IN THE SUPREME COURT OF INDIA
CIVIL APPELLATE JURISDICTION
SPECIAL LEAVE PETITION (CIVIL) Diary No(s).11622/2021

IN THE MATTER OF :
UNION OF INDIA … Petitioner(s)
VERSUS
RAKESH MALHOTRA & ANR. … Respondent(s)

AFFIDAVIT PLACING THE REPORTS ON RECORD

I, Nipun Vinayak, son of Shri Umesh Vinayak, aged 44 years, working as Joint Secretary in the Ministry of Health & Family Welfare, the deponent herein, do hereby solemnly affirm and state on oath as under:-

1. That I am the Additional Secretary/authorized signatory of the petitioner and authorized to file the present affidavit. I am fully conversant with the facts and circumstances of the case the knowledge of which has been obtained from the records. As such, I am competent to swear this affidavit.

2. That this Hon'ble Court, vide order dated 06.05.2021, in the captioned matter, was pleased to order the formation of a "National Task Force".

3. That in the said orders specifically for the purposes of the oxygen audit, this Hon'ble Court directed that the Task Force will constitute sub-groups/committees for each State/UT comprising of the following:

(i) An officer of the State/UT Government not below the rank

of Secretary to the State Government;

(ii) An officer of the Union Government not below the rank of Additional/Joint Secretary;

(iii) Two medical doctors in the State/UT concerned including at least one with administrative experience of managing the medical facilities of a hospital; and

(iv) A representative from the Petroleum and Explosives Safety Organisation (PESO).

4. That this Hon'ble Court, for carrying out the above audit exercise for NCTD, directed that the audit sub-group shall consist of:

(i) Dr Randeep Guleria, Professor and Head, Department of Pulmonary Medicine and Sleep, AIIMS;

(ii) Dr Sandeep Budhiraja, Clinical Director & Director – Internal Medicine, Max Healthcare; and

(iii) An IAS officer, each from the Union Government and GNCTD, not below the rank of Joint Secretary.

5. That subsequent to the said order of this Hon'ble Court, the meetings of the Task Force was convened on many occasions and detailed deliberations took place. The sub-groups were also constituted.

6. The National Task Force has, in accordance with the terms of reference, provided its recommendations on the Terms of Reference (i) to (v).

A copy of the Recommendations of the National Task Force on the Terms of Reference (i) to (v) is attached herewith and marked as **Annexure R – 1**.

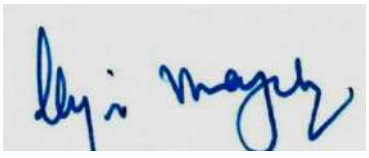
A majority of the recommendations given by the National Task Force on oxygen were already being implemented by the Central Government as mentioned in the Report itself and the Central Government is working on other recommendations.

A copy of the Action Taken Report as on the date of the report of the National Task Force is further attached herewith and marked as **Annexure R – 2**.

7. That further, the Sub-Group on Oxygen Audit for NCT of Delhi has provided an Interim Report of the Oxygen Audit for the NCT of Delhi. A copy of the Interim Report of the Oxygen Audit in the NCT of Delhi is attached herewith and marked as **Annexure R – 3**.

8. That the present affidavit is being filed in order to place before this Hon'ble Court the reports received by the above-mentioned groups constituted by this Hon'ble Court. As this affidavit is for the limited purpose as aforesaid, the deponent is not placing any other facts/merits of the issues involved.

9. The present affidavit is bonafide and in the interest of justice.



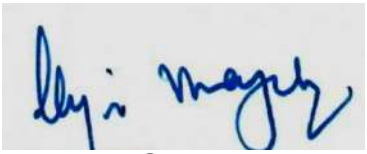
DEPONENT

VERIFICATION

I, the deponent abovenamed, do hereby verify that the contents of Para 1 to 9 of my above affidavit are prepared on the basis of instructions received by me from respective

ministries i.e. Ministry of Health and Family Welfare, and on the basis of legal advice received and no part of it is false and nothing material has been concealed there from to the best of my knowledge.

Verified at New Delhi on this the 22.06.2021.



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ANNEXURE R - 1

NATIONAL TASK FORCE

RECOMMENDATIONS

ON OXYGEN RELATED ISSUES

[ToRs (i) – (v)]

Background:

The National Task Force (NTF) was constituted in pursuance of the orders of the Hon'ble Supreme Court dated 6 May 2021 in SLP (Civil) no 11622/2021, and regular meetings were held from 9th May, 2021 onwards. The Supreme Court has laid down twelve Terms of Reference (ToRs) for the NTF, as detailed in paragraph 24 of the order dated 6th May, 2021. Five of these pertain to Oxygen related issues, as follows:

1. Assess and make recommendations for the entire country based on the need for, availability and distribution of medical oxygen;
2. Formulate and devise the methodology for the allocation of medical oxygen to the States and UTs on a scientific, rational and equitable basis;
3. Make recommendations on augmenting the available supplies of oxygen based on present and projected demands likely during the pandemic;
4. Make recommendations for the periodical review and revision of allocations based on the stage and impact of the pandemic;
5. Facilitate audits by sub-groups within each State and UT inter alia for determining:
    a. whether the supplies allocated by the Union Government reach the concerned State/UT;
    b. the efficacy of the distribution networks in distributing supplies meant for hospitals, health care institutions and others;
    c. whether the available stocks are being distributed on the basis of an effective, transparent and professional mechanism; and
    d. accountability in regard to the utilisation of the supplies of oxygen allocated to each State/UT.

Deliberations by the NTF and the Subgroup on Oxygen:

Cabinet Secretary has been designated as the convenor of the National Task Force. The first meeting of the NTF was held on **May 9, 2021**, the day after the orders of the Hon'ble Supreme Court (dated 6th May, 2021) were received on 8th May, 2021. In this meeting, it was decided to set up three Subgroups related to different areas of work, including the Subgroup on Oxygen related issues, in order to assist the National Task Force. The NTF decided to take up the work on five TORs related to Oxygen on priority, and members of the NTF not included in the Subgroup on Oxygen requested to be included.

As per the orders of the Hon'ble Supreme Court, the NTF is at liberty to draw upon the human resources of the Union Government for consultation and information. The Task Force may also co-opt or seek the assistance of other experts within or outside Government to facilitate its working. Accordingly, the NTF associated Member (Health) NITI Aayog, DG ICMR, Director AIIMS, the Secretaries of MHA, DPIIT, MoRTH and DGHS, who were specifically mentioned in the order of the Hon'ble Supreme Court, in its work.

The second meeting of the National Task Force was convened on **17th May, 2021**, in which the progress made by the Task Force on Medical Oxygen was discussed in detail, besides other issues.

The third meeting of the National Task Force was convened on **23rd May, 2021**, in which the recommendations on oxygen management on the five ToRs were presented and discussed.

The fourth meeting of the National Task Force was convened on **5th June 2021**, in which the draft report of the NTF was discussed, along with the further plan of action in respect of remaining ToRs.

The Subgroup on Oxygen held four meetings in May 2021 as below, in which detailed deliberations were held and the information presented was reviewed.

11th May, 2021: A presentation was made on Supply side covering data and rationale on Production and Storage of Oxygen, and allocation process of Oxygen to the States. Another presentation was made on the Demand side covering formula of Expert Group on calculation of Oxygen, rational use of oxygen in hospitals, etc

14th May, 2021: In this meeting, data were presented State and UT wise on the following parameters: (i) active cases, (ii) projection of oxygen demand for states as per expert group formula, etc

15th May, 2021: This was a meeting of the Subgroup with the Oxygen management teams of all States and UTs in the country. More than 180 participants participated in to this virtual meeting where the Subgroup gave their views on oxygen management at the level of hospitals and the States/UTs.

22nd May, 2021: The Subgroup met again along with all other members of the NTF. A detailed presentation was made to the members. The members appreciated the efforts made by the Government, and discussed their draft recommendations.

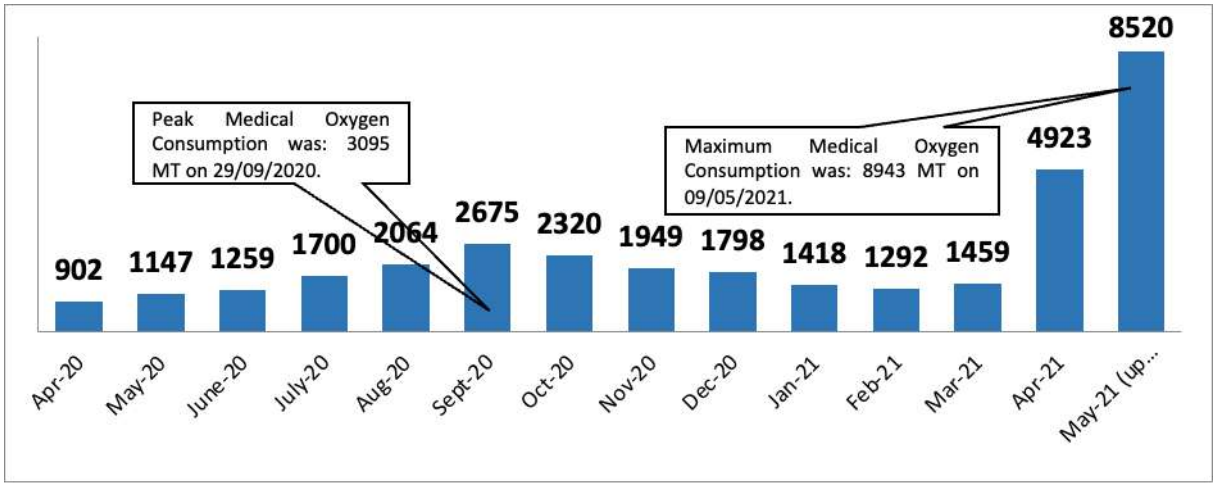
Summary of background information presented to the Subgroup and other members of the NTF

1. **Sudden increase in demand for liquid medical oxygen and measures taken to enhance production and supply:**

It was noted that the second wave of Covid-19 witnessed a rapid surge in active cases, resulting in a sudden, enormous increase in the requirement of medical oxygen. Various measures were undertaken by the Central Government in coordination with the State Governments to address this challenge. These were presented in detail to the Subgroup on Oxygen related issues, wherein other expert members of the National Task Force were also present. It was noted that the demand for medical oxygen saw a sudden increase in April 2021, touching an average of 5500 MTs a day in the third week of April 2021, rapidly increasing to a daily average consumption of 7100 MT in the fourth week of April 2021. This increased further to the highest consumption level of 8943 MTs a day on 9th May 2021.

Figure 1: Average Daily Consumption of Medical Oxygen, Month-wise

(April 2020- May 2021)



A number of measures for increasing the production of liquid oxygen in the country and making it available for medical purposes were taken by the Central Government. The production by liquid oxygen manufacturers in the public and private sector establishments was enhanced. This included the PSU and private sector Steel Plants. Steel plants minimized their use of gaseous oxygen, which

resulted in immediate enhancement of liquid oxygen production. Private sector manufacturers such as Linde, Inox, Air Liquide and RIL also enhanced their production through various measures.

In this manner, in the month of April 2021, about 3000 MTs of daily production of liquid oxygen was added. The daily production of liquid oxygen, which was an average of about 5700 MTs per day in August 2020, increased to a high of 9690 MTs on 13 May 2021.

Besides the enhanced generation of liquid oxygen in the steel plants, liquid oxygen available in their storage tanks was also made available for medical use. The safety stocks in the storage tanks at all Steel Plants was brought down to 0.5 days, from 3.5 days previously, in order to make available additional liquid medical oxygen. Further, use of liquid oxygen by the industry was restricted in April 2021, as more liquid oxygen was diverted for medical use.

In this manner, the liquid medical oxygen (LMO) that was supplied at a daily average of 1292 MTs in February 2021, and at 1459 MTs in March 2021, was supplied at an enhanced level of a daily average of 4923 MTs in April 2021 and 8520 MTs in May 2021. The NTF recognized the enormity of the challenge and appreciated the steps taken by the Government of India.

The members were also presented a perspective of the allocation process of oxygen to the states, the formula of the Expert Group of Government on calculation of oxygen requirement, the challenges associated with oxygen supply, distribution and transportation, besides other related issues. The expert members of the Subgroup also interacted with all the States/UTs and provided guidance on oxygen management practices.

2. Challenges in allocations:

Despite the enhanced daily production and supply of LMO, there have been challenges in allocations of LMO to the States through the Supply Plan. This was on account of the high concentration of Oxygen production in few States of the country, and in the steel plants which were mostly concentrated in the eastern part of the country. During the beginning of the second wave, there was simultaneous demand from the high burden States that were mostly concentrated in West, North and Central India. Not all of them manufactured LMO, and many of these States were also in geographic contiguity. Thereby there was pressure of heavy demand on the limited manufacturing plants in these areas, that had to cater to the demand of the local State and also of neighbouring States. This was followed by increased demand in southern States of Karnataka, Kerala, Tamil Nadu, Andhra Pradesh without appreciable decrease in allocations of other major States.

