

Guidance to physicians on managing asthma during the ongoing pandemic

INTRODUCTION

Asthma is a disease that is managed by general physicians (GPs) and pulmonologists, depending on the severity of the disease, geographical location, local practices, patient preferences, and medical facilities available in that area. The coronavirus disease 2019 (COVID-19) pandemic has necessitated many changes in the way asthma is being managed. This document is designed to address these management-related issues, evaluate the evidence, and summarize the guidance regarding approaches to address these challenges faced by physicians in India.

METHODOLOGY

The questions selected were based on a discussion between the various members of the Consensus Committee set up by the Indian Chest Society. The literature search was done based on the following key words: asthma, COVID-19, and coronavirus. Three search engines, namely, PubMed, Medline, and Google Scholar were used for this purpose.

Are patients with asthma at an increased risk of getting coronavirus disease 2019?

The current data are very limited and not enough to demonstrate that asthmatics are at a greater risk of getting infected with COVID-19 (caused by severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]) or have worsened disease course if infected with COVID-19. The impact of COVID-19 may cause difficulty in the diagnosis of underlying chronic respiratory diseases (CRDs) in patients with COVID infection, altered immune response in patients with asthma, and the protective effect of inhaled corticosteroids (ICS) in patients with asthma. At present, the data available are equivocal regarding this aspect.^[1,2]

Can coronavirus disease 2019 exacerbate asthma?

Beyond the direct risk of the COVID-19 infection itself, there is also a risk of experiencing an asthma exacerbation triggered by the infection. Nonpandemic coronaviruses that circulate annually have been reported to cause asthma exacerbations; however, SARS and *Middle East respiratory syndrome* (MERS), which are also caused by coronaviruses, have not been shown to be directly associated with asthma exacerbations.

Nevertheless, it is important for asthmatics to ensure that their asthma is under control to decrease the chances of an

asthma event due to poorly controlled asthma, which can potentially lead to a more complex prognosis in those who do get COVID-19. It is, therefore, strongly recommended that physicians should continue to manage asthma according to the existing asthma guidelines until more information becomes available. Worsening asthma or an exacerbation may require the patient to visit the hospital or clinic where the risk of being infected is higher due to the current pandemic.^[1-6]

What are the general preventive measures that all asthmatics should take?

The best preventive for asthmatics is to avoid getting exposed to the external environment and stay at home. Advise them to take the following precautions:^[7,8]

- The face mask remains an important weapon in providing some protection against COVID-19 infection, even in patients with asthma. There is, however, no special directive on the nature of the face mask and its use in asthma patients with COVID-19
- They should wash hands at regular intervals with soap and water for at least 20 s. If patients are unable to wash their hands, advise them to use an alcohol-based sanitizer (alcohol content > 60%)
- Social distancing is a nonpharmaceutical infection prevention and control intervention implemented to avoid/decrease contact between those who are infected with a disease-causing pathogen and those who are not, so as to stop or slow down the rate and extent of disease transmission in a community. Again, this is equally important in patients with asthma
- They should use a peak flow meter to track the peak expiratory flow (PEF) rate and monitor lung function (it is important to use the peak flow meter only when alone in a room that is well ventilated)
- They need to manage the asthma triggers and avoid them as far as is possible to prevent the asthma from getting worse
- They should use the inhalers regularly and on time as prescribed. The inhalers should be kept handy at all times including when going outdoors. Inhalers should not be shared with anyone else including family members, and hygiene should be maintained by regular cleaning and washing of spacer devices
- If feeling unwell, they should contact the physician immediately.

How can an asthma exacerbation be differentiated from the symptoms of coronavirus disease 2019?

COVID-19 can present with symptoms that may be very

similar to an asthma attack such as cough and shortness of breath. However, it is uncommon to get a high temperature, tiredness, and changes in taste or smell with an asthma attack. The presence of these symptoms may suggest the likelihood of infection by SARS-CoV-2.^[7]

If you suspect COVID-19, follow the COVID-19 screening protocols to determine a patient's risks for COVID-19 infection and the need for COVID-19 testing at a designated facility.

However, due to overlapping symptoms, it may be necessary in some asthmatics to consider COVID-19 testing early as per the clinical judgment of the treating physician.

Given that spirometry is being discouraged in the current scenario, what are the alternatives to confirm a diagnosis of asthma?

In the absence of objective measures, one can draw on the clinical skills of history taking.^[9,10] These can be summarized in Table 1.

If spirometry is thought to be required, how should it be carried out?

In situations where performing a pulmonary function test (PFT) is unavoidable, the following practices are recommended:^[9,10]

1. Perform the PFT only in a hospital setup where there is good ventilation, and adequate personal protective equipment (PPE – gloves, gown, face mask, and shield) is available for people (doctors/nurses/technicians/helpers) performing the tests and anyone else in the testing space. N95 masks are preferred over surgical masks
2. Situations in which spirometry might still be required include the following:
 - a. New case with respiratory symptoms in patients with comorbidities
 - b. Cardiac versus bronchial asthma
 - c. Unexplained breathlessness
 - d. Chronic cough with complications.
3. Schedule an appointment when you expect minimal individuals around the PFT laboratory or waiting area
4. A day before the appointment, telephonically check if the patient has COVID-19-related symptoms. Use a semi-formal questionnaire to do this. If symptoms are suggestive of COVID-19, advise the patient to isolate and to get himself/herself tested
5. When in the department, patients should be seated >1 m apart wherever possible
6. The patient should be provided with tissues to cough into. The tissue should be disposed in an appropriate waste bin
7. Hand sanitizers should be readily available in the department and the PFT laboratory. Handwashing with soap and water should be preferred even before the patient performs the PFT
8. Ensure the use of appropriate viral filters in the spirometer while conducting the test

9. After the test is over, wipe the spirometer equipment and surrounding areas with alcohol-soaked swabs (>60%). This practice should be followed at the end of every test
10. The PFT laboratory should be cleaned at the end of each day. Hand hygiene practices should be ensured strictly
11. Ensure a 45-min period between two PFT appointments so as to give adequate time for the cleaning process and ventilation.

How can asthma be monitored through a telephonic consultation?

Asthma symptom control should be assessed on a routine basis. Simple screening tools such as categorical and numerical symptom control tools have been recommended in the Global Initiative for Asthma (GINA) 2020 document. However, numerical asthma control tools such as the Asthma Control Test (ACT) and the GINA Assessment of Asthma Control are more sensitive to changes in symptom control than the categorical tools. The ACT can be easily downloaded from <https://www.asthmacontroltest.com/>.^[11]

Short-term peak flow monitoring may be used to assess response to symptoms, to evaluate triggers for worsening symptoms, or to establish the baseline for proposed action plans.^[12]

Does ICS use lower the immune system response and put people at increased risk of coronavirus disease 2019?

No. There is no evidence that ICS use increases the risk of getting COVID-19; therefore, patients should be advised to continue with all their inhaler medications including ICS and ICS/long-acting beta2-agonist combination. In fact, it has been postulated that treatments for chronic respiratory diseases may probably lower the risk of getting infected. In *in vitro* models, ICS alone or in combination with bronchodilators have been shown to suppress coronavirus replication and cytokine production.^[4,7]

As mentioned earlier, it is of utmost importance to maintain asthma control. Discontinuing or reducing controller medications may lead to destabilizing the asthma, which, in turn, can trigger an asthma exacerbation due to other types of environmental exposure.

What is the advice on the use of nebulizers during the current pandemic?

Nebulizers generate aerosol particles that can carry bacteria and viruses if the patient is infected. Since patients with COVID-19 can be asymptomatic for long periods, their potential to generate infectious droplets cannot be overruled. These particles can further put other patients and paramedics in the clinic at the risk of getting infected.^[8,12]

It is, therefore, not recommended to use nebulizers to deliver inhaled medications unless unavoidable. A pressurized metered dose inhaler plus spacer should be used for the treatment of acute attacks in both

Table 1: Asthma Assessment Tool

Clinical features	Asthma more likely	Asthma less likely
The patient has two or more of these symptoms: Wheeze (most sensitive and specific symptom of asthma) Breathlessness Chest tightness Cough	√	
The symptom pattern is as follows Typically worse at night or in the early morning Provoked by exercise, cold air, allergen exposure, irritants, viral infections, beta blockers, aspirin, or other NSAIDs Recurrent or seasonal Began in childhood	√	
The patient has a history of atopic disorder or family history of asthma	√	
Widespread wheeze is heard on chest auscultation	√	
Symptoms are rapidly relieved by inhaled SABA	√	
PEF variability is >15% over time (highest-lowest PEF/mean), >15%; the greater the variability, the greater the probability	√	
The patient has chronic productive cough in the absence of wheeze or breathlessness		√
There is an absence of wheeze when symptomatic		√
The patient shows normal PEF when symptomatic		√
The symptoms have begun later in life, particularly in people who smoke		√
PEF variability is <15% over time (the lesser the variability, the lower the probability)		√
The patient does not respond to a trial of asthma treatment		√

SABA: Short-acting beta2-agonist, PEF: Peak expiratory flow, NSAIDs: Nonsteroidal anti-inflammatory drugs

adults and children. If the use of a nebulizer cannot be avoided, appropriate infection control measures should be practiced. Furthermore, in case of patients with difficult/severe asthma who are well controlled on home nebulization, caution should be exercised if intending to switch/taper use to a safe inhaler device as it should not destabilize the patient. Such patients should be regularly followed up and advised on the importance of adherence to infection control practices. Every patient should be advised to use his/her own inhaler and spacer and that inhalers or spacers should not be shared with anyone else including family members.

What advice should be given to patients to manage acute symptoms at home?

Physicians are recommended to give all asthmatics an "Action Plan" to be followed when they have a flare-up. The Action Plan should guide patients on how to recognize their symptoms, how and when to increase the dosage of the medicine in their inhalers, and when to contact their doctor. The Action Plan also advises on monitoring the peak flow reading, which can help patients recognize worsening symptoms.

Refer to the GINA 2020 guidelines for further guidance on an Asthma Action Plan.^[13]

Is it advisable to use oral corticosteroids for asthma attacks during the pandemic?

Patients should be advised to take their oral corticosteroids for an asthma attack. The duration should not exceed 5 days.

However, for those patients who are on long-term steroids for severe asthma, it is advisable to maintain them on the lowest effective dose required to prevent their asthma from

worsening. The oral steroids should not be discontinued abruptly. Oral corticosteroids should be used with caution in patients with COVID-19 and asthma.

Should patients with severe asthma continue with their biologics?

Patients who are receiving biological therapies for their asthma should not stop their biologics as there is no evidence that they suppress immunity.^[14,15] They should be advised to visit the clinic to take the dose of the biologic. Schedule an appointment for such patients when you expect minimal individuals around at the clinic. In case you wish to initiate treatment with biologics, carefully evaluate the risks versus the benefits of such treatment.

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