommended by pulmonary medicine.

4. Long – term treatment with oral steroids is not recommended in COPD. Steroid myopathy can contribute to muscle weakness and and worsen respiratory insufficiency and failure in patients with COPD.

C. Oxygen Therapy – the only therapy shown to increase survival in patients with severe (GOLD Stage IV FEV_1 <30%) COPD is long-term oxygen therapy (>15 hours per day) where indicated:

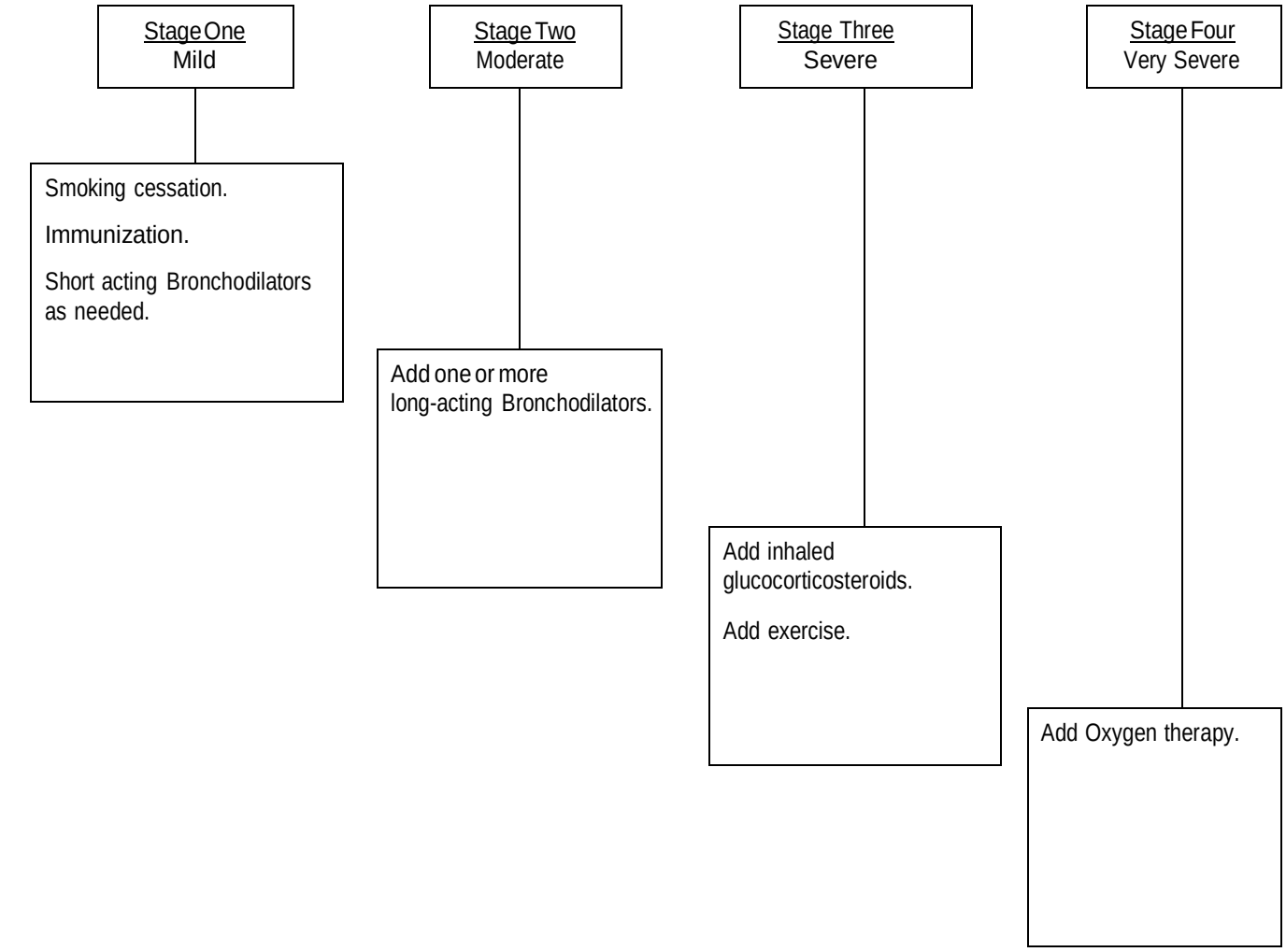
1. Patient is on maximal medical therapy

2. PaO_2 <55 mm Hg on room air

3. SaO_2 <88% on room air

Oxygen should be given by nasal cannula at a flow rate to keep the oxygen saturation at 90-92 percent. Caution should be exercised to avoid CO_2 retention from overly aggressive oxygen therapy.

Therapy for COPD



IV. Management of Acute Exacerbations – an acute exacerbation is characterized by:

A. Increased dyspnea

B. Increased cough

C. Increased sputum volume

D. Change in sputum character

In patients with very severe COPD (GOLD Stage IV - FEV_1 <30%) the most important sign of an exacerbation is a change in mental status.

A. Evaluation:

1. History/Physical exam

e. Chest X-Ray

f. EKG

g. ABG – if symptoms and signs of respiratory failure are present

h. Sputum gram stain and culture

i. CBC

B. Causes of acute exacerbation that should be considered and treated:

1. Tracheobronchial infection or Pneumonia – most common cause of acute exacerbation

2. Anemia

3. Congestive Heart Failure - elevated B-type natriuretic peptide (BNP) distinguishes CHF from a COPD exacerbation

4. Cardiac Arrhythmia

5. Pneumothorax

6. Metabolic Acidosis

7. Pulmonary embolism

8. If a patient is on theophylline a level should be checked to ensure that the lab value is in therapeutic range.

A. Management

Maximize medical therapy – doses of bronchodilators and steroids should be adjusted during an acute exacerbation, and agents not being used for maintenance can be introduced for short-term symptom control. Nebulized bronchodilators may be more effective than metered-dose inhalers during an acute exacerbation.

1. Consider antibiotics – the most common bacterial causes of an acute exacerbation of COPD are S. pneumoniae, H. influenzae, and M. catarrhalis. Trimethoprim-sulfamethoxazole (Bactrim), Doxycycline, and Augmentin are good first line choices.

2. Short-term oxygen therapy – when oxygen saturation is less than 90%, oxygen can be given by nasal cannula titrated to keep SaO_2 between 90% and 92%.

3. Short – term oral steroids – shorten recovery time and help to restore lung function more quickly. Prednisolone 30 – 40mg daily for 7 – 10 days is recommended.

V. Goals of Therapy

A. Minimize symptoms of dyspnea and cough

B. Maintain normal activity levels and improve exercise tolerance

C. Minimize need for emergency room visits or hospitalizations

D. Cessation of smoking in patients who smoke

E. If a patient discontinues smoking and symptoms resolve such that medication(s) are no longer necessary, the patient can be discharged from chronic illness enrollment.

VI. Routine Follow-Up

Once goals of therapy have been reached and the patient is stable, routine follow-up in chronic clinic should be arranged as follows:

A. Chronic clinic visit

1. Review Medication Regimen – inhaler technique, frequency of inhaler use, side effects

2. Interval History – change in cough, dyspnea or sputum; amount of activity that results in dyspnea; frequency of acute exacerbations

3. Exam – vital signs, chest exam

4. Lab – theophylline level if patient is on theophylline, SaO_2 if patient is on oxygen.

5. Patient Education – smoking cessation, use of inhaler, maintenance of activity as tolerated

6. Categorize in accordance with "Severity Classification of Common Chronic Illness" (OP-140137, Attachment A)

B. Annually

1. Interval history – as above

2. Complete physical exam

3. Oral exam by provider with referral to dental as needed

C. Vaccines

1. Influenza (annually)

2. Pneumovax (revaccination is recommended only if the patient received a first dose prior to age 65. Give a second dose at or after age 65 only when 5 or more years have elapsed since the previous dose).

VII. References

OP- 140137 entitled "Chronic Illness Management"

Based on (Clinical Practice Guideline for the Management of Persons with Chronic Obstructive Pulmonary Disease – Department of Veteran's Affairs, 1997)

GOLD (Global Initiative for Chronic Obstructive Lung Disease) Workshop Report 2006.

GOLD (Global Initiative for Chronic Obstructive Lung Disease) Workshop Report 2011.

VIII. Action

The chief medical officer, Health Services will be responsible for compliance with this procedure.

The chief medical officer, Medical Services will be responsible for compliance with this procedure.

Any exceptions to this procedure will require prior written approval from the director.

This procedure will be effective as indicated.

Replaced: Medical Services Resource Manual 140137-08 entitled "Management

of Chronic Obstructive Pulmonary Disease dated July 13, 2012.

Distribution: Medical Services Resource Manual

Referenced Forms	Title	Located In
DOC 140137A	"Chronic Illness Note and/or Routine Physical Examination"	OP-140137

Attachments

Attachment A	"Severity Classification of Common Chronic Illness"	OP-140137