As such, given the heavy pressure of simultaneous demand, it became imperative to additionally tag the rapidly increasing demand for LMO to sources of liquid oxygen in the Steel Plants on the eastern side, as well, in the detailed supply mapping of the States. The movement of the cryogenic tankers to the Steel Plants was supported by a logistical plan that included the Air Force and Railways.

As on 25th May 2021, the total daily oxygen allocation made to various States/UTs under the allocation/supply plan was a total of 10,250 MTs. This allocation is more than the daily installed production capacity for liquid oxygen in the country, and the supply for this allocation was made possible by the various interventions as explained above.

3. Allocation and transportation of Oxygen:

In March 2020, the Government of India, following the whole of Government approach for COVID response, constituted several Empowered Groups of Secretaries, which included representatives of related Ministries, in order to address various issues related to COVID Management. Empowered Group -2 (EG-2) was tasked inter-alia to addressing issues related to supply of medical related equipment and other medical supplies, including oxygen.

To meet the rapidly increasing demand for medical oxygen in the States, a Supply Plan for Oxygen was drawn up by EG-2, wherein it was planned to map the high-burden States to sources of oxygen, with the quantity being specified. As this is a shifting pandemic, this was planned within a dynamic, rolling framework, with the directions being to review and revisit the allocations with the States every two to three days.

Accordingly, the exercise for initial allotment of Liquid Medical Oxygen (LMO) was conducted in early April 2021, wherein projections for oxygen for twelve high burden States were coordinated in a joint videoconference by DPIIT and MOHFW with the States, based on the case load of active cases, the infrastructure availability in the States, projections for the future etc. The first Supply Plan on 15th April, 2021 included the high burden States of Maharashtra, Kerala, Gujarat, Madhya Pradesh, Karnataka, Uttar Pradesh, Delhi, Haryana, Punjab, Chhattisgarh, Rajasthan, and Tamil Nadu.

Subsequently other States were also added to the Supply Plan following the surge in COVID cases in these States. Allocations were made through a process of detailed deliberations conducted with the senior officials of the critically

affected States/UTs along with connected Ministries, and manufacturers and suppliers of Oxygen, and other stakeholders in a consultative manner.

As the framework for Supply Plan is dynamic, it has been subsequently updated numerous times between 15 April to 29 May 2021, based on intensive consultations with Ministries, and feedback from States and Manufacturers.

Further, a logistical plan has supported the movement of oxygen from the supply points to its destination in various States, through a judicious mix of various available modes of transportation, such as road, rail and air. To add to existing fleet of cryogenic oxygen tankers available, action has been taken to convert 50% of existing Nitrogen & Argon tankers to transport oxygen. ISO containers were imported and used on Oxygen Express trains, along with tankers, to facilitate quick supply of oxygen over long distance, through Roll On – Roll Off (RORO) service. An Oxygen Digital Tracking System (ODTS) has also been put in place to track the movement of daily allocations of oxygen. The recommendations of the NTF, based on deliberations are summarised as below.

RECOMMENDATIONS OF THE NATIONAL TASK FORCE

ToR 1: Assess and make recommendations for the entire country based on the need for, availability and distribution of medical oxygen.

Monitoring Oxygen Needs at the Hospital Level

1.1 **Oxygen Monitoring Committee** should be set up in every hospital, consisting of Additional MS, Head of Anaesthesia, Respiratory Medicine/Internal Medicine and Nursing Superintendent.

1.2 A monitoring team to be available round the clock (one duty nurse and one duty technician) to ensure proper assessment of need as per hospital protocol and implementation of steps to conserve Oxygen (e.g. closure of valve during no-use, checking for-leakage).

1.3 To follow Guidelines provided by expert groups to reduce/optimize oxygen use. For example, use of non-rebreather masks, Non-Invasive Ventilation (NIV) preferred over High Flow Nasal Oxygen (HFNO), Bains Circuit, ingeniously made CPAP machines etc. can be used to optimize use of oxygen.

1.4 Non rebreather mask may not be used (need >12 L/min) with an oxygen concentrator, and ordinary masks may be used instead. If oxygen saturation remains below 92 percent on 5L flow, awake-prone position may be advised to reduce oxygen requirement of patients; hence more stress on this intervention.

1.5 Setting of rational target for SPO2 levels of 90%-94% for hospitalized patients. Once this level is achieved, flow of oxygen should not be increased as there would be no additional benefit to the patient.

Monitoring Oxygen Needs at the State Level

1.6 In normal times no special arrangements are required. In emergency, implementation of management of Oxygen Grid with 10-12 regional production sites is required . The storage hubs with state and district storage spokes should be in place for any emergent situation. Long haul connectivity through Rail from the production hub to the storage hubs, with the last mile connectivity as a spoke model transported by trucks.

The LMO production hubs should be so located that the transport distance even by rail is preferably less than 24 hours.

1.7 Create a state dashboard which monitors both supply and demand, including real-time data on available infrastructure, beds & actual oxygen consumption at each health-facility. The dashboard should be updated regularly. There should be a designated officer in the State Government for taking informed decisions during a pandemic, with a complete perspective coming in from the real time data. If the States are forming committees for oxygen management under a senior officer, that would also suffice.

1.8 Tanker movement should be effectively managed and closely monitored from dispatch to recipient hospitals by respective States/UTs. For this use of IoT, GPS and other IT based tools can be used to track each tanker.

1.9 Ensure enough geographically distributed emergency reserve storage points (with 20% buffer stock for 2 weeks) to supply oxygen to hospitals, in case of SOS. Information on this should be widely disseminated, including contact numbers, names and designations of the officers in-charge.

1.10 Each State should have access to reserve tankers depending on the dynamics of pandemic to meet demand supply mismatch.

1.11 Allocation of tankers to the States during a pandemic may be taken over by the Government of India (GoI) in times of emergency. Besides, to meet the urgent need of additional tankers, GoI should continue to use the ISO containers.

1.12 Once tankers are allocated to a State, they should manage the filling and distribution of oxygen to urban and rural areas.

ToR 2: Formulate and devise the methodology for the allocation of medical oxygen to the States and UTs on a scientific, rational and equitable basis.

2.1 {The oxygen distribution plans should be implemented as soon as there is a surge in demand in any state. The supply plan of Oxygen to the high burden states should be dynamic, based on caseload and projection of cases and should be reviewed in real time.

2.2 In a shifting pandemic, some of the States need to shed their allocations as new allocations are made to other States. Effective communication is essential to ensure that states do not continue to request supply greater than their actual requirement.

2.3 A supply chain expert may be involved (from supply chain organizations or IIMs) to give pragmatic inputs on oxygen supply throughout the country. There should be a system-based design for supply chain management.

2.4 The mechanisms of war room for real time monitoring during any emergent situations should be institutionalized. During pandemic situation, the war room should monitor movement of tankers, managing oxygen demand, its consumption and distribution in a real time, dynamic and transparent manner. (During normal times there will not be need for such a war room since the oxygen supply to the hospitals is done by manufacturers and suppliers as part of commercial arrangement). A Senior Officer should be in-charge of the war room and its complete functioning, including distribution.

2.5 A formula needs to be developed for the calculation of oxygen requirement for the primary, secondary, and tertiary -level hospitals based on the number of Oxygen beds and ICU beds.

2.6 **Oxygen Need Determination Formula:** The expert members of the NTF propose a formula to determine the oxygen needs for the country, which takes into account all levels of care. For example, 1.5 MT of liquid oxygen required for a 100 bedded hospital having 25% ICU beds is a formulation that may be examined, as illustrated below:

Oxygen requirements for a 100 bed hospital, with 25% ICU beds:

Mode of oxygen therapy	**No of beds**	**Needs**	**O2 requirement in Lit/Min**
Invasive ventilation	8	80% FiO2	240
Non-invasive ventilation (NIV)	10	70% FiO2	300
Masks : Rebreathing	4	15 Lit/min = 4 X 15	60
Mask: Hudson	3	10 lit /min = 3 x 10	30
Wards/Operation Theatre	20	5 Lit/min	100

Daily O2 requirement = 730 litre X 60 (minutes) X 24 (hours) = 1051200 l/day [1]

~ 10.5 Lakh Litres of Gaseous Oxygen per day;

[Leaks in circuits/mask/wastage/valves/= 10% extra] ~1.5 MTs of LMO per day

[1] *7 lakh litres of gaseous oxygen translates to 1 MT of LMO*

2.7 Such a formula will be part of a dynamic, evolving process and open to modification and consultation with states as the situation evolves.

2.8 The active case load of the State/UT and the doubling rate should be the main factors in allotting O2, addressing both the current situation and the future demand.

2.9 Some States which have Pharma, Military and Steel Industry establishments will need more than the medical quota of O2.

2.10 States/UTs will need to develop a mechanism which can predict oxygen inventory required for next 24 hours and next few days based on the calculations of the formula. These requirements will need to be submitted to the Central Oxygen War Room, which will include factors in 2.8 and 2.9 for determination of allocation, based on modelling approaches.

2.11 Modelling approaches may be explored, for which past data can be used to arrive at projections for bed oxygen requirement number (litre/min), which can be compared to the States' request for determination of allocation.

2.12 There should be a designated officer in the State Government for taking informed decisions during a pandemic, with a complete perspective coming in from the real time data. If the States are forming committees for oxygen management under a senior IAS officer, that would also suffice.

ToR 3: Make recommendations on augmenting the available supplies of oxygen based on present and projected demands likely during the pandemic.

3.1 About 20% buffer capacity of the state's requirement should be created for allocation over and above baseline demand for allocation to States with rising cases.

3.2 States must explore options, to plan and operationalize the buffer stock, in consultation with local stakeholders. Local PESO officials may also be involved to guide on storage availability.

3.3 Efforts are to be made to further scale up LMO production in preparation of the next pandemic. There is an urgent need to increase production of LMO from about 5% - 8% of gaseous industrial oxygen. Govt should support and subsidize concerned industries.

3.4 In an emergency, the states may actively explore setting up some field/make-shift hospitals in proximity of Industrial Oxygen production units which can supply piped Oxygen with necessary modifications and strict quality control.

3.5 Technology to be put in place to convert nitrogen plants to oxygen producing plants in case of an emergency situation..

3.6 Focus should also be placed on cylinders, gaseous oxygen and arrangement of cylinder fillers. CO2 cylinders from beverage industries may also be converted to oxygen cylinders.

3.7 Besides cylinders & LMO, the PSA plants must be encouraged, based on actual assessment. PSA plants have the capability to manage a 100 bedded hospital and fill cylinders for ambulances and PHC/CHC as well.

3.8 Make Oxygen generation units (PSA) compulsory for all hospitals, including for medical colleges and district hospitals. All district hospitals

should have PSA plants with compressors so that they can manage their own load as well as fill cylinders for CHC/PHC/Ambulances.

3.9 Each hospital with 100 or more beds, should be encouraged to have an LMO installation. A cryogenic storage tank for LMO should be insisted upon for every hospital in metropolitan areas.

3.10 The PESO regulations need to be revisited to facilitate installation of LMO tanks in hospitals. As such, the PESO regulation of 10-meter clearance maybe relaxed and relevant alternative arrangement be made, for instance with appropriate material surrounding the tank to prevent any mishap.

3.11 Use of Cryocans/Dewar Type Flasks which can carry up to 500 Kg LMO by road may be encouraged. The available inventory and need to be assessed and fulfilled.

3.12 Oxygen cylinders: Adequate procurement, filling, and timely supply of the oxygen cylinders to the hospitals and facilities in nursing homes, tier 2 and 3 cities, districts and rural areas, covid care centres, and other health care facilities specially created for Covid patients should be calculated and ensured.

3.13 Oxygen supply to rural areas to be supported with new strategies, as described in 3.14 to 3.17.

3.14 As the rural hospitals are dependent on cylinders and concentrators (non-LMO sources), there is a need to shift PSA plants towards vulnerable areas. Cylinder turnaround time also needs to be efficient. Adequate number of cylinders must be kept as buffer. The rural and semi-urban areas preparation should be prioritized henceforth.

3.15 Concentrators should be used in Covid Care centers in rural areas, and district hospitals, where patients need 5 L/min Oxygen, thereby saving about 5%-7% oxygen usage.

3.16 Oxygen cylinder filling and storage in rural areas is important; hence, central filling stations be considered in districts/rural areas.

3.17 For smaller villages liquid oxygen cylinders of 250 ltr. may be considered to be parked for 10-12 bed facilities. Similar arrangements may be made for other villages as well.

