



Government of Odisha

Health & Family Welfare Department

File No-DMET-METI-MISC-0044-2021 **12675** /HFW, dated- **27.04.2021**

From:

Shri P.K. Mohapatra, IAS
Additional Chief Secretary to Government

To

All Collectors & DM,
All Municipal Commissioners,
All Dean & Principals of Medical Colleges,
All CDM & PHOs

Sub: SOP on rational use of oxygen in Covid facilities.

Sir / Madam,

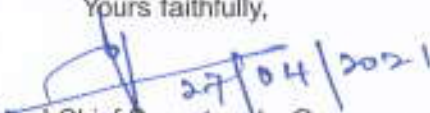
It is noticed that the number of Covid cases are increasing day by day and Government is keen in setting up of sufficient Covid facilities with General beds, HDU beds and ICU beds. Such patients require oxygen which is the mainstay of treatment. Oxygen is precious and we may face acute shortage if not managed properly, rationally and judiciously. Also timely use of oxygen can reduce the mortality as well as morbidity to a large extent.

In view of the above, the following Standard Operating Procedure (SOP) (Annexure-A) shall be followed scrupulously for rational use of Oxygen in the Covid facilities. This shall be followed in true letter and spirit in all Government and Private Covid-19 hospitals.

Expert teams shall visit periodically for strict observation of such protocols. Any deviation to the rational use shall be viewed seriously.

This may be treated as most urgent.

Yours faithfully,


Additional Chief Secretary to Government

Memo No. 12676 // Dt. 27.04.2021

Copy forwarded to all Directors of H & FW Department, Addl. DMET, Odisha cum
Chairman Technical Committee for information and necessary action.


Deputy Secretary to Government

1000/110/2021

SOP FOR RATIONAL AND TIMELY USE OF OXYGEN IN

COVID HOSPITALS

Oxygen is the key drug in management of Covid-19 patients who very frequently develop poor saturation of oxygen resulting in organ damage. Oxygen is very precious and is manufactured in oxygen plants and supplied in cylinders to the patients. This SOP will facilitate rational and timely use of oxygen in ICU / HDU / General Beds so that a needy patient is not deprived of oxygen when in need.

Government of India has also issued guidelines for rational use of oxygen which is aimed to promote judicious use of oxygen therapy in individual cases, and to enhance accountability for oxygen conservation through monitoring and audit without compromising quality of care.

The majority of patients of COVID-19 have mild illness. Out of 100 patients, 80 are treated at home or COVID care centers (CCC). Out of the remaining 20, about 17 have moderate disease needing oxygen beds. Only 3 are in ICUs and are treated with oxygen therapy by Non Re-Breathing Mask (NRBM), Non Invasive Ventilation (NIV), High Flow Nasal Cannula (HFNC) and Invasive Ventilation.

The following operating procedure shall be followed for rational and timely use of oxygen.

1. The flow of oxygen should be adjusted to the lowest permissible level to target an oxygen saturation of 92% to 94% for the hospitalized COVID -19 patients.
2. Indiscriminate use of BIPAP/HFNC should be avoided. When required, BIPAP should be preferred over HFNC as the latter consumes large amount of oxygen. HFNC device should be used only in the ICU setting under supervision of a respiratory physician/physician. Patient should be put on HFNC only after approval of the senior most respiratory physician/physician.
3. Prone positioning should be intermittently done in patients of COVID -19, along with adjunctive physiotherapy. This optimizes the respiratory status.
4. Individualization of oxygen therapy should be done taking into account the clinical signs like respiratory rate etc. and not just the saturation level. Once the desired saturation is achieved, flow of oxygen should not be increased as it may not provide any additional benefit to the patient. Up-titration instead of down titration of oxygen flow levels should be the norm.
5. Triaging of patients as per their oxygen status should be done at regular intervals.
6. The critical part of the timely use of oxygen is to see that the oxygen in the container is up to appropriate level and timely changing of empty cylinders is

done. This will prevent sinking of the patient due to want of oxygen at proper pressure and percentage.

The Ventilators have an internal alarming system which indicates by beep sound regarding the lowering of oxygen pressure, which prompts the timely changing of the source of oxygen.

In many well planned HDUs the digital or aneroid system of pressure gauges are installed which can indicate the pressure level of oxygen in the cylinder.

Where the oxygen is administered from a cylinder, there is no alarming system except the pressure gauge. In such cases the following principles shall be followed.

- i. The intensivist shall calculate the approximate time of exhaust of the oxygen in the cylinder used taking the size of cylinders, its capacity, the pressure gauge used and the rate of flow of oxygen required for the patient in to consideration.
- ii. The nursing or the paramedical staff on duty shall be instructed regarding the time or pressure at which the cylinder shall be replaced with a filled one. As the changing of a cylinder requires at least 5 to 10 minutes, the preparation for change of cylinder must start before 10 minutes.

Estimation of time of replace:

<u>Types of available cylinders:</u>			
Size	Capacity (L)	Pressure (psi / kg/cm ²)	Weight (kg)
B	200	1900 / 133.58	2.27
D	400	1900 / 133.58	3.4
E	650	1900 / 133.58	5.4
F	1360	1900 / 133.58	14.6
G	3400	1900 / 133.58	34.5
H	6900	2200 / 154.67	53.2
M	3400	2200 / 154.67	29.0

NB: The cylinders shall be randomly weighed to check if it contains appropriate volume of oxygen in litres or not.

For example a patient requiring oxygen at 5 litres per minute, if uses a B type cylinder will require 40 minutes to exhaust the oxygen. The nursing staff or paramedics shall be alerted and instructed to prepare for the replace of cylinder after 30 minutes of starting when the cylinder will be having 50 litres balance. Similarly for H type cylinders and rate of use at same 5 lit per min will require 23

hours to exhaust and the staff shall be alerted to prepare for change in 22 and half hours.

7. An audit and safety of the oxygen use by the ICU / HDU / General Bed should be done by the clinical team leader on a daily basis as under:

Monitoring for safety and audit

- i. The Oxygen Audit Committee will be mandated to supervise inventory planning, oxygen consumption pattern regular repair and maintenance of gas pipelines, gas plant, and wall mounted gas outlets etc.
- ii. It should review the consumption pattern of oxygen twice a week and conduct an audit and reduce oxygen consumption if found to be in excess.
- iii. The hospital management should reduce all elective and emergency services to a minimum in view of the present pandemic situation.
- iv. Regular training of OT Technicians and Nurse should be undertaken on proper oxygen administration and monitoring, and on conserving oxygen. Sensitize nurses and technicians for conservation of oxygen.
- v. District Magistrate (DM) assisted by the Chief Medical Officer (CMO) of the district must also monitor the consumption including the rational use of oxygen in all facilities of the district on a weekly basis.
- vi. A team of one Nurse and one OT Technician may be designated as Oxygen Monitoring Team for each shift at each hospital/health facility level. The team will visit all areas where oxygen supply / therapy are instituted. They will inspect the gas pipeline, wall mounted gas outlets, as well as gas cylinders to detect and promptly address leakages, if any.
- vii. Nurse in the team will check the oxygen mask on a regular basis. Ensure closure of valves during 'no-use' at all times.
- viii. At the facility level, an Oxygen Audit Committee may be formed in every hospital which may consist of Additional Medical Superintendent Head of Anaesthesia, Head of Respiratory Medicine/ General Medicine and Nursing Superintendent.
- ix. Home oxygen cylinders should not be encouraged but the use of oxygen concentrators at home should be promoted whenever required.
