



هيئة الصحة
HEALTH AUTHORITY

HAAD Guidelines for the Diagnosis and Management of Chronic Obstructive Pulmonary Disease (COPD)

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1. INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a type of lung disease marked by permanent damage to tissues in the lungs, making it hard to breathe. The following may be used as a definition of COPD:

- Airflow obstruction is defined as a reduced FEV1 /FVC ratio (where FEV1 is forced expired volume in 1 second and FVC is forced vital capacity), such that FEV1 /FVC is less than 0.7; and
- If FEV1 is $\geq 80\%$ predicted normal a diagnosis of COPD should only be made in the presence of respiratory symptoms, for example breathlessness or cough.

Chronic obstructive pulmonary disease includes chronic bronchitis, in which the bronchi (large air passages) are inflamed and scarred, and emphysema, in which the alveoli (tiny air sacs) are damaged. COPD is characterized by airflow obstruction that is not fully reversible, does not change markedly over several months or progresses over long term. Exacerbations often occur, where there is a rapid and sustained worsening of symptoms beyond normal day-to-day variations. COPD is predominantly caused by smoking however; occupational or environmental exposures may also contribute to the development of COPD. There is no single diagnostic test for COPD. Diagnosis relies mainly on clinical decision making which should be based on patient history, physical examination and confirmation of the presence of airflow obstruction using spirometry.

ABOUT THIS GUIDELINE

This document serves as a guideline for treatment of adult patients with Chronic Obstructive Pulmonary Disease (COPD). This guideline pertains to HAAD's integrated COPD program that focuses on adults' ≥ 40 diagnosed with COPD. COPD includes emphysema, chronic bronchitis or a combination of these. The guideline covers diagnostic criteria and identification of early disease. The guideline also makes recommendations on the management of people with stable COPD, exacerbations and preventing progression of the disease. The guideline does not specifically look at other respiratory conditions such as asthma, bronchopulmonary dysplasia or bronchiectasis.

This guideline is not and cannot be exhaustive therefore physicians and allied health care professionals should use their own clinical judgement to address specific case scenarios.

Who is this Guideline for?

All HAAD Licensed Physicians, Allied Health Care Professionals and Health Care Providers in the Emirate of Abu Dhabi.

2. PURPOSE

The purpose of this guideline is to improve the diagnosis and management of COPD among primary and secondary healthcare professionals who are engaged in the management of patients with COPD and make decisions about their care in the Emirate of Abu Dhabi. In doing so, the guideline will contribute toward the following:

- 2.1. Avoid premature death related to COPD
- 2.2. Provide a rational basis for referral;
- 2.3. Ensure patients receive high quality and safe care
- 2.4. Enhance the quality of life for people with long term condition
- 2.5. Embed ongoing education on COPD
- 2.6. Promote efficient use of resources
- 2.7. Act as focus for quality control, including audit;

3. SCOPE

This Guideline applies to:

- 3.1. All healthcare Facilities and Providers who are engaged in the management of COPD in the Emirate of Abu Dhabi.
- 3.2. All adults ≥ 40 with COPD and/or have a history of exposure to risk factors for the disease emphysema.

4. ABBREVIATIONS

No.	Category	Definition
4.1	Dyspnea	Progressive difficulty in breathing, worsens mainly with exercise, persistent
4.2	Chronic cough	May be intermittent and may be unproductive cough
4.3	Chronic Sputum production	Any pattern of chronic sputum production may indicate COPD
4.4	FEV ₁	Forced expiratory volume in the first second

No.	Category	Definition
4.5	FVC	Forced vital capacity
4.6	CAT	COPD Assessment Test
4.7	SA	Short acting
4.8	LA	Long acting
4.9	ICS	Inhaled corticosteroid
4.10	PDE ₄	Phosphodiesterase4
4.11	PRN	Patient reader necessary
4.12	PaO ₂	Partial pressure of oxygen in arterial blood
4.13	SaO ₂	Percent oxygen saturation
4.14	kPa	Kilopascal, a unit of pressure
4.15	mmHg	Millimeter of mercury

5. RECOMMENDATIONS FOR THE DIAGNOSIS AND MANAGEMENT OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

The following recommendations have been set out to assist practitioners and patients make decisions about the appropriate health care for COPD management. They are designed to support the decision-making processes in patient care however; they are not intended to override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian.

Recommendation 1: All licensed healthcare providers, including professionals engaged in the diagnosis and management of COPD care should:

- 1.1. Have in place facility operational policies and standard operating procedures in for at least the following elements of COPD care:
 - 1.1.1 Diagnosis;
 - 1.1.2 Assessment;
 - 1.1.3 Management, follow up and monitoring;
 - 1.1.4 Referral of specialist care, as per **Table 1**;
- 1.2. Manage COPD patients by Multi-Disciplinary Team (MDT) that comprises of the healthcare professionals with requisite qualifications and skills, and/or training in COPD care.
- 1.3. Be equipped to provide education on COPD for the patient/caregivers in accordance with these recommendation.
- 1.4. Have access to spirometry and be able to interpret the results.
- 1.5. Focus their practice and undertake continuing medical education
 - 1.5.1. Limit their practice to their skills and competencies and the privileges granted within the particular employing facility or with which they are associated; and
 - 1.5.2. Participate in continuing medical education (CME/CPD) and training with a focus on COPD management.

Table 1. Pulmonary specialist referral

Consider pulmonary specialist referral
<ul style="list-style-type: none"> • lung function deficits disproportionate with symptoms • Diagnostic uncertainly especially if an alternative need to be exclude • Suspicion with asthma or COPD. • Suspicion or of alpha 1-antitrypsin deficiency • Severe or recurrent acute exacerbation • Consideration/ monitoring oxygen therapy • Comorbidities that may interfere with the assessment and management of the airways • Failure to respond to therapy

Recommendation 2: The following should be considered in the Diagnosis of COPD:

- 2.1. Age: COPD diagnosis should be considered in patients ≥ 40 years with symptoms and history of exposure to risk factors and in accordance to **Table 2**.
- 2.2. Confirmatory test: Post-bronchodilator spirometry is a confirmatory test for the diagnosis of COPD;
- 2.3. Spirometry can be performed by any healthcare worker who has undergone appropriate training and who keeps his or her skills up to date.
- 2.4. Alternative Diagnosis: Alternative diagnoses or investigations should be considered in patients who are not eligible to undergo spirometry tests (e.g. older people, recent brain/ eye surgery);
- 2.5. Additional Investigations: Additional investigation by chest X-ray may be valuable in excluding other conditions like bronchiectasis, heart failure and lung fibrosis.
- 2.6. CT: High resolution computed tomography is not routinely recommended but can be effective in confirming the diagnosis or excluding other diagnosis such as bronchiectasis or lung fibrosis; and
- 2.7. Asthma: COPD and Asthma diagnostic differentiation can be challenging, however, correct diagnosis recommended to be considered according to **Table 3**.

Table 2. COPD Diagnostic Indicators

Indicators that increase the probability of COPD diagnosis
Patient age is ≥ 40 yrs. Old who have some / all of the following: <ul style="list-style-type: none"> • History of tobacco use or; • Prolonged exposure to environmental or occupational dust and chemicals; • Symptoms of exertional breathlessness, chronic cough, regular sputum production, frequent 'bronchitis' and wheeze; • Frequent chest infections • Persistent wheeze • Other some indicators for suspected COPD are: weight loss, effort intolerance, waking at night, ankle swelling, fatigue, chest pain & haemoptysis. • A post bronchodilator FEV1 / FVC\uparrow ratio of less than 0.7 defines airflow obstruction that is not fully reversible and establishes a diagnosis of COPD.

Table 3. Asthma diagnostic differentiation

Clinical features	COPD	Asthma
History of smoking	Usually > 10 pack/year	Not causal
Symptoms in early life	unusually	usually
Chronic productive cough	usually	unusually
Nocturnal waking breathlessness and/or wheeze	unusually	usually
Significant variability of symptoms from day to day	unusually	usually
Spirometry	May improve but never normalize	Often normalize

Recommendation 3: Patients with COPD should be assessed to determine:

- 3.1. Current level of patient symptoms by using a validated simple questionnaire such as COPD Assessment Test (CAT) available at: <http://www.catestonline.org/english/indexEN.htm>;
- 3.2. Spirometry results or other alternative chest test if patient is not eligible to perform the spirometry test;
- 3.3. An annual spirometry test to monitor the decline in lung function and this can be done more frequently if clinically indicated, e.g. rapid decline in symptoms **Table 4**;
- 3.4. Risk of future exacerbation and this is best predicted through history of previous exacerbation, hospitalization and worsening of air flow limitation;
- 3.5. Classification of COPD patient category, which is based on patient symptoms, spirometric results and/or risk of exacerbation **Table 5**; and
- 3.6. Presence of Co-morbidities.

Table 4. Classification of COPD Severity

Classification of COPD severity			
	COPD stage	Post-bronchodilator FEV ₁	Symptoms
FEV ₁ / FVC < 0.70	Mild	≥ 80%	Shortness of breath when hurrying or walking up a slight hill
	Moderate	50% - 79%	Stops after walking near to 100m or after few minutes
	Severe	30% - 49%	Too breathlessness to leave the house and when dressing or undressing
	Very severe	<30% <i>or</i>	< 50% with chronic respiratory failure

Table 5. Combined Assessment of COPD and Model of Risk Evaluation

Model of Symptom/Risk of Evaluation of COPD					
When assessing risk, choose the highest risk according to GOLD grade or exacerbation history. (One or more hospitalizations for COPD exacerbations should be considered high risk).					
Patient Category	Characteristics	Spirometric Classification	Exacerbation per year	CAT	mMRC
A	Low Risk Less symptoms	Gold 1-2	≤ 1	< 10	0-1
B	Low Risk More symptoms	Gold 1-2	≤ 1	≥ 10	≥ 2
C	High Risk Less symptoms	Gold 3-4	≥ 2	< 10	0-1
D	High Risk More symptoms	Gold 3-4	≥ 2	≥ 10	≥ 2

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Recommendation 4: It is recommended that patients with COPD should be:

- 4.1. Managed through a strategy that combines smoking cessation, pharmacological and non-pharmacological therapies and in line with **Table 6**.
- 4.2. The goals of COPD management are:
 - 4.2.1. To relieve current symptoms in the short term;
 - 4.2.2. To prevent future exacerbation risks;
 - 4.2.3. To reduce or control risk factors (ex: smoking, indoor and outdoor pollution, occupational dusts and fume exposure, recurrent respiratory infections);
 - 4.2.4. To manage co-morbidities; and
 - 4.2.5. To improve health status and exercise tolerance.
- 4.3. It is recommended that all patients presenting with airflow limitation at a relative early age (of the fourth to fifth decade) or with a family history of COPD be tested for alpha-1-antitrypsin deficiency.
- 4.4. It is recommended that pulse oximetry be considered in patients with COPD and be performed in all patients with severe or very severe COPD (FEV₁ < 50 percent predicted) to determine the degree of hypoxemia and the potential need for long-term oxygen therapy at rest and/or during exercise.
- 4.5. Referral to a specialist is appropriate in certain circumstances as set out in **Table 1**.
- 4.6. Multidisciplinary care team should be involved from a range of disciplines working together to implement the maximum medical care protocol, including adjustment of medications and outpatient pulmonary rehabilitation for all patients and

nutritional and psychological counseling as needed. Individuals with chronic obstructive pulmonary disease (COPD) require long-term multidisciplinary care because of the physiologic and psychological problems associated with this COPD.

4.6.1 A multidisciplinary care team should include a physician, pulmonary nurse specialist, respiratory therapist, physical therapist, occupational therapist, dietitian, social worker, vocational counselor, psychiatrist or psychologist, the individual with COPD, and his or her family or caretaker.

Table 6. Combined Strategy for Managing COPD

Pharmacologic Therapy for Stable COPD*			
Patient Group	Recommended First Choice	Alternative Choice	Other Possible treatment**
A	SA anticholinergic prn or SA beta2 – agonist prn	LA anticholinergic or LA beta2 – agonist or SA beta2 – agonist and SA anticholinergic	Theophylline
B	LA anticholinergic or LA beta2 – agonist	LA anticholinergic and LA beta2 – agonist	SA beta2 –agonist and/or SA anticholinergic Theophylline
C	ICS + LA beta2 – agonist or LA anticholinergic	LA anticholinergic and LA beta2 – agonist or LA anticholinergic and PDE-4 inhibitor or LA beta2 – agonist and PDE-4 inhibitor	SA beta2 –agonist and/or SA anticholinergic Theophylline
D	ICS + LA beta2 – agonist and/or LA anticholinergic	ICS + LA beta2 – agonist and LA anticholinergic or ICS + LA beta2 – agonist and PDE-4 inhibitor or LA anticholinergic and LA beta2 – agonist or LA anticholinergic and PDE-4 inhibitor	Carbocysteine SA beta2 –agonist and/or SA anticholinergic Theophylline

*Medication in each box are mentioned in alphabetical order and therefore not necessarily in order of preference.

**Medications in this column can be used alone or in combination with other options in the First and Alternative Choice columns.

Glossary
SA: short-acting
LA: long-acting
ICS: inhaled corticosteroid
PDE-4: phosphodiesterase-4
Prn: when necessary

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Recommendation 5: It is recommended for patients, who use tobacco products (cigarette, waterpipe, midwakh) to:

- 5.1. Provide support for at risk population e.g. smokers and people with chronic disease to quit smoking through pharmacological and non-pharmacological interventions:
 - 5.1.1. Pharmacological interventions: nicotine replacement therapy (i.e. patches, chewing gums, spray or inhaler), group therapy, counselling and social support.
 - 5.1.2. Non-pharmacological interventions: Basic lung anatomy and physiology/COPD pathophysiology, group therapy, counselling and social support

Recommendation 6: It is recommended that pharmacological management should include:

- 6.1 Pharmacological COPD therapy should be prescribed to control symptoms and prevent acute exacerbation.
 - 6.1.1 The classes of COPD medications are shown in **Table 6**. The treatment of choice for COPD should be based on the patient's category as presented in **Table 5**. Once the patient is clinically assessed and diagnostic spirometry performed, it is recommended to obtain the assessment score test e.g. CAT test to assess the symptoms and ask about the history of exacerbations or hospitalizations in the past year.
 - 6.1.2 The treating physician should ensure that the prescribed medication is the most suitable for the patient and is on the HAAD List of Approved Medical Products
 - 6.1.3 All medications must be prescribed in accordance with HAAD regulations
 - 6.1.4 All medications must be explained to the patient by a licensed healthcare professional (pharmacist and physician), including providing information on:
 - 6.1.4.1 The name/s of the medication
 - 6.1.4.2 The method of action of the medication
 - 6.1.4.3 The route of delivery
 - 6.1.4.4 The frequency of administration
 - 6.1.4.5 The technique to administer the medication (including the need to use any specific devices for its administration)
 - 6.1.4.6 The possible side effects or interaction with other medication or substances
 - 6.1.4.7 Other signs and symptoms that may coincide with medication administration.
- 6.2 It is recommended that information be given to the patient in written form and orally in a clear and understandable language.

Recommendation 7: It is recommended that non-pharmacological management of COPD patients include:

- 7.1 All COPD patients at any age and still smoking should be encouraged to stop smoking and offered appropriate help to treat nicotine addiction;
- 7.2 Clinically stable patients who remain dyspneic and limited in their exercise capacity despite optimal pharmacotherapy should be referred for supervised pulmonary rehabilitation;
- 7.3 Long-term oxygen therapy is typically indicated for patients who meet the recommendations in **Table 7**;
- 7.4 Annual single dose seasonal influenza vaccination is recommended to be offered to all COPD patients; and
- 7.5 Pneumococcal Polysaccharide and 23 Valent vaccine is recommended for patients with COPD.

Table 7. Long term oxygen therapy

Administration recommendations for long – term oxygen therapy
PaO ₂ < 55 mmHg (< 7.3kPa OR SaO ₂ <88%). With or without hypercapnia confirmed twice over a three week period
PaO ₂ from 55mmHg to 60 mmHg (7.4kPa to 8kPa) with pulmonary hypertension, peripheral edema suggesting congestive cardiac failure, or polycythemia (hematocrit> 55%)

Recommendation 8: It is recommended that monitoring COPD patients include:

- 8.1 Highlighting of the COPD diagnosis in the case record;
- 8.2 Performing COPD Assessment Test (CAT) every two to three months.
- 8.3 Recording the values of the spirometric tests performed at the diagnosis;
- 8.4 Performing the spirometry test best once a year to identify patient with declining lung function test;
- 8.5 Recording the opportunistic measurement of spirometric parameters (rapid progressing COPD need specialist referral);
- 8.6 Review of COPD patients at least once per year or more if indicated. Visits should cover the issues listed **Table 8**; and
- 8.7 Review of patients with severe COPD and with long-term non-invasive ventilation regularly by specialist every two to four months or more frequently as needed.

Table 8. Consideration during COPD patient monitoring and follow up

Consideration during COPD patient monitoring & follow up
<ul style="list-style-type: none">• At least annual visits for mild to severe cases and twice per year for very severe cases. Smoking status or desire to stop smoking• Spirometry test once per year in stable COPD patients• Performing COPD Assessment Test (CAT) every two to three months• Inquiring about changes in symptoms• Presence of complications or comorbidities• Review the current therapeutic regimen, dosages, adherence, inhaler techniques• Need for specialist referral or therapy services• Need for pulmonary rehabilitation• Patient body mass index• Need for long term oxygen therapy• Presence of depression

Recommendation 9: It is recommended for patients are at risk of having exacerbation of COPD should be given advice on:

- 9.1 Basic lung anatomy and physiology/COPD pathophysiology;
- 9.2 Diet and nutrition habits;
- 9.3 Environmental irritant avoidance;
- 9.4 Smoking quit and/ or avoid smoking places;
- 9.5 Safe travel;
- 9.6 Importance of medications, how to be used and how they work;
- 9.7 Skills in using medications;
- 9.8 Skills to assess and seek medical help when needed; and
- 9.9 Importance of maintaining active healthy lifestyle.

Recommendation 10: It is recommended for the following be considered in managing COPD cases with an acute exacerbation:

- 10.1 The severity of an acute attack should be promptly and thoroughly assessed to determine the required type of treatment using **Table 9**;
- 10.2 Patients should be provided with supplemental oxygen therapy and referred to Emergency Services or Intensive Care Unit in cases of severe exacerbation life-threatening conditions;
- 10.3 In case of non-life-threatening conditions Lung function should be optimized by administering bronchodilators, corticosteroids and other pharmacological agents;
- 10.4 Antibiotics are suggested to be used in ambulatory patients with at least two symptoms: increasing breathlessness, increasing sputum volume; and
- 10.5 It is advisable that patients are referred to another healthcare provider based on their identified needs and in accordance with these recommendations and with the HAAD requirements for Patient Transfer.

Table 9. Acute COPD Assessment

Acute COPD Assessment		
Medical History	Alerting signs	Tests to be considered
<ul style="list-style-type: none"> • Degree of air flow limitation; • New symptoms or deterioration; • Previous episodes; • Comorbidities; • Response to actual treatment regimen; • History of mechanical ventilation use. 	<ul style="list-style-type: none"> • Rapid and shallow breathing; • Use of accessory respiratory muscles; • Paradoxical chest wall motion; • Wheezing, attenuated or absent breath sounds; • Purse lip breathing; • increased and/or abnormal pulse heart rate; • Altered mental status, pulmonary conditions 	<ul style="list-style-type: none"> • Pulse oximetry; • Chest radiographs to exclude other diagnosis; • ECG; • Whole blood count; • Presence of purulent sputum; • Biochemical test abnormalities.

Recommendation 11: The following is recommended for patients with COPD and Comorbidities:

- 11.1 Management of COPD patient should include identification and treatment of comorbidities as the uncontrolled comorbid disease can increase the sequelae from COPD;
- 11.2 Patient with cardiovascular diseases including (Ischemic Heart Disease (IHD), Heart failure (HF), Arterial Fibrillation (AF) and Hypertension are usually be treated according to their usual guidelines. However, in HF treatment with selective beta₁ - blockers is considered safer and preferable than non- beta₁ – blockers;
- 11.3 Patients with osteoporosis should be treated according to the usual osteoporosis guidelines; however, recurrent courses of systemic corticosteroids for COPD exacerbation have to be avoided if possible.
- 11.4 Patients with metabolic syndrome and diabetes should be treated in line with the usual diabetes guidelines with considering the dose of the prescribed corticosteroids doses ; however, it is not advised to aim for a body mass index (BMI) less than 21kg/m²;
- 11.5 COPD patients with bronchiectasis should be treated along with the conventional guidelines; however, some patients may need more aggressive and prolonged antibiotic therapy;
- 11.6 Patients with anxiety and depression should be treated as per the patient’s usual treatment regime.

Recommendation 12: The following is recommended for patients who are fasting (Ramadan):

- 12.1 The responsible treating physician should advise the patient about the effects of fasting on his/her disease and the allowed drugs during fasting.
- 12.2 If adjustment of the timing of the medication is determined to be necessary a full assessment of the patient's needs should be carried out to ensure that COPD control is well maintained.
- 12.3 If the patient wishes to abstain from taking COPD treatment or adjust the timing against advice of the treating physician, the physician should:
 - 12.3.1 Inform the patient of the potential risks associated with this action;
 - 12.3.2 Educate the patient on how to manage their condition and minimize the risks whilst abstaining from treatment, including avoiding known triggers; and
 - 12.3.3 The physician should document the patient's decision to abstain from treatment in the patient's record.

Recommendation 13: The following is recommended for patients who are participating in Omra / Al Haj / Travel:

- 13.1 Assess the patient's requirements for immunisations in accordance with international best practice standards and recommendations and encourage the patient to have them prior to travel;
- 13.2 Ensure that the patient's COPD is under control before traveling;
- 13.3 Patients should receive proper pre-Hajj counseling on COPD self-management;
- 13.4 Hypoxemic patients should be clinically evaluated before deciding on oxygen requirements during flight;
- 13.5 Treat Exacerbations of COPD in accordance to section 10.1;
- 13.6 Prescription should cover the quantity needed to cover the travel period. The proper action plan to ensure appropriate and timely treatment is delivered should be discussed with the patient; and
- 13.7 The patient should be advised to seek medical attention during the trip upon the development of respiratory symptoms, and not wait until the return back home.

6. Recommended Indicators for COPD

Key priority	Criterion	Exception
<p>1. Provider Knowledge Empower the provider knowledge with updated COPD diagnosis and management practices Participation in continuing medical education (CME/CPD) with a focus on COPD management</p>	Percentage of health care providers who are involved in COPD management and have at least biannual COPD management training.	N/A
<p>2. Diagnose COPD A diagnosis of COPD should be considered in patients over the age of 40 who have a risk factor (generally smoking) and who present with exertional breathlessness, chronic cough, regular sputum production, frequent 'bronchitis' or wheeze. The presence of airflow obstruction should be confirmed by performing spirometry. All health professionals managing patients with COPD should have access to spirometry and they must be competent in the interpretation of the results.</p>	<p>1. Percentage of smokers over the age of 40 consulting with a chronic cough and/or breathlessness who have had spirometry performed</p> <p>2. Percentage of patients with a diagnosis of COPD who have had spirometry performed</p>	Inability to perform spirometry, for example because of facial paralysis
<p>3. Smoking Cessation Encouraging patients with COPD to stop smoking is one of the most important components of their management. All COPD patients still smoking, regardless of age should be encouraged to stop, and offered help to do so, at every opportunity.</p>	Percentage of patients with COPD who are current smokers recorded in the general practice records as having been offered/referred to smoking cessation advice and or therapy	N/A
<p>4. COPD Assessment Test The goals of COPD assessment are to determine the severity of the disease, its impact on patient health and the risk of future exacerbation, hospital admissions or death. One of the recommended aspects to achieve this goal is to use a validated simple questionnaire such as the COPD assessment test (CAT).</p>	Percentage of patients with in the usage of validated simple questionnaire to assess the patient symptoms.	N/A

Key priority	Criterion	Exception
<p>5. Vaccination</p> <p>Pneumococcal vaccination and an annual influenza vaccination should be offered to all patients with COPD</p>	<ol style="list-style-type: none"> 1. Percentage of patients with Annual single dose seasonal influenza vaccination is recommended to be offered to all COPD patients. 2. Percentage of patients with Pneumococcal polysaccharide 23 Valent vaccine is recommended for COPD patients 	<p>N/A</p>

6.STAKEHOLDERS

The following Stakeholders contributed to the development of this Guideline.

Name of Stakeholder	Profession	Organization
Dr. Ahmed Abbas Ahmed	Consultant Pulmonologist	Ambulatory Health Care Services
Dr. Bassam Mahboub	Consultant Pulmonologist	Rashid Hospital
Dr. Babar Navid Navid	Internal Medicine	Al Mafraq Hospital
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Dr. Masood Ur Rahman	Consultant Pulmonologist	Tawam Hospital
Dr. Mohammed Al- Houqani	Consultant of Internal Medicine, Respirology and Sleep Medicine	United Arab Emirates University
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