3.18 All oxygen cylinders to have RFID tagging to make it easier to identify and track them.

3.19 It is recommended that Portable Oxygen Concentrators should be encouraged for home care as a part of home care packages and Oxygen cylinders should be used in hospitals.

3.20 We should have strategic reserves of oxygen for country to cover 2-3 weeks' consumption, similar to the arrangement made for petroleum products. Similarly, all hospitals should have a buffer capacity for Emergencies.

3.21 There should be a strategy to manufacture oxygen locally or in the neighbourhood for the big cities to fulfill at least 50% of their LMO demand, as road transportation is vulnerable. This may be taken up in respect of Delhi and Mumbai on priority, due to their population density. All 18 metro cities to be made oxygen independent, with at least 100 MT storage in the city itself.

ToR 4: Make recommendations for the periodical review and revision of allocations based on the stage and impact of the pandemic.

4.1 The formula suggested by the National Task Force for oxygen allocation ***(Oxygen requirements for a 100 bed hospital, with 25% ICU beds- 1.5 MT/day)*** may be looked at as a dynamic and evolving process and should be open to modification as the situation evolves.

4.2 Since it is dynamic process, the allotment may be revised every week after reviewing the trends, unless there are immediate requirements.

4.3 There should be granular data available with respect to the hospitals, for which a dynamic hospital registry with unique ID of the hospitals in required.

4.4 The information of the hospitals to be available on this registry must cover aspects such as:

(i) On infrastructure (ICU Beds, Ventilators, HFNO, Bipap, Non-Covid Beds, etc),

(ii) On patients (on O2 beds/ ICU/ Ventilated/ Covid and Non-Covid),

(iii) Region-wise Covid case positivity rates, trends and variants. States/UTs must provide such data to GoI regularly, and at least thrice a week.

4.5 Oxygen concentrators or other medical equipment should be shared nationally from one region to another based on the demand.

4.6 As far as possible, States producing O2 should be permitted to supply to their own state/ neighboring state, to reduce tanker turn-around time.

4.7 However, every State cannot be self-sufficient, and the demand and supply situation is dynamic. Therefore, deficits in demand will have to be met by

transfer from other States, with due regard to minimum time required for transport from other States.

TOR 5: ***Facilitate audits by sub-groups within each State and UT inter alia for determining:***

a) whether the supplies allocated by the Union Government reach the concerned State/UT;b) the efficacy of the distribution networks in distributing supplies meant for hospitals, health care institutions and others;

c) whether the available stocks are being distributed on the basis of an effective, transparent and professional mechanism; and d) accountability in regard to the utilisation of the supplies of oxygen allocated to each State/UT.

5.1 State wise O2 audit committees must be put in place, as per Supreme Court mandate.

5.2 In order to ensure judicious use of oxygen, audit of hospitals should be conducted including an audit of pipeline system of hospitals. Conduct of such audits reduces 10%-20% of oxygen use.

5.3 Guidance protocols may be developed for home based or facility based isolation and self-monitoring programs and non-hospital covid care facilities. For example, if facility has only oxygen cylinders', oxygen consumption logs must be maintained and reviewed twice daily.

5.4 There should be a buffer of at least 6 cylinders in the rural settings, to accommodate for delays and surge, or enough time to transfer to another facility.

5.5 If facility has oxygen concentrator (5 to 10 litre /min) there must be a back-up power plan in place, in case of electricity failure. Or enough stored oxygen in cylinders for safe transport elsewhere.

5.6 All PSA plants need to be well maintained and monitored for which hospitals may enter arrangement with third-party.

5.7 **Oxygen stewardship program:** Every hospital should have committee for this like they have for hospital infection control (HICC) etc. All hospitals oxygen infrastructure/use should be inspected and certified in routine like other systems of hospitals get audited.

5.8 **Audit of hospitals:**

(i) Audit of oxygen to also cover cleaning of oxygen pipelines

(ii) Hospitals to optimize use of oxygen and reduce demand by 10-15 percent

(iii) Hospital Oxygen Team

(iv) Hospitals to have back-up systems

(v) Alerts to be created for Hospitals to raise red flag on LMO/Oxygen stock

(vi) Real time tracking of tankers

(vii) Triage patients in hospitals

(viii) To have a mechanism to know how much they need in next 24 hours.

Way forward: The recommendations of the NTF can be classified into measures to be taken at the level of

(i) the hospitals, such as oxygen audit, cleaning of the pipelines, triage system for patients, etc;

(ii) the states, such as tracking of tankers, creating alert system for hospitals, war room at state level for real time tracking systems, reports by oxygen audit committees, etc;

(iii) at Central level, such as procurement of cylinders, enhancing production and supply of oxygen, mapping oxygen for states as per formula that includes case load, infrastructure of beds, projected requirements, etc, and the need for a supply plan which is also dynamic and flexible.

The members do recognize the hard work and efforts made by the Government in the management of the pandemic of the present magnitude. The members of the NTF appreciate that many of their recommendations were already under implementation and work on others has also already commenced.

ACTION TAKEN ON ISSUES RELATED TO OXYGEN

With respect to Oxygen management for COVID19, a series of proactive steps were taken by Government of India last year, since March/April 2020, when the first wave of the pandemic hit the country. The demand for medical oxygen went up in the country last year, reaching a high on 3095 MTs on 29th September 2020, after which a decline in cases and in demand for oxygen was witnessed.

During the first wave, GoI had facilitated steps to enhance the availability of liquid oxygen, as well as, storage capacity of liquid medical oxygen (LMO) in hospitals and by way of cylinders. Among the steps taken during the first wave were: issue of licences for industrial gas manufacturers to manufacture medical oxygen, on directions of Empowered Group – 2 (EG-2) the manufacturers of liquid oxygen enhanced daily production of liquid oxygen, new LMO units were started at Modinagar (UP) and Pune (Maharashtra), liquid oxygen available with the Steel plants was also used for medical oxygen. Further, industrial oxygen cylinders were allowed to be used for medical purposes as per a well-defined SoP, new cryogenic liquid medical oxygen (LMO) tanks were installed in hospitals across the country, manufacturing and procurement of lakhs of oxygen cylinders was facilitated, permission was given for domestic movement of ISO cryogenic containers, a tender was floated for import of liquid oxygen, new PSA plants were sanctioned by both Central and State governments, and manufacturers of the PSA plants were brought onto GEM platform to facilitate orders directly by the State governments, among other interventions taken up.

This year, in April 2021, the demand for liquid medical oxygen saw a sudden spike, touching an average of 5500 MTs a day by the third week of April 2021, and rapidly increasing to a daily average consumption of 7100 MT in the fourth week of April 2021. This increased further to the

highest consumption level of 8943 MTs a day on 9th May 2021. The action taken during the first wave of the pandemic last year helped to quickly put in place the mechanisms for enhanced production with the manufacturers in private sector, enhancing the production and utilization of oxygen available with the Steel plants including in their storage, use of industrial cylinders for medical use, use of LMO storage capacities available with hospitals, ISO containers were imported and used for domestic movement based on policy action taken in September last year, etc.

As such, the action taken on issues related to medical oxygen management during COVID19 includes the actions that were taken during last year while handling the first wave of Covid19, while some others were initiated based on learnings from the first wave. Following is an overview of the action taken by Government of many of the key issues related to oxygen management, as well as action on other important aspects on which substantive work has already commenced and is being regularly monitored.

Capacity Augmentation

i) Enhanced production in steel plants and other initiatives through Ministry of Steel - Oxygen is used in steel plants in gaseous form for manufacturing steel. All these Oxygen plants are also designed to produce a specific quantity of liquid oxygen, liquid argon and liquid nitrogen as associated products along with producing gaseous oxygen. By minimizing use of gaseous oxygen by the steel plants and minimising production of other liquid products (Argon and Nitrogen) which are also required for manufacturing steel, the production of Liquid Oxygen has been enhanced to a maximum technical limit and has resulted in immediate enhancement of LMO production/ capacity.

ii) At the same time, a system for daily real time monitoring of the production in Steel plants and distribution of oxygen to States/UTs was put in place for dynamic, real time decision making. A copy of the format is as below.

Steel Plants Names	Oxygen Plant Name	Dispensing Capacity (24x7) 3 shifts	LMO Production Capacity	Liquid Production daily	Maximum Storage capacity	Stock Available (Including Dead + Safety Stock)	Dead stock to maintained	Safety Stock (@0.50 Day)	Available stock for Supply EOD (Excluding dead and Safety)	Total Supply made on 24-05-21	LMO supply (State-wise)	LMO Allocation (State - wise)
SAIL Bhilai	Own	80	40	40	4000	2375.61	600	480	1295.61	31.06	MP-31.060	MP – 40
SAIL Bhilai (BOO Plant Linde)	BOO Praxair	415	350	324.47	5000	2492.02	600	920	972.02	139.71	MH- 20.80 MP-16.94 CG-27.83 TG-18.80 AP- 55.34	MH – 80 MP – 57 CG – 118 TL- 60
SAIL Bokaro	Own	60	20	24	2000	1140	415	260	465	16.69	PB - 16.69	UP – 20 PB – 20 BR - 50
SAIL Bokaro (BOO Plant Index)	INOX	300	170	164	5000	1819	1000	640	179	139.33	JH - 29.25 BH - 35.04 UP - 15.46 PB - 15.78 TN - 43.80	JH – 50 BR – 60 UP – 70 MP – 33 PB – 40 CG – 40
SAIL Durgapur	Own	100	43	44	2000	1324	600	640	84	48.42	WB - 48.42	WB – 77 UP – 20 AS- 23
SAIL Durgapur (BOO Plant Linde)	BOO	150	85	93	2200	696	300	200	196	72.9	WB - 57.50 AS - 15.40	WB – 40 UP – 20 AS- 40
SAIL Raurkela		150	48	63	3420	2246	1000	530	716	197.92	AP 19.66 OD 9.62 UP 16.62 TG 13.92 TN 45.58 KL 92.52	AP – 20 OD- 25 TL – 24 TN- 50 KL- 50
SAIL Raurkela (BOO Plant Linde)	Linde BOO Plant RKL	300	310	331	2000	709	500	0	209	386.54	MP 16.21 CG 53.71 AP 81.84 OD 50.03 KR 19.72 TL 139.49 TN 25.54	HR- 30 CG- 37 OD- 25 DL- 40 TN- 46 KL- 42
SAIL Burnpur	OWN	135	70	70	3800	3091.91	1600	700	791.91	57.86	WB-32.15 UP-15.97 BR-15.97	WB- 50 AS- 55 UP – 90 RJ – 40 BR – 30

iii) Apart from the current generation of LMO, the steel sector has made available the liquid oxygen available in its storage tanks for medical use. Further, the safety stocks in the storage tanks of liquid oxygen at all locations has been brought down to 0.5 days from 3.5 days previously, in order to make available additional LMO. This was decided in April 2021.

iv) Enhancing production of medical oxygen by other manufacturers - Apart from the steel manufacturers, other manufacturers such as Linde, Inox, Air Liquide, RIL Jamnagar also enhanced the production of medical oxygen in their respective plants and consequently, the daily production of liquid oxygen, which was

an average of about 5700 MTs per day in August 2020, increased to a high of 9690 MTs on 13 May 2021.

This action was taken up in early April 2021 itself, on the directions of the Empowered Group of Secretaries (EG-2). In this manner, in the month of April 2021 alone, about 3000 MTs of daily production of liquid oxygen was added.

v) Restrictions on industrial use of oxygen - In order to further enhance the availability of oxygen for medical use, MOHFW, vide order dated 18.04.2021, has restricted industrial use of oxygen.

vi) Conversion of nitrogen generating plants (in private sector such as in food processing) into oxygen producing plants is being implemented and is envisaged to give additional oxygen of 45 MTs a day.

vii) Issuing licences to industrial gas manufacturers to manufacture medical oxygen - Based on deliberations between EG2 and Drug Controller General of India (DCGI), an order dated 07.04.2020, was issued by the DCGI to industrial gas manufacturers to be allowed licence for manufacturing medical oxygen within 24 hours of receiving the application for the same by the DCGI (copy enclosed).

viii) Field hospitals have been successfully set up and utilized, such as the facilities at Delhi and Ahmedabad set up by DRDO and non-government entities. Besides, field hospitals have been set up at some oil refinery sites to utilize the gaseous oxygen at locations such as Panipat and Hissar in Haryana, Dolvi in Maharashtra, Bina in Madhya Pradesh, Rajasamand in Rajasthan, Kochi in Kerala, Hazira in Gujarat, Bellary in Karnataka, etc.

ix) One lakh oxygen concentrators are in the process of being procured under PM CARES Fund through ONGC for use in rural areas.

