

Management Strategies of COPD during the COVID-19 Pandemic

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Dear Editor

Chronic obstructive pulmonary disease (COPD), a chronic lung disease with persistent respiratory symptoms and reduced lung function, is the third leading cause of mortality globally. On the other hand, in the coronavirus disease 19 (COVID-19) pandemic, the whole world is crying. COVID-19 shows a vast range of clinical manifestations; people infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have mild/no symptoms, but it can be severe in ~20% of cases, and a small percentage of infected individuals tend to develop respiratory distress, multi-organ disease, and sometimes even death (1,2). The death rates are higher (~2-15%) among the elderly and those having comorbidities: cardiovascular diseases, hypertension, diabetes, COPD, etc. (1,2). In different studies, the pooled prevalence of COPD in COVID-19 cases was 2%, 2.2%, and 14%. [3-5] Additionally, COPD patients were at a greater risk of getting severe COVID-19 than patients without COPD [63% vs. 33.4%] (3). COPD patients also had a higher 30-day all-cause mortality (5). Albeit COPD prevalence was low in COVID-19, SARS-CoV-2 infection is associated with increased severity as well as mortality in COPD. Studies demonstrated that current smokers had a greater risk of complications and elevated mortality rate in comparison to former and never smokers. To minimize COVID-19 in COPD patients, effective management of patients is primal. Here, we will discuss important evidence-based strategies for better management of COPD patients during the COVID-19 pandemic (Figure 1):

- Elevated gene expression of angiotensin-converting enzyme-2 (ACE-2) receptor was found in smokers than never smokers. Literature suggests that smoking is the major indicator of COVID-19 severity. Hence COPD patients should be motivated to quit smoking.
- Pulmonary function test (PFT) is the diagnostic test to confirm COPD. Being an aerosol-generating technique, it may lead to SARS-CoV-2 transmission among patients and hospital staff. Hence, during the COVID-19 wave, routine PFT is avoided following American Thoracic Society (ATS) and European Respiratory Society (ERS) recommendations. In that situation, good history taking, clinical examination, and previous reports should be used to reach a diagnosis of COPD by a pulmonologist.

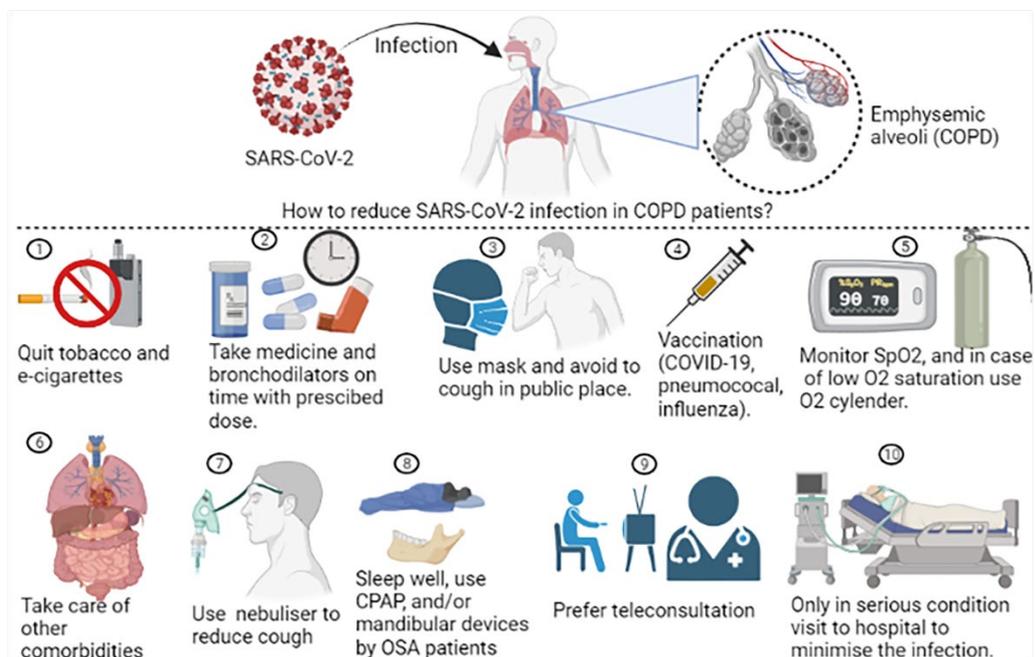


Figure 1. Management of COPD patients during the COVID-19 pandemic (The figure was created with the Biorender.com).

Abbreviations: COPD, chronic obstructive pulmonary disease; SARS-CoV-2, Severe acute respiratory syndrome coronavirus 2; COVID-19, coronavirus disease 19; OSA, obstructive sleep apnea; CPAP, continuous positive airway pressure.

- Whenever a COPD patient presents with a productive cough or shortness of breath, it should be managed as a case of an acute exacerbation of COPD (AECOPD), which occurs naturally in the disease course. Respiratory virus infections are indeed a prevalent factor in COPD exacerbation. Co-morbidities viz pneumonia, pleural effusion, edema, pulmonary embolism, cardiac arrhythmias, etc. should be investigated by chest X-ray and/or high-resolution computed tomography (HRCT). Following the initial stage of the disease, AECOPD and COVID-19 patients may face a greater risk of cardiovascular morbidity and mortality. Patients should be closely monitored throughout this vulnerable period, with a strategy that focuses on early detection of cardiovascular problems in the initial 30 days following the acute phase. If the patient's symptoms worsen, they should consult a clinician. In the general practice of AECOPD patients, invasive mechanical ventilation (IMV) is favored over non-invasive ventilation (NIV) when it is required. The use of NIV and high-flow nasal oxygen (HFNO) should be based on clinical necessity. NIV not only lowers the risk of disease transmission but also reduces oxygen consumption; it is preferable over HFNO. If a patient is not responding to NIV support, it is best to switch from NIV (or HFNO) to IMV as soon as possible to avoid a delay in intubation (6). Other than this, patients using NIV at home usually have limited movement or are restricted to their homes. There is an increased risk of transmission from caretaker to patient. NIV produces droplets, and using a non-vented mask with either a viral filter significantly lowers the transmission (7). If a patient with home nursing NIV requires hospitalization, they should carry their devices with them.
- Patients with COPD on inhaled corticosteroids (ICS) must not stop taking them for afraid of contracting viral or bacterial pneumonia, as happened during COVID-19 (8). Patients who have been taking oral corticosteroids for a long time should continue taking them at the recommended dosage because deterring them can become more harmful. The RECOVERY trial of the University of Oxford reported low-dose dexamethasone lowered mortality in COVID-19 patients who needed IMV (11.7% reduction) or oxygen supplementation (3.5 % reduction) (9). Patients who have already been recommended antibiotic prophylaxis should continue to take them. If at all possible, avoid using nebulizers. In severe exacerbations, a

pressurized metered-dose (pMDI) inhaler with a spacer is a good way of drug delivery, with a mouthpiece and/or tightly suited face mask, if needed. Inhaler and spacer should not be shared and hygiene should be maintained. Patients who are currently getting long-term oxygen therapy must continue to do so in the absence of specific evidence. SpO₂ should be monitored by a pulse oximeter and keep it within the range. If the patient's breathlessness and SpO₂ levels worsen, patients should be encouraged to contact a health professional.

- People suffering from obstructive sleep apnea (OSA) should persist in using their continuous positive airway pressure (CPAP) at home (6,10). Sleeping in an upright position, giving up drinking, losing weight, and usage of mandibular advancement devices may be supported as alternatives to CPAP in lowering OSA when CPAP is not used/available (6,10).
- In the absence of facts, it would be cautious to advise patients who are doing airway clearance practices to keep doing so. However, several precautions like a person doing the airway clearance methods in a well-ventilated room, preferably away from family members should be adopted. In addition, family members must be instructed to just not enter a room until the aerosols have been cleared. Pulmonary rehabilitation (PR) is still an essential aspect of managing COPD. Even though we do not know the substantial impact of COVID-19 on COPD, PR should be continued as earlier. Patients should be encouraged to participate in online programs and prevent unnecessary hospital visits as much as possible.

Patients with COPD should be motivated to take strict steps to reduce potential COVID-19 exposures, and preventive measures should be taken to limit their contact with suspected or confirmed COVID-19 cases. It is vital to ensure COPD is well managed through appropriate COVID-19 behavior, pharmacotherapy (bronchodilators and steroids), vaccination (influenza, pneumococcal, and COVID-19), PR, and smoking cessation that all precautionary measures are taken to manage COPD as considered necessary.

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