COVID-19 and Oxygen Therapy

Why in news?

The second surge in Covid-19 cases has seen a huge rise in the demand for supplemental oxygen.

When does a Covid-19 patient need oxygen support?

- Covid-19 patients need oxygen support when shortness of breath progresses to a more acute condition.
- Most of the Covid-19 patients have a respiratory tract infection and in the severe cases their symptoms includes shortness of breath.
- In a small proportion of such cases, this can progress to a more severe and systemic disease characterised by Acute Respiratory Distress Syndrome (ARDS).

How does Covid-19 trigger shortness of breath?

- The lungs enable the body to absorb oxygen from the air and expel carbon dioxide.
- Alveoli- tiny air sacs in the lungs- expand to capture oxygen which is then transferred to blood vessels and rest of the body.
- Respiratory epithelial cells line the respiratory tract whose primary function is to protect the airway tract from pathogens and facilitate gas exchange.
- SARS-CoV-2 coronavirus infects these epithelial cells and to fight such infection the body's immune system releases cells that trigger inflammation.
- When this inflammatory immune response continues, it impedes the regular transfer of oxygen in the lungs and fluids too build up which makes difficult to breathe.

How many symptomatic people require oxygen?

- National Clinical Registry data shows that shortness of breath is the most common feature among symptomatic hospitalised patients when compared to first wave.
- The national Covid-19 task force said that 54.5% of hospital admissions during the second wave required supplemental oxygen during treatment.
- This was a 13.4-percentage-point increase compared to the previous wave between September and November.

- However, requirement of mechanical ventilation dropped during the second wave from 37.3% to 27.8%.
- Due to the sudden surge of cases there is a panic, people wanted to get admitted to hospitals and oxygen requirement suddenly shot up.

In what conditions is oxygen used in Covid-19 clinical management?

- According to the clinical management protocol, under the following conditions persons require oxygen:
  - a person is suffering from moderate disease;
  - a person is diagnosed with pneumonia with no signs of severe disease;
  - presence of clinical features of dyspnea (shortness of breath) and/or hypoxia (no oxygen supply at the tissue level);
  - fever, cough, including SpO2 (oxygen saturation level) less than 94% (range 90-94%) in room air;
- When respiratory distress of the patient cannot be alleviated after receiving standard oxygen therapy, high-flow nasal cannula oxygen therapy (HFNO) or non-invasive ventilation can be done.
- But patients with hypercapnia (exacerbation of obstructive lung disease), hemodynamic instability, multi-organ failure, or abnormal mental status should generally not receive HFNO.

Does a patient show Covid symptoms when oxygen level drops?

- Hospitals report of sudden deaths which are caused due to sudden cardiac event, preceding silent hypoxia or due to a thrombotic complication such as pulmonary thromboembolism.
- In silent hypoxia, patients have extremely low blood oxygen levels, yet they do not show signs of breathlessness.
- Silent hypoxia is not usually an early symptom to occur in Covid-19 patients.
- Patients frequently arrive at the emergency room for other reasons such as muscle aches, fatigue, fever and cough.
- Therefore instead of solely relying on pulse oximeter, patients should monitor for gastrointestinal symptoms, muscle soreness, fatigue, and changes in taste and smell and for fever, cough, and shortness of breath.

Source: The Indian Express



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