A Dynamic Framework for Allocation of Oxygen

i) Allocations of oxygen to States/UTs were made through a consultative process of detailed deliberations, conducted with senior officials of the critically affected States/UTs, along with relevant Ministries, and manufacturers/suppliers of liquid oxygen, and other stakeholders.

ii) The framework for Allocation Plan is dynamic, and it has been updated numerous times between 15.04.2021 to 29.05.2021, based on intensive consultations with Ministries, and feedback from States/UTs and Manufacturers.

iii) While the active case load of the State/UT was the primary determinant of oxygen allocation, other factors such as doubling rate, available medical infrastructure, etc were also given due consideration. In addition, need of pharma, military and air force establishments were also taken into account while making allocations.

iv) Special allocations over and above the allocation plan were also made to meet the emergency needs of States/UTs.

Logistical Support to Oxygen Transportation

Considering the near simultaneous spike in demand for medical oxygen in the high-burden States, resulting in pressure of heavy demand on the limited manufacturing plants in these areas, it became imperative to additionally tag the rapidly increasing demand for LMO to sources of liquid oxygen in the Steel Plants on the eastern side. To support the movement of the liquid oxygen from the Steel Plants, a logistical plan that included support from the Air Force and Railways was put in place. Details are shared as follows:

i) Transportation of Oxygen by Rail - Railways is being used for long distance transport of tankers through Roll On – Roll Off (RORO) service and ISO containers. It is submitted that with a view to ensure that the medical oxygen travels from supply point and reaches its destination without any interruption or delay, the Indian railways is running Oxygen Express which is a double engine train and which gets a green corridor from supply point to destination. As on 09th June 2021, a total quantity of 28,060 MTs have been delivered to various states by Oxygen Express and another 500 MT were in transit.

ii) Support by Air - Indian Air Force supported 13 states for domestic movement of tankers, 1066 sorties in which 690 tankers were airlifted corresponding to about 12000 MT of LMO capacity. Besides, Indian Air Force also supported airlifting of 153 containers corresponding to 2681 MT of LMO capacity from overseas locations through 118 sorties.

iii) Empowered Group-IV is taking action on refining the transport and logistic plan with the help of experts from various fields including supply chain management, as well as through collation of all relevant data points.

IT based Oxygen Management Systems

i) National Health Authority (NHA) is currently developing an Oxygen Demand Aggregation System (ODAS) to ascertain demand for medical oxygen from all medical facilities based on bed availability and occupancy, and aggregating them at the state level. At least, 10 states such as Kerala, Punjab, Karnataka, Assam, Chhattisgarh, Delhi, Meghalaya, etc. have developed their own portals for ascertaining oxygen demand from hospitals on daily basis. ODAS would connect to such state

portals and also provide services for connecting with hospitals wherever state portals are not available.

ii) An Oxygen Digital Tracking System (ODTS) to track the daily allocations of oxygen, their dispatch and deliveries, including movement of oxygen tankers dispatched, delivered, as well as tankers in transit has been developed and put in place by Government of India on 1st May 2021.

iii) In order to manage the logistics of tanker movement, from dispatch to recipient hospitals, with close monitoring using IOT, GPS and other IT based tools to track each tanker, MOHFW has advised States/UTs to manage the logistics of tanker movements vide letter dated 08.05.2021.

iv) Barcoding of Oxygen Concentrators – A portal is being developed by MOHFW and ONGC along with NIC for barcoding and tracking of 1,00,000 Oxygen concentrators being provided under PM-CARES.

Augmentation of Tankers and ISO Containers

i) Augmentation in availability of tankers – India has 1,224 oxygen tankers (16,732 MT capacity). Efforts have been made to increase availability of oxygen tankers through conversion of 50% of existing Nitrogen & Argon tankers to transport Oxygen – about 528 tankers had been converted. Besides, M/s IOCL had deployed new and converted LNG tankers for use for medical oxygen transportation.

ii) 214 ISO containers have been imported and made available to States for transportation of oxygen. Another 204 ISO containers were in pipeline through various private and govt parties. Of the total 418 ISO containers, IOCL is arranging 208 ISO Containers. Of this 50 ISO Containers are being manufactured in India.

iii) 250 number of LOX cryogenic containers with a capacity of 500 litres each have been procured by IOCL for enhancing storage in hospitals. The allocation for the same has also been done by MoHFW.

Cylinders

i) Permission for use of industrial oxygen cylinder for medical use after following due process of purging was given by PESO on 22.04.2020.

ii) Import of cylinders has been notified on 15.05.2021 as permitted without need for prior permission of PESO for next six months, subject to weight and hydro testing once they are sent to refillers. This eases the availability of oxygen cylinders further.

iii) Augmentation of availability of cylinders – 1,02,400 oxygen cylinders were procured in April and May of 2020 and distributed to States to enable easier access of medical oxygen to end users.

iv) Further, orders have been placed for additional 1,27,000 cylinders on 21/04/2021 and deliveries of the same have started. The said procurement includes 54,000 jumbo cylinders (D type) as well as 73,000 regular cylinders (B type). Of these, nearly 24,000 have been distributed to States/UTs. In addition, 1.5 lakh SPO2 based oxygen control systems cylinders are being procured by DRDO.

v) Additionally, PESO has also introduced relaxations for domestic movement of ISO tank containers carrying liquid oxygen in September 2020 itself.

vi) Efforts were made since April 2020 to get cryogenic tanks installed in hospitals and medical colleges and enhance storage capacities, increase domestic manufacturing of cylinders for purchase by hospitals, States and Central Government, and also track the availability of cryogenic tankers and the conversion of

nitrogen and argon tankers that had been permitted for movement of LMO. The quarterly progress in this regard may be seen as below:

Capacity Enhancement of Cryogenic Tanks, Tankers and Medical Oxygen Cylinders

Date	As on 31/03/2020	As on 30/09/2020	As on 31/12/2020	As on 21/05/2021
No of Cryogenic Tanks installed in Hospitals across India & Storage Capacities	**609**	**688**	**727**	**905**
	5959 KL	6828 KL	7374 KL	8915 KL
No of Cryogenic Tankers & Capacities	**1040**	**1132**	**1141**	**1799** (including conversion)
	12480 MT	15045 MT	15527 MT	24820 MT (including conversion)
Medical Oxygen Cylinders (Nos)	4,35,382	876031	10,76,031	**11,19,000**

Action on Creation of Reserve Storage Points

i) MOHFW has advised States/UTs to identify geographically distributed emergency reserve storage points, which are to be managed by senior officers for ensuring timely supply of oxygen to hospitals in case of SOS/emergency call. They were also advised to widely disseminate the contact details of such senior officers.

ii) PESO has examined relaxation of regulations for installation of LMO cryogenic tanks in hospitals, for upto 10 KL capacity and beyond. As per extant guidelines, clearance of 5 mtr. is required along with parking space for LMO tanker, and for capacity over 10 KL upto 20 KL a clearance of 7.5 mtr. will be required.

Import of LMO

Considering the continuous need to bolster the oxygen supply in the country, as an urgent measure, a total quantity of 1385 MT of LMO in several consignments have been imported into the country from UAE, Bahrain, Kuwait, Qatar, Singapore, etc. These were made available to NCR Delhi (140 MT), Karnataka (485 MT), Maharashtra (180 MT), Rajasthan (60 MT), Tamil Nadu (200 MT), Andhra Pradesh (200 MT), Kerala (80 MT), Goa (40 MT) and more are in the pipeline for the states as per their need. Additional quantity is also tied up for import through M/s Ultra-Pure Gases for the months of June & July 2021.

PSA Plants

All large hospitals and hospitals located in remote areas need to have own oxygen generation system to reduce dependence on external supply sources, to the extent possible. As such, Government of India is supporting the States for establishment of PSA Oxygen generation plants.

i) In the first Phase, 162 PSA plants (154.19 MT capacity) were sanctioned by MoHFW in 32 States/UTs from PM CARES fund. Of these, 147 plants have been delivered, 117 plants have been installed and gas generation has begun in 115 plants. All these plants will be commissioned by June end.

ii) Overall, more than 1,600 PSA plants - 1,213 under PM Cares by MoHFW & DRDO, 108 by MoPNG, 23 by Ministry of Power, 40 by Coal India, 13 from Foreign Aid and around 300 by State Governments are being established. Nearly 2,000 MT of oxygen is expected to be generated through PSA plants. The EG-2 (now reconstituted as EG-4) regularly monitors the establishment of the PSA plants.

iii) All States have been advised by MoHFW to prepare an action plan expeditiously for establishment of PSA plants in all public

and private hospitals on priority basis, as per communication dated 25 May 2021.

iv) National Medical Commission has amended their Regulations to make it mandatory for all the Medical Colleges to establish PSA plants within six months.

v) States have also been advised to appropriately amend Clinical Establishment Act, 2010 to make PSA plants mandatory for all clinical establishments.

vi) MOHFW, vide letter dated 24-May-2021, issued to States/UTs have provided guidance regarding proper running and maintenance of PSA plants. Further, 85 master trainers have been identified and trained in States with the help of Ministry of Skill development, Naval dockyard, Vishakhapatnam, and IIT Kanpur. The PSA plants being procured by MoHFW have a 3 Year warranty followed by 7 years of Annual Maintenance Contract (AMC) to ensure that maintenance support is available.

Rational Use of Oxygen and Oxygen Audit

i) MOHFW has issues detailed guidelines for Rational Use of Oxygen and Oxygen Audit to all the States/UTs on 25.09.2020 which had been further revised and issued on 25.04.2021. These guidelines cover various aspects of oxygen management including setting up of state-level oxygen monitoring committees, triaging patients in hospitals, target SPO2 level (92%-94%), etc.

ii) Most States/UTs had nominated Senior IAS officers for oxygen management during the pandemic. In addition, Senior IAS officers from Government of India have also been nominated to the State Audit Committees.

iii) As on 09.06.2021, 34 States/UTs have constituted State Level Audit Sub-groups/ Committees and meetings have been held of

22 such Committees. The rest of the States/UTs are also of initiating this work.

iv) The State Audit Sub-Groups have started deliberating on various issues mentioned in the ToRs given in the orders of the Supreme Court including transparent and scientific distribution of oxygen based on caseloads, efficient transportation, use of IT portals and effective monitoring through war rooms.

Protocols for Home care/Semi-Urban and Rural Areas

i) MOHFW has issued guidelines dated 05.05.2021 for management of asymptomatic/mild cases which are under home isolation. Further, Guidance Note has been prepared and circulated to States on 08.06.2021 regarding oxygen concentrators in primary health facilities.

ii) MOHFW has issued advisory dated 16.05.2021 to States/UTs to communicate SOPs on aspects of oxygen management in suburban, Rural & Tribal areas.

War room

Real time oxygen War Room has been set up for monitoring of movement and supply of Medical Oxygen-Virtual Central Control Room including senior officers of Additional Secretary/Joint Secretary rank from various Ministries/Departments like Health, Industry, MHA, MORTH, Railway, Steel along with senior officers of States/UTs to monitor production, movement, supply of oxygen. These senior officers of Govt of India and States/UTs share information/problems and immediate solutions on real times basis 24 Hours every day.

Way Forward

The Empowered Group on Oxygen (EG-4) is continuously working to ensure installation and commissioning of PSA plants, procurement of oxygen concentrators, oxygen cylinders and ISO containers, in a timely manner. Private sector is being encouraged to strengthen their manufacturing capacities and public sector units are also exploring means to enhance production through technical interventions. States are also developing comprehensive medical oxygen plans and strengthening the infrastructure for medical oxygen in the public and private sector. Ten States namely, Andhra Pradesh, Madhya Pradesh, Maharashtra, Telangana, Uttarahand, Kerala, Punjab, Tamil Nadu, Uttar Pradesh and Rajasthan have finalized such plans till now.

Interim Report of Oxygen Audit in NCT of Delhi

June 2021

Submitted by

Sub-group constituted by Hon'ble Supreme Court of India

MEMBERS OF THE SUBGROUP

Dr. Randeep Guleria
Director
AIIMS New Delhi

Sh. Subodh Yadav
Joint Secretary, DoWR
Jal Shakti Ministry
Govt of India

Dr. Sandeep Budhiraja
Clinical Director & Director – Internal Medicine,
Max Healthcare, Delhi

Sh. Bhupinder S Bhalla
Principal Secretary (Home)
Govt of NCT Delhi

Dr. Sanjay Kumar Singh
Controller of Explosives
PESO

Contents

Executive Summary

The hon'ble Supreme Court of India, during the hearing of special leave petition (CIVIL) Diary No (s). 11622/2021, ordered the constitution of a National Task Force, which will provide a public heath response to the pandemic on the basis of a scientific approach. The National Task Force, drawn out of renowned national experts, will in turn constitute subgroups/committees for each state and UT for carrying out an oxygen audit. The hon'ble Court also ordered the constitution of a subgroup/ subcommittee for NCT of Delhi.

The subgroup consists of Dr. Randeep Guleria, Director AIIMS New Delhi; Dr. Sandeep Budhiraja, Clinical Director & Director, Internal Medicine, Max Healthcare; Sh. Subodh Yadav, Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India; Sh. Bhupinder S Bhalla Principal Secretary (Home), Govt of NCT Delhi and Dr. Sanjay Kumar Singh, Controller of Explosives, PESO. The subgroup was assisted by various officials from Department of Promotion of Industry & Internal Trade; All India Institute of Medical Sciences, New Delhi; Petroleum & Explosives Safety Organization (PESO) and Govt of NCT Delhi. The subgroup met virtually through videoconferencing on 10.05.21, 11.05.21, 12.05.21, 13.05.21, 15.05.21, 18.05.21 and 21.05.21.

The subgroup drafted a proforma to calculate the accurate oxygen requirement of NCT of Delhi. This was circulated to all the hospitals situated in NCT of Delhi. It aimed to collect data pertaining to medical oxygen requirement (by assessing number of oxygen beds, HFNO, NIV and ventilators; both installed capacity and actual occupancy and use by patients) by various healthcare facilities. This was done to ensure that installed capacity could be differentiated both from occupancy and actual use. The form was to be duly signed by Medical Superintendent/ Director under their personal undertaking and could be used as an Affidavit. It was informed that Govt of NCT Delhi is also collecting data on daily basis at their COVID portal from the various hospitals situated in Delhi.

The collated data was discussed during the deliberations of the subgroup. A lot of apprehensions were voiced regarding the quality of data for oxygen requirement

that was collected through the proforma and that this data cannot be relied upon for arriving at the requirement. Reliability of the data was low because of errors in calculation of oxygen use.

It was agreed that with the fall in new cases and positivity rate of COVID-19, with setting up of PSA plants in various hospitals of Delhi and with increased availability of oxygen concentrators, the average daily requirement of LMO has come down and should be approx. 400 MTs for NCT of Delhi. The remaining LMO can be diverted to other areas which are facing an acute shortage and need LMO urgently. It was decided that the group can meet again to review the situation in coming days and again review the data.

It was decided to have an "Oxygen Stewardship Programme" in Delhi Hospitals, the proforma for which has been drafted by the subgroup. The Govt of NCT Delhi was requested to make a presentation on internal allocation of oxygen and for drafting a proforma for optimising the allocation of LMO.

Background Information & Terms of Reference

Ref: Item no 35 Court 5 (Video Conferencing) SECTION XIV
Special Leave Petition (CIVIL) Diary No (s). 11622/2021

(Arising out of impugned final judgment and order dated 01-05-2021 in WP(C) No. 3031/2020 and 04-05-2021 in WP(C) No. 3031/2020 passed by the High Court of Delhi at New Delhi) Dated: 06-05-2021

The purpose of conducting oxygen audit is to ensure a measure of accountability for the proper distribution of oxygen supplies made available by the Union Government to the States/UTs. For the purpose of facilitating the audit, the National Task Force will constitute sub-groups/committees for each State/UT comprising:

1) An officer of the State/UT Government not below the rank of Secretary to the State Government.
2) An officer of the Union Government not below the rank of Additional/Joint Secretary.
3) Two medical doctors in the State/UT concerned including at least one with administrative experience of managing the medical facilities of a hospital; and
4) A representative from the Petroleum and Explosives Safety Organisation (PESO).

A subgroup has been constituted by Hon'ble Supreme Court of India to carry out an Oxygen Audit exercise for NCT Delhi with following terms of reference:

- To ensure accountability in respect of the supplies of oxygen provided to every State/UT.
- To ensure that the supplies which have been allocated are reaching their destination; that they are being made available through the distribution network to the hospitals or, as the case may be, the end users efficiently and on a transparent basis.
- To identify bottlenecks or issues regarding the utilization of oxygen.

Details of Subgroup

The subgroup consists of following members:

1. Dr. Randeep Guleria	Director &Prof., Department of Pulmonary Medicine & Sleep Disorders, AIIMS New Delhi
2. Dr. Sandeep Budhiraja	Clinical Director & Director, Internal Medicine, Max Healthcare
3. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
4. Sh. Bhupinder S Bhalla	Principal Secretary (Home), Govt of NCT Delhi
5. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO

The subgroup was assisted by various officials from Department of Promotion of Industry & Internal Trade; All India Institute of Medical Sciences, New Delhi; Petroleum & Explosives Safety Organization (PESO) and Govt of NCT Delhi. Subgroup met virtually through videoconferencing on 10.05.21, 11.05.21, 12.05.21, 13.05.21, 15.05.21, 18.05.21 and 21.05.21. *(Annexure I)*

Broad principles for oxygen audit:

- COVID 19 pandemic is a dynamic situation and being a moving pandemic, the requirement of Liquid Medical Oxygen (LMO) would vary from one region to other. Delhi has seen the peak of COVID 19 cases on 2nd May and thereafter, the number of new COVID 19 positive cases and positivity rate has come down drastically, thereby bringing down the oxygen requirement.
- Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, appraised the group that the current production capacity for LMO is 7,300 MTs, while the allocation done to various states is 10,500 MTs. As a result, LMO reserves which are 47,800 MTs are depleting and another 30,000 MTs including LMO can be utilised from reserve. She stressed upon the judicious utilisation of LMO as there is an increase in demand from Southern part of the country, while demand from Northern and Western part of the country has not gone down.
- There is a need to increase the availability of medical oxygen by adopting best practices for oxygen conservation like maintaining a target saturation of 92 -94% using various modalities of medical oxygen administration i.e. face mask, NRBM, NIV, HFNO, and ventilator.
- Healthcare facilities should undertake Oxygen Audit on regular basis with the help of a Nursing Officer (Oxygen Nurse) and a Faculty Member/Physician (Medicine/ Pulmonary Medicine/Anaesthesia). CMC Vellore has a very robust oxygen audit protocol and similarly, Fortis Hospital in Mumbai brought down their oxygen requirement by 15% using oxygen audit tool.
- Best practices from other states/ cities i.e. can be replicated after making contextual modifications. *(Annexure II)* It was recommended that future interventions for ensuring adequate supply of medical oxygen such as liquid oxygen back up storage tanks should be explored.
- Oxygen audit in NCT Delhi was started in late April and is based on 24 hours medical oxygen consumption data, collected twice daily in a predesigned format. Nodal Officers have been identified in each hospital, having the responsibility of carrying out the same.

Formula for calculating LMO requirement:

- A query was raised on the formula to be used for calculating recommended oxygen requirement on non-ICU beds.
- The formula used by Government of India and the formula used by Govt of Delhi were discussed. It was clarified that formula used by GOI was devised by a group of experts and is used for making LMO allocation to various states. This formula assumes that only 50% of the non-ICU beds use oxygen. However, the formula used by the Government of Delhi assumes that all non-ICU oxygenated beds use oxygen. Calculations were then made using both formulae and discussed.
- It was clarified that COVID 19 patients admitted in a patient care facility are at various stages of treatment and not all would require oxygen administration, even when they are occupying an oxygen bed. Even though the hospital policy is to only admit moderate and severe disease requiring oxygen, many such patients no longer require oxygen during recovery but cannot be discharged, sometimes due to comorbidities or a waxing and waning course. They continue to occupy the 'Oxygen non-ICU beds' particularly if all the COVID beds in the hospital have oxygen capability or the non-oxygen COVID beds are full. This is the real-life experience of all major hospitals including AIIMS. Thus, assuming that all patients admitted on 'oxygenated non-ICU COVID' beds will need oxygen for calculating LOM, requirement will be an overestimation.
- GNCTD stated that the Delhi Government formula is based on ICMR Guidelines but no such guidelines were placed before the subgroup.

Collection of LMO data through proforma:

- Since this is a moving pandemic, medical oxygen requirement in a particular region/state is a very dynamic situation, which varies as days progress. Hence, it is extremely important to collate the actual current requirement of NCT Delhi.
- It was decided to collect and collate data pertaining to medical oxygen allocation made, supplies received and consumption of medical oxygen by various healthcare facilities. To collect the data on consumption of medical oxygen by various hospitals in Delhi, a format was drafted and approved by the subgroup. It aimed to collect data pertaining to medical oxygen requirement (by assessing number of oxygen beds, HFNO, NIV and ventilators; both installed capacity and actual occupancy and use by patients) by various healthcare facilities. This was done to ensure that installed capacity could be differentiated both from occupancy and actual use. The form was to be duly signed by Medical Superintendent/ Director under their personal undertaking and could be used as an Affidavit. *(Annexure III)*
- The subgroup was informed that the COVID portal of NCT Delhi carries columns pertaining to oxygen consumption and the same is also linked to the supply end for better supply chain management. It was suggested that the module can be modified to include the information asked in the proforma finalised by subgroup. Information generated from the COVID portal can be analysed by NCT Delhi on daily basis and once in a week, the information on oxygen requirement can be collected using the proforma finalised by the subgroup for its deliberations and further recommendations.

PESO study on Oxygen Supply in Delhi

Addl. Sec, DPITP, Government of India made a presentation on a study conducted by PESO with regards to liquid medical oxygen supply in Delhi and neighbouring states. Salient findings from the study are given below:*(Annexure IV)*

- Sufficient quantity of LMO is available with major hospitals and refillers in NCT Delhi.
- Liquid medical oxygen tanks in Delhi were filled to the capacity of 71% in the morning of 10th May 2021 and it may not be possible to accommodate additional 700MTs, if supplied. *(Annexure V)*
- Average daily consumption of LMO in Delhi is 284 to 372 MTs.
- Inadequate infrastructure for storing 700 MTs of LMO.
- Delhi government has reserve of 122.50 MTs as of 10.05.2021 at 12 noon.
- Slow decantation process is increasing the turnaround time of tankers, which in turn is impacting medical oxygen supply chain.
- Overall, NCTD has surplus oxygen, which is affecting the LMO supplies to other states and are disaster in waiting, if it continues like this.
- Findings of the PESO study regarding LMO supply to Delhi may be shared with Govt of NCT Delhi for comments/clarifications.

Subsequently Delhi Government submitted a rebuttal to PESO study (Annexure VI)

- The data pertaining to the LMO storage capacity in hospitals of Delhi is not consistent with our records.

• Total hospitals having LMO	89
• LMO capacity of 89 hospitals	670.03 MT
• Oxygen capacity in cylinders of 89 hospitals	94.1 MT

- Study says that major hospitals have more than 12 hours of stock. Even then, 12 hours of stock is not enough in the face of uncertain supplies. In

fact, the uncertainty of supply is demonstrated by the fact that suppliers have not given us the schedule of replenishing the stock, nor are they following any consistent schedule of supply.

- The hospitals and the health facilities are required to maintain adequate LMO stock so that they are in a position to look after/treat the COVID patients as per the protocol.
- It has been the endeavour of Delhi government to regularly replenish the LMO stock in the hospitals and refillers to avoid the SOS situation which the state witnessed after 24th April on a consistent basis.

LMO consumption data as on 12.05.21 (Annexure VII)

- Officers of Delhi government, using their existing network of nodal officers at each COVID hospital who report daily consumption of oxygen, collected data from COVID hospitals situated in Delhi in the proforma prepared by the subgroup. This data had been added to a spreadsheet for further calculations and was deliberated upon at length and the following observations were drawn from it.
- It was informed by officials of the Delhi Government who sent and received the proforma, that 213 hospitals are uploading data on the COVID portal of NCT Delhi and proforma finalised by the subgroup was sent to 260 hospitals. However, response had been received initially from 183 hospitals, which included all big hospitals of the city consuming the maximum portion of allocated LMO.
  - These 183 hospitals had shown 10,916 non-ICU hospital beds and 4,162 ICU beds.
  - During meetings of the sub-group, it was repeatedly noted that there was a gross discrepancy in the data recorded from these proformas.
  - *In the 4th meeting on 13th May, it was discussed that there is a gross discrepancy (about 4 times) in that the actual oxygen consumption claimed (1140MT) was about 4 times higher than the versus calculated consumption by formula for bed capacity (289MT). It was noted that four hospitals in Delhi i.e. Singhal Hospital, Aruna Asaf Ali Hospital, ESIC Model Hospital, and Liferay Hospital have claimed extremely high oxygen consumption with very few beds and the claims appeared to be clearly erroneous, leading to extremely skewed information and significantly higher oxygen requirement for entire state of Delhi.* Actual consumptions were estimated by recalculation after replacing the claimed use figures for these 4 hospitals with expected use figures using the calculation formula.
  - Oxygen requirement of NCT Delhi was calculated using various parameters as given below:

Parameter Used	LMO requirement
Actual Oxygen Consumption of 183 hospitals as per data from Govt. of NCT Delhi	1140 MT
Actual Oxygen Consumption after correcting erroneous reporting by 4 hospitals	209 MT
Recommended oxygen consumption as per GOI Formula	289 MT
Recommended oxygen consumption as per Delhi Formula	391 MT
Recommended oxygen consumption as per GOI Formula for total bed strength provided by Delhi Government on 3rd May 2021 (highest till date; 16272 non-ICU beds and 5866 ICU beds)	415 MT
Recommended oxygen consumption as per Delhi Government Formula for total bed strength provided by Delhi Government on 3rd May 2021 (highest till date; 16272 non-ICU beds and 5866 ICU beds)	568 MT

- During subsequent discussions after the meeting, it was noted that there were certain hospitals that had reported negative consumption. While some negative consumption may have occurred due to more supplies than use, in some cases the values were too large to be correct. The actual consumption data was thus again revised after deleting the negative values and replacing deemed erroneous values with recommended consumption values.
- During these discussions, it was also pointed out that in the data provided by Delhi Government for consumption from 29th April to 10th May, there were no negative consumption values, and the consumption did not exceed 350 MT on any of the recent days. However, the possibility of incomplete/ underreporting could not be excluded.
- There is a variation in the number of ICU beds and non-ICU beds reported in proforma compared to the total number of around 5500 ICU

beds and over 18000 non-ICU beds as stated to be functional by the Govt. of Delhi.

- Requirement of oxygen for balance ICU and non-ICU beds, home isolation, nursing homes and non-COVID healthcare should also be factored in while calculating oxygen requirement for NCT Delhi.
- Certain hospitals have responded that they do not have adequate oxygen supply to meet their daily demand.

Government of NCT Delhi submitted remarks on the abovementioned proceedings. (Annexure VIII)

LMO Consumption data on 15.05.21: Presentation made by Govt of NCT Delhi (Annexure IX)

- Principal Secretary (Health), Govt of NCT Delhi informed that data on oxygen requirement, gathered for 12th May on the proforma made by this subgroup, has been further updated after the last meeting and data from 214 hospitals has been fed into spreadsheet, however, it still lacked data from 2 to 3 big hospitals for e.g. GTB & LNJP hospital which have added 500 additional beds each for COVID 19 patients. In addition, some data on oxygen cylinders available with hospitals, refillers and certain other establishment is missing. Also, some buffer component needs to be factored in while calculating requirement.
- Oxygen requirement calculation sheet shared by GNCTD has lot of errors and input values from the sheet has been taken into consideration to calculate the oxygen requirement by the AIIMS team. As per the latest calculations (Annexure IX), the total O_2 consumption is 474MTs, while considering bed occupancy as on date (12593 oxygen beds and 4766 ICU beds) as per GNCTD formula it is 449.42 MTs, and it is 332MTs by GoI formula. Annexure IX, which is a spreadsheet (Sorted Ver 1.1 audit data of 216 hospitals dated 14 May 2021,) posted in the WhatsApp group on 15th May at 1850 PM by GNCTD, has the following errors:
    - Column AD should have been calculated using GoI formula based on existing beds in columns AB and AC. However, it has actually been calculated by summing up data in columns AG and AH which have data for occupied beds. Further, column AH uses the GNCTD formula for non-ICU beds, not the GoI formula.
    - Thus, column AD is actually GNCTD formula-based calculation for occupied beds.
    - Column AI is labelled as 'Sub-group formula.' Although there is no sub-group formula, assuming this to mean GoI formula of 50% use of non-ICU beds, the application is still wrong as it assumes 50% use in ICU beds (Column AF) while it should have used 50% use for non-ICU beds (Column AE).

- If the correct GoI formula were to be used (AE4*10*24*60/770000/2) + (AF4*24*24*60/770000), the figure in column AI would actually be 332MT as mentioned above.

- Due to the cylinders being not accounted and including a buffer stock, an error of 2 to 3% may be considered. In the current calculations, there are no large negative figures, as pointed out previously, however, there are certain hospitals having large positive variation for e.g. Mool Chand Hospital has variation of 800%. It was also informed that on direct enquiry with the hospital, it had been stated by them that their actual consumption is the correct value.
- A presentation was made by OSD, Health & Family Welfare, Govt of NCT Delhi and salient points from the same have been highlighted below:
  - It was mentioned that NCT of Delhi receives LMO supplies traditionally from neighbouring states of Haryana, Uttarakhand and UP. These have been largely tanker-based supplies and have during the peak pandemic period been erratic and unreliable. Container based supplies started from eastern part of the country: Jamshedpur, Durgapur and Kalinganagar, which added a degree of reliability and predictability. So was the case with special supplies from Jamnagar.
  - Total allocation being made to Delhi is 590 MTs, however, this allocated amount was made available only for three days between 4th May till 14th May.
  - Data presented was from 10th May onwards and it was assured that trends from 29th April onwards will be made available to the subgroup for evaluation.
  - Occupancy of COVID beds (ICU and Non-ICU oxygenated) is showing a downward trend, however, ICU occupancy as on date is still 90%, while oxygen use of non-ICU beds has come down to 70%.
  - Delhi had its peak on 2nd May and thereafter, the number of cases is showing a downwards trend.
  - It was clarified that only oxygenated beds have been taken into consideration while calculating oxygen requirement by the Delhi

Government formula, while the GOI formula considers all beds including non-oxygen beds.

- An assured supply should be made available to Delhi as delivery schedules are not being provided by the suppliers.
- It was reiterated that the situation is dynamic, however, adequate, and reliable supplies should be made available to NCT Delhi considering all logistical challenges.
- It was informed that data captured on the Delhi Govt portal was more reliable than data submitted in the forms created specifically by the sub-group and actual consumption as per portal data is 442 MTs. Requirement of LMO calculated from data captured using excel sheet is 490 MTs.
- It was concluded that total consumption of Delhi is not less than 500 MTs.

Quality of Data on medical oxygen consumption:

- Former DGHS, NCT Delhi submitted that there has been discrepancy in data being uploaded right from the day one because of the poor understanding of the demand calculation by end users.
- Lot of apprehensions were voiced regarding the quality of data and the data for oxygen requirement collected through the drafted proforma cannot be relied upon for arriving at the requirement. Reliability of the data is low because of errors in calculation.
- Officers of the Delhi Government attending the meeting suggested that data available on the COVID portal of the Delhi government may have more reliable information than that collected on the proforma made by the sub-group.
- The filled proformas are available with the Delhi government officers and it was suggested that these may be shared with the sub-group.
- Principal Secretary (Home), GNCTD stated that all the data is based on signed forms received from 214 hospitals, and these forms, in original, can be handed over to the Sub-group for record purpose and submission to the court if needed. The data in the spreadsheet can be verified from the forms as well.

Some other related points:

- Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, expressed anguish over the way the data was collated by Govt of NCT Delhi, as it still has lot of errors which have been pointed out. It is still not clear on what basis had an allocation of 700MT been sought by Govt of Delhi in the Supreme Court of India when collated data had so many gross errors and it took an oxygen audit to point out the same. It also appears that Govt of Delhi used a wrong formula and made exaggerated claims on 30th April. It was also evident that some hospitals could not differentiate between KL and MT and the same was not examined while projecting 700 MTs.
- Controller of Explosives, PESO informed that oxygen supply to Delhi and LMO tankers level are being monitored on daily basis and as per 8 am report on 13.05.2021 most of the LMO tanks in Delhi were filled with more than 75%, while few tanks were completely filled. It is obvious that there is excess oxygen supply in NCT Delhi, which is further substantiated by the fact that NCT Delhi has picked up only 11MT LMO from Air Liquide plant at Panipat by 11am on 13.05.2021. It was also pointed out that Delhi was unable to store all the LMO allotted to it and had asked the suppliers to hold oxygen in reserve at their own plants. *(Annexure X)*
- Tankers in Delhi are not able to offload oxygen and are lying idle as oxygen tanks in various hospitals are completely filled. In this regard, a complaint has been received from M/S Goel Gases that their tanker has been parked at LNJP hospital and could not offload oxygen for many hours, leading to breakdown in supply chain. *(Annexure XI)* Similar, instances have been observed at AIIMS, New Delhi.
- It was informed by Controller of Explosives, PESO that Delhi has built reserves of approximately 470 MTs. Current daily LMO requirement of Delhi should be less than 400 MTS, given the fact that an average of 463 MTs of LMO is being supplied to Delhi and much of it is being stored and not used on that day.

Oxygen Stewardship Programme:

- The subgroup decided to implement a system of "Oxygen Stewardship Programme" and resolved to draft a proforma for the same. Through this programme, opportunities for improvement in oxygen utilisation through self-evaluation will be identified by hospitals and shall serve as a quality improvement measure for optimising oxygen consumption. Hospitals should be encouraged to perform self-evaluation regularly so as to document progress in saving medical oxygen. GOI guidelines on Oxygen Audit can be utilised for drafting this proforma and should have a component addressing the same.
- A team of officials from AIIMS, New Delhi and Dr. Sandeep Budhiraja has drafted a proforma for "Oxygen Stewardship Programme". *(Annexure XII)*

Internal Distribution of LMO

- Delhi government has an established system of allocating LMO to various hospitals and refillers through a centralised "War Room" & "Oxygen Room" and it was decided that the Govt of NCT Delhi may be requested to make a presentation on the internal allocation of LMO during the next meeting of the subgroup. It was also suggested that the allocation data by Delhi Government for past 10-15 days may be presented before the subgroup for better understanding and making recommendations accordingly. Thereafter, A proforma for studying distribution network may also be drafted.

Principal Secretary (Home) & Member of the Subgroup submitted the comments of GNCTD on minutes of 5th Meeting of the subgroup. *(Annexure XIII)*

INTERIM RECOMMENDATIONS

On 13.05.2021, *it was suggested that a fixed quota should be available for NCT of Delhi on an assured basis and an additional quota should be available for Delhi to lift from plants by maximum 4 PM of the day, after which the unutilized additional quota should be made available for other States to utilize so as to ensure the available oxygen capacity does not go un-utilized. Principal Secretary Home, GNCTD after consulting his colleagues, submitted that the suggestion of having a cut-off time for the additional quota is not practical due to shortage of tankers, various extraneous factors including time taken by plants for filling up the tankers (on the previous day), traffic delays affecting the tanker movement, etc.*

After detailed discussions subgroup arrived at the conclusion that the current oxygen requirement of NCT Delhi ranges from 290 - 400 MT of LMO. Accordingly, it is recommended that 300 MT quota should be available for NCT of Delhi on an assured basis. An additional 100 MT of quota should be available for Delhi to lift from plants by maximum 4 PM of the day, (Next day quota will be released at 00:00 hours) after which the unutilized quota from this 100 MT should be made available for other States so that the available oxygen capacity does not go un-utilized. However, Principal Secretary Home, GNCTD expressed his reservations on linking the additional quota of 100 MT to a cut off time due to the reasons mentioned earlier. In addition, it is recommended that Govt of NCT of Delhi should keep a buffer stock of approx. 50 – 100 MT of Liquid Oxygen to cater to any exigency.

On 15.05.21*, Representatives from Delhi Government insisted on an assured allocation of 500 MTs. This was not agreeable to the Chairperson as it appeared from the data provided that 400 MTs is enough as assured and additional 100 MTs could be made available till 4pm. Also, given the drastic reduction in number of cases and installation of PSA plants in many hospitals, this requirement is bound to be significantly less. Subgroup decided to meet again to review situation, which has been very dynamic. Finally, as a compromise it was concluded that for the next few days Delhi may have an assured allocation of 500 MTs and if this is not consumed,*

it can be provided to other states. It was decided to meet again over the next 3 to 4 days and if the cases continue to decline and positivity rate also comes down this allocation may be significantly decreased. The Subgroup decided to seek more information on oxygen requirement as and when needed. In addition, it also decided to carry out random physical inspection of various hospitals as deemed appropriate.

***On 18.05.2021**, All members were informed of the meeting but Dr. Sandeep Budhiraja and Sh. Bhupinder S Bhalla did not attend the meeting. During the meeting it was agreed upon that, with the COVID 19 new cases and positivity rate falling dramatically; with setting up of PSA plants in various hospitals of Delhi and with increased availability of oxygen concentrators, the average daily requirement of LMO has come down and should be approx. 400 MTs for NCT of Delhi. The remaining LMO can be diverted to other areas which are facing an acute shortage and need LMO urgently. It was decided that the group can meet again to review the situation in coming days and again review the data.*

***On 21.05.2021,** it was decided to have an "Oxygen Stewardship Programme" in Delhi Hospitals, the proforma for which has been drafted by the subgroup and Govt of NCT Delhi was requested to make a presentation on internal allocation of oxygen and for drafting a proforma for optimising the allocation of LMO.*

Comments of Principal Secretary (Home) and Dr. Sandeep Budhiraja on the interim draft report has been added in totality as annexure XIV for reference.

ANNEXURE I

Dated: 11.05.2021

Minutes of the 1st Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

Ref: Item no 35 Court 5 (Video Conferencing) SECTION XIV
Special Leave Petition (CIVIL) Diary No (s). 11622/2021

(Arising out of impugned final judgment and order dated 01-05-2021 in WP(C) No. 3031/2020 and 04-05-2021 in WP(C) No. 3031/2020 passed by the High Court of Delhi at New Delhi) Date : 06-05-2021

A subgroup has been constituted by Hon'ble Supreme Court of India to carry out an Oxygen Audit exercise for NCTD with following terms of reference:

- To ensure accountability in respect of the supplies of oxygen provided to every State/UT.
- To ensure that the supplies which have been allocated are reaching their destination; that they are being made available through the distribution network to the hospitals or, as the case may be, the end users efficiently and on a transparent basis;
- To identify bottlenecks or issues in regard to the utilization of oxygen.

First meeting of the subgroup was held under the Chairmanship of Prof. Randeep Guleria, Director & Professor, Department of Pulmonary Medicine & Sleep Disorders, AIIMS, New Delhi on 10.05.2021 and was attended by the following officials:

1. Dr. Sandeep Budhiraja	Clinical Director & Director – Internal Medicine, Max Healthcare
2. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
3. Sh. Bhupinder S Bhalla	Principal Secretary (Home), Govt of NCT Delhi
4. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO
5. Dr. Rajiv Kumar	Professor, Urology & Sub Dean, AIIMS
6. Dr. Angel Rajan Singh	Assoc. Prof., Hosp. Admin., AIIMS
7. Dr. Vijaydeep Siddharth	Assoc. Prof., Hosp. Admin., AIIMS

Following are the discussion points and decisions taken during the meeting:

- Chairperson welcomed and apprised terms of reference to the sub-group. It was informed that National Task Force constituted by Hon'ble Supreme Court of India has to submit their findings/report as early as possible. He stressed upon the need to increase the availability of medical oxygen by adopting best practices for oxygen conservation like maintaining a target saturation of 92 -94% using various modalities of medical oxygen administration i.e. face mask, NRBM, NIV, HFNO, and ventilator.

- Healthcare facilities should undertake Oxygen Audit on regular basis with the help of a Nursing Officer (Oxygen Nurse) and a Faculty Member/Physician (Medicine/ Pulmonary Medicine/Anaesthesia). CMC Vellore has a very robust oxygen audit protocol and similarly, Fortis Hospital in Mumbai brought down their oxygen

requirement by 15% using oxygen audit tool. Best practices/established can be replicated after making pertinent contextual modifications. Chairperson also suggested that subgroup should also recommend future interventions for ensuring adequate supply of medical oxygen such as liquid oxygen back up storage tanks.

- Sub-group needs data pertaining to medical oxygen allocation made, supplies received and consumption of medical oxygen by various healthcare facilities. Representative of Govt. of India, Govt. of NCT Delhi and PESO were requested to extend all possible facilitation and coordination for making available the required data. It was also decided to draft formats for collation and analysis.

- Data pertaining to medical oxygen requirement (by assessing number of oxygen beds, HFNO, NIV and ventilators) by various healthcare facilities must be duly certified by Medical Superintendent/ Director and should be submitted under their personal undertaking.

- Members stressed upon the importance of validating the data provided by various healthcare facilities by carrying out oxygen audits physically at few big hospitals of Delhi, which are major consumer of medical oxygen. Chairman suggested having a dashboard for medical oxygen supply and its availability in NCTD with real time updates.

- Representative of Govt. of India, Govt. of NCT Delhi and PESO were requested to extend assistance by nominating individuals who can aid in carrying out oxygen audit. Prof. Rajeev Kumar, Dr. Angel Rajan Singh and Dr Vijaydeep Siddharth have been roped in from AIIMS, New Delhi for assistance by Director, AIIMS.

- It was decided to create a whatsapp/email group for faster dissemination of information among group members.

Issued with the approval of Chairperson.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin

Dated: 12.05.2021

Minutes of the 2ndMeeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

Secondmeeting of the subgroup was held virtually under the Chairmanship of Prof. RandeepGuleria, Director &Professor, Department of Pulmonary Medicine & Sleep Disorders, AIIMS, New Delhiat 7:00 pm on 11.05.2021 and was attended by the following officials:

1. Dr. Sandeep Budhiraja	Clinical Director & Director – Internal Medicine, Max Healthcare
2. Smt. Sumita Dawra	Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India
3. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
4. Sh. Bhupinder S Bhalla	Principal Secretary (Home), Govt of NCT Delhi
5. Dr. Ashok Kumar Rana	Director General of Health Services, Government of Delhi
6. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO
7. Dr. Rajiv Kumar	Professor, Urology & Sub Dean, AIIMS
8. Dr. Angel Rajan Singh	Assoc. Prof., Hosp. Admin., AIIMS
9. Dr. Vijaydeep Siddharth	Assoc. Prof., Hosp. Admin., AIIMS
10. Dr. Sonal	Medical Lecturer, Directorate of Family Welfare, Govt of Delhi

Following were the discussion points/decisions taken during the meeting:

Chairperson expressed concern over the availability of medical oxygen in other states of the country and stressed upon the fact that medical oxygen requirement in a particular region/state is a very dynamic situation, since it's a moving pandemic. Hence, it is extremely important to collate the actual requirement of NCT Delhi as on datewith the help of proforma drafted and approved by the oxygen audit subgroup.

Prof. Rajeev Kumar, did a preliminary analysis of the data provided by Delhi Government with regards to consumption of medical oxygen in Delhi and presented following observations:

- Oxygen audit in NCT Delhi was started in late April and is based on 24 hours medical oxygen consumption data, collected twice daily in a predesigned format.
- Nodal Officers have been identified in each 149 hospitals, having the responsibility of carrying out the same.
- There is gross error in actual consumption data uploaded by certain hospitals may be due to typographical error.
- Medical oxygen consumption as per actual bed occupancy was 250 tonnes in late April, 470-490 MT in 1st week of May and 900 MT as claimed on 10th May 2021.

DGHS, NCT Delhi submitted that there has been discrepancy in data being uploaded right from the day one because of the poor understanding of the demand calculation by end

users. They have tried to plug leakages and various other issues having an impact on medical oxygen consumption.

Smt. Sumita Dawra made a presentation ona study conducted by PESO with regards to liquid medical oxygen supply in Delhi and neighbouring states. Salient findings from the study are given below:

- Liquid medical oxygen tanks in Delhi were filled to the capacity of 71% in the morning of 10th May 2021 and it may not be possible to accommodate additional 700MT, if supplied.
- Average daily consumption of LMO in Delhi is 284 to 372 MT.
- Sufficient quantity of LMO is available with major hospitals and refillers.
- Inadequate infrastructure for storing 700 MT of LMO.
- Delhi government has reserve of 122.50 MT as of 10.05.2021 at 12 noon.
- Slow decantation process is increasing the turnover time of tankers, which in turn is impacting medical oxygen supply chain.
- Overall, NCTD has surplus oxygen, which is affecting the LMO supplies to other states and are disaster in waiting, if it continues like this.

It was decided to circulate the proforma to all hospitals in Delhi for ascertaining the medical oxygen requirement as on date by tomorrow noon i.e. 12.05.2021 and same shall be submitted before the subgroup for making interim recommendations on adequacy of LMO supplied to Government of NCT Delhi.Interim recommendation of the subgroup will be followed by onsite inspections of healthcare facilities and thereafter, subgroup will submit the final report.

Chairman, reiterated the need for having a dashboard for real time oxygen availability as it's a moving pandemic and demand fluctuation has to be addressed promptly.

Oxygen Audit subgroup will meet at 4:00pm on 12.05.2021 for making interim recommendations.

Issued with the approval of Chairperson.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin
AIIMS New Delhi

Dated: 13.05.2021

Minutes of the 3rd Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

Third meeting of the subgroup was held virtually under the Chairmanship of Prof. Randeep Guleria, Director & Professor, Department of Pulmonary Medicine & Sleep Disorders, AIIMS, New Delhi at 4:00 pm on 12.05.2021 and was attended by the following officials:

1. Dr. Sandeep Budhiraja	Clinical Director & Director – Internal Medicine, Max Healthcare
2. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
3. Sh. Bhupinder S Bhalla	Principal Secretary (Home), Govt of NCT Delhi
4. Sh. Ashish Verma	Principal Secretary (Health), Govt of NCT Delhi
5. Sh. Prince Dhawan	OSD, Health & Family Welfare Deptt., Govt of NCT Delhi
6. Dr. Ashok Kumar Rana	Former Director General of Health Services, Government of Delhi
7. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO
8. Dr. Rajiv Kumar	Professor, Urology & Sub Dean, AIIMS
9. Dr. Angel Rajan Singh	Assoc. Prof., Hosp. Admin., AIIMS
10. Dr. Vijaydeep Siddharth	Assoc. Prof., Hosp. Admin., AIIMS

Following were the discussion points/decisions taken during the meeting:

Chairperson welcomed all the members and invited comments/remarks of the members before arriving to any interim recommendation/s.

It was informed by Principal Secretary (Home), that team working on collection and collation of data, using proforma designed by the subgroup, has received data from 150 hospitals, while 160 hospitals have filled up the google sheet by 03:30pm. Subsequent to collection, the data needs to be reconciled and checked for accuracy, which will require sometime. It was requested that some more time may be allowed before it is presented to the subgroup.

Subgroup also deliberated upon the existing data of Govt. of NCT Delhi for arriving at some interim decision; however, it was unanimously and consciously decided to rely upon the data being collected through proforma, as the existing data is erroneous and a

decline in number of cases has also been witnessed over past few days, which will have an impact on requirement of medical oxygen in NCT Delhi.

Requirement of medical oxygen to be calculated using proforma, can be used as base for estimating future requirement and the situation may be reviewed after three or seven days. It was decided to adopt ICMR and Empowered Group guidelines for calculating oxygen requirement i.e. 10 litres per min for oxygen bed and 24 litre per min for ICU beds (employing HFNC, NIV, Ventilator)

It was decided to hold the next meeting of the subgroup virtually at 12:00 noon on 13.05.2021.

These minutes are issued with the approval of Chairperson.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin
AIIMS, New Delhi

Recommended oxygen consumption as per Delhi Government formula for total bed strength provided by Delhi Government on 3rd May 2021 (highest till date; 16272 non-ICU beds and 5866 ICU beds)	568 MT

- There is a variation in the number of ICU beds and non-ICU beds reported in proforma compared to the total number of around 5500 ICU beds and over 18000 non-ICU beds stated to be functional by the Govt. of Delhi.
- Principal Secretary (Home) submitted that requirement of oxygen for balance ICU and non-ICU beds, home isolation, nursing homes and non-COVID healthcare should also be factored in while calculating oxygen requirement for NCT Delhi.
- Group Director, Max Hospital brought into notice that certain hospitals have responded that they do not have adequate oxygen supply to meet their daily demand.

- Controller of Explosives, PESO informed that oxygen supply to Delhi and LMO tankers level are being monitored on daily basis and as per 8 am report on 13.05.2021 most of the LMO tanks in Delhi were filled to level of more than 75%, while few tanks were 100% filled. It is obvious that there is excess oxygen supply in NCT Delhi, which is further substantiated by the fact that NCT Delhi has picked only 11MT LMO from Air Liquide plant at Panipat by 11am on 13.05.2021. It was also pointed out that Delhi was unable to store all the LMO allotted to it and had asked the suppliers to hold oxygen in reserve at their own plants.

- JS, MOHFW suggested that findings of the PESO study regarding LMO supply to Delhi may be shared with Govt of NCT Delhi for comments/clarifications.

- The Chairperson expressed anguish over the fact that the oxygen tankers in Delhi are not able to offload oxygen and are lying idle as oxygen tanks in various hospitals are completely filled. In this regard, a complaint has been received from M/S Goel Gases that their tanker has been parked at LNJP hospital and could not offload oxygen for many hours, leading to breakdown in supply chain. Similar, instances have been observed at AIIMS, New Delhi.

- The subgroup was informed that the COVID portal of NCT Delhi carries columns pertaining to oxygen consumption and the same is also linked to the supply end for better supply chain management. It was suggested that the

module can be modified to include the information asked in the proforma finalised by subgroup. Information generated from the COVID portal can be analysed by NCT Delhi on daily basis and once in a week, the information on oxygen requirement can be collected using the proforma finalised by the subgroup for its deliberations and further recommendations.

- It was suggested that a fixed quota should be available for NCT of Delhi on an assured basis and an additional quota should be available for Delhi to lift from plants by maximum 4 PM of the day, after which the unutilized additional quota should be made available for other States to utilize so as to ensure the available oxygen capacity does not go un-utilized. Principal Secretary Home, GNCTD stated that he would need to consult with his colleagues who handle such supplies to examine the feasibility of the having a cut-off time for the additional quota. After consulting, he submitted that the suggestion of having a cut-off time for the additional quota is not practical due to shortage of tankers, various extraneous factors including time taken by plants for filling up the tankers (on the previous day), traffic delays affecting the tanker movement, etc.

After detailed discussions subgroup arrived at the conclusion that the current oxygen requirement of NCT Delhi ranges from 290 - 400 MT of LMO. Accordingly, it is recommended that 300 MT quota should be available for NCT of Delhi on an assured basis. An additional 100 MT of quota should be available for Delhi to lift from plants by maximum 4 PM of the day, (Next day quota will be released at 00:00 hours) after which the unutilized quota from this 100 MT should be made available for other States so that the available oxygen capacity does not go un-utilized. However, Principal Secretary Home, GNCTD expressed his reservations on linking the additional quota of 100 MT to a cut off time due to the reasons mentioned earlier. In addition, it is recommended that Govt of NCT of Delhi should keep a buffer stock of approx. 50 – 100 MT of Liquid Oxygen to cater to any exigency.

It was decided to hold the next meeting of the subgroup on 17.05.2021 for reviewing the medical oxygen situation in NCT Delhi. These minutes have been seen and approved by the subgroup.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin
AIIMS, New Delhi

Dated: 19.05.2021

Minutes of the 5th Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

Fifth meeting of the subgroup was held virtually through video conferencing under the Chairmanship of Prof. Randeep Guleria, Director & Professor, Department of Pulmonary Medicine & Sleep Disorders, AIIMS, New Delhi at 07:00pm on 15.05.2021 and was attended by the following members:

1. Dr. Sandeep Budhiraja	Clinical Director & Director – Internal Medicine, Max Healthcare
2. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
3. Sh. Bhupinder S Bhalla	Principal Secretary (Home), Govt of NCT Delhi Govt of NCT Delhi
4. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO

The meeting was also attended by the following officials:

1. Smt. Sumita Dawra	Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India
2. Sh. Ashish Verma	Principal Secretary (Health) Govt of NCT Delhi
3. Sh. Ashish Kundra	Principal Secretary, Transport Deptt., Commissioner, Govt of Delhi
4. Dr. Ashok Kumar Rana	Former Director General of Health Services, Government of Delhi
5. Shri Udit Prakash Rai	Director, Education, GNCT of Delhi
6. Sh. Prince Dhawan	OSD, Health & Family Welfare Department, Govt of Delhi
7. Dr. Rajeev Kumar	Professor, Urology & Associate Dean, AIIMS, New Delhi
8. Dr. Angel Rajan Singh	Assoc. Prof., Hosp. Admin., AIIMS, New Delhi
9. Dr. Vijaydeep Siddharth	Assoc. Prof., Hosp. Admin., AIIMS, New Delhi

Following were the discussion points and decisions taken:

- At the outset, Chairperson informed the house that a meeting of National Task Force for COVID 19 was held today morning i.e., 15.05.2021, where various member states presented their oxygen requirement. He also informed that there is huge surge in COVID 19 cases in Tamil Naidu and CMC Vellore is left with barely 8 hours of LMO. He urged the members and officials to take a holistic view, to ensure equitable distribution of LMO to all needy areas of the country instead of focussing on only one state.

- Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, appraised the house that current production capacity for LMO is 7,300 MTs, while the allocation done to various states is 10,500 MTs. As a result, LMO reserves which are 47,800 MTs are depleting and another 30,000 MTs including LMO can be utilised from reserve. She stressed upon the judicious use utilisation of LMO as there is increase in demand from Southern part of the country, while demand from Northern and Western part of the country has not gone down.

- Principal Secretary (Health), Govt of NCT Delhi informed that data on oxygen requirement, gathered for 12th May on the proforma made by this subgroup, has been further updates after the last meeting and data from 214 hospitals has been fed into spreadsheet, however, it still lacks additional data from 2 to 3 big hospitals for e.g. GTB & LNJP hospital which have added 500 additional beds each for COVID 19 patients. In addition, some data on oxygen cylinders available with hospitals, refillers and certain other establishment is missing. Also, some buffer component needs to be factored in while calculating requirement.

- It was informed that as per the latest calculations, with given occupancy as on date i.e. 12593 oxygen beds and 4766 ICU beds, total O_2 consumption is 449 MTs, while as per GOI formula it is 342 MTs, however it is 474 MTs by Delhi Government formula. Due to the cylinders being not accounted and including buffer stock an error of 2 to 3% may be considered. In the current calculations, there are no large negative figures, as pointed out previously, however, there are certain hospitals having large positive variation for e.g. Mool chand Hospital has variation of 800%. It was also informed that on direct enquiry with the

hospital, it had been stated by them that their actual consumption is the correct value.

- A presentation was made by OSD, Health & Family Welfare, Govt of NCT Delhi and salient points from the same have been highlighted below:

    - NCT of Delhi receives LMO supplies from eastern parts of the country, Panipat and Ghaziabad.
    - Total allocation being made to Delhi is 590 MTs, however, only on two days this allocated amount has been made available.
    - Data presented was from 10th May onwards and it was assured that trends from 29th April onwards will be made available to the subgroup for evaluation.
    - Occupancy of COVID beds (ICU and Non-ICU oxygenated) is showing a downward trend, however, ICU occupancy as on date is still 90%, while oxygen use of non-ICU beds has come down to 70%.
    - Delhi had its peak on 2nd May and thereafter, the number of cases is showing a downwards trend.
    - It was clarified that only oxygenated beds have been taken into consideration while calculating oxygen requirement by the Delhi Government formula, while the GOI formula considers all beds including non-oxygen beds.
    - An assured supply should be made available to Delhi as delivery schedules are not being provided by the suppliers.
    - It was reiterated that the situation is dynamic, however, adequate, and reliable supplies should be made available to NCT Delhi considering all logistical challenges.
    - It was informed that data captured on the Delhi Govt portal was more reliable than data submitted in the forms created specifically by the sub-group and actual consumption as per portal data is 442 MTs. Requirement of LMO calculated from data captured using excel sheet is 490 MTs.
    - It was concluded that total consumption of Delhi is not less than 500 MTs.

- Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, expressed anguish over the way the data was collated by Govt of NCT Delhi, as it still has lot of errors which have been pointed out. It is still not clear on what basis had an allocation of

700MT been sought by Govt of Delhi in the Supreme Court of India when collated data had so many gross errors and it took an oxygen audit to point out the same. It also appears that Govt of Delhi used a wrong formula and made exaggerated claims on 30th April. It was also evident that some hospitals could not differentiate between KL and MT and the same was not examined while projecting 700 MTs.

- Controller of Explosives, PESO informed that Delhi government has created a reserve of 300-400 MTs and as per given trend, requirement of LMO in Delhi should be 400 MTs.

- It was suggested that actual consumption as on date, along with trend in positivity rate should be taken into consideration while calculating oxygen requirement for Delhi.

- Lot of apprehensions were placed regarding the quality of data and collated data for oxygen requirement in the Excel sheet cannot be relied upon for arriving at requirement. Reliability of data is low because of errors in calculation.

Representatives from Delhi Government insisted on an assured allocation of 500 MTs. This was not agreeable to the Chairperson as it appeared from the data provided that 400 MTs is enough as assured and a 100 MTs could be made available till 4pm. Also, given the drastic reduction in number of cases and installation of PSA plants in many hospitals, this requirement is bound to be significantly less. Subgroup decided to meet again to review situation, which has been very dynamic. Finally, as a compromise it was concluded that for the next few days Delhi may have an assured allocation of 500 MTs and if this is not consumed, it can be provided to other states. It was decided to meet again over the next 3 to 4 days and if the cases continue to decline and positivity rate also comes down this allocation may be significantly decreased.

These are issued with the approval of Chairperson.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin
AIIMS New Delhi

19.05.2021

Minutes of the 6th Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

Sixth meeting of the subgroup was held virtually through video conferencing under the Chairmanship of Prof. Randeep Guleria, Director & Professor, Department of Pulmonary Medicine & Sleep Disorders, AIIMS, New Delhi at 05:00pm on 18.05.2021 and was attended by the following members:

1. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
2. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO

Following members did not attend the meeting, however, information for the same was circulated on WhatsApp group created for this purpose:

1. Dr. Sandeep Budhiraja	Clinical Director & Director – Internal Medicine, Max Healthcare
2. Sh. Bhupinder S Bhalla	Principal Secretary (Home), Govt of NCT Delhi

The meeting was also attended by the following officials:

1. Dr. Rajeev Kumar	Professor, Urology & Associate Dean, AIIMS, New Delhi
2. Dr. Angel Rajan Singh	Assoc. Prof., Hosp. Admin., AIIMS, New Delhi
3. Dr. Vijaydeep Siddharth	Assoc. Prof., Hosp. Admin., AIIMS, New Delhi

At the outset Chairperson informed that a National Task Force meeting was held today morning, where a presentation was made by Dr. Shiv Sarin, who recommended creation of a post of Oxygen Commissioner at National Level responsible for allocation of LMO supply to various states.

It was informed by Controller of Explosives, PESO that Delhi has built reserves of approximately 470 MTs. Current daily LMO requirement of Delhi should be less than 400 MTS, given the fact that an average of 463 MTs of LMO is being supplied to Delhi and much of it is being stored and not used on that day.

It was agreed upon that, with the COVID 19 new cases and positivity rate falling dramatically; with setting up of PSA plants in various hospitals of Delhi and with increased availability of oxygen concentrators, the average daily requirement of LMO has come down and should be approx. 400 MTs for NCT of Delhi. The reaming LMO diverted to the geographical areas which are facing in acute shortage and needs LMO urgently. It was decided that group can meet again to review the situation in coming days. Also, there is a significant increase in demand for the southern state and from eastern India.

These are issued with the approval of Chairperson.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin
AIIMS New Delhi

21.05.2021

Minutes of the 7th Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

Seventh meeting of the subgroup was held virtually through video conferencing under the Chairmanship of Prof. Randeep Guleria, Director & Professor, Department of Pulmonary Medicine & Sleep Disorders, AIIMS, New Delhi at 05:00pm on 21.05.2021 and was attended by the following members:

1. Dr. Sandeep Budhiraja	Clinical Director & Director Internal Medicine, Max Healthcare
2. Sh. Subodh Yadav	Joint Secretary, DoWR, Jal Shakti Ministry, Govt of India
3. Dr. Sanjay Kumar Singh	Controller of Explosives, PESO

Sh. Bhupinder S Bhalla, Principal Secretary (Home), Govt of NCT Delhi did not attend the meeting; however, information for the same was circulated on WhatsApp group created for this purpose:

The meeting was also attended by the following officials:

1. Dr. Rajeev Kumar	Professor, Urology & Associate Dean, AIIMS, New Delhi
2. Dr. Angel Rajan Singh	Assoc. Prof., Hosp. Admin., AIIMS, New Delhi
3. Dr. Vijaydeep Siddharth	Assoc. Prof., Hosp. Admin., AIIMS, New Delhi

Following discussions and decisions were taken during the meeting:

- At the outset, it was informed by the Chairperson, that in view of the drop in cases, positivity rate and active cases the requirement of oxygen for Delhi should have further come down. He added that this is a dynamic process and based on the data, requirement needs to be changed regularly. Also, the National Task Force constituted by Hon'ble Supreme Court is already developing a strategy for equitable distribution for all States and Union Territories. It was informed that an Oxygen Commissioner would be appointed

centrally, whose role would be to make oxygen allocation to various states and UTs.

- The meeting was convened to discuss the terms of reference pertaining to the efficacy of distribution network of LMO, allocation of LMO and to ensure accountability in respect of the supplies of oxygen provided to every State/UT.

- It was clarified that the distribution network outside the Delhi i.e. supplies reaching Delhi from eastern part of the country, is within the ambit of National Task Force, while this subgroup is to examine the internal distribution of the LMO to various hospitals and refillers.

- Delhi Govt could not lift the entire allocated amount from eastern part of the country because of the inadequate number of tankers, as informed by PESO.

- Delhi government has an established system of allocating LMO to various hospitals and refillers through a centralised "War Room" & "Oxygen Room" and it was decided that the Govt of NCT Delhi may be requested to make a presentation on the internal allocation of LMO during the next meeting of the subgroup. It was also suggested that the allocation data by Delhi Government for past 10-15 days may be presented before the subgroup for better understanding and making recommendations accordingly. Thereafter, A proforma for studying distribution network may also be drafted.

- The subgroup deliberated upon the various parameters to be adopted for measuring the efficacy of distribution system which included allocated LMO reaching Delhi, consumption of allocated LMO in past 24 hours etc. Parameters to be used in this proforma should be clear, unambiguous, uniform across hospitals and should be reliable.

- It was suggested that hospitals should have LMO storage facility commensurate to that of the bed complement and should have LMO storage of at least 48 hours consumption. Scheduling of the LMO supplies was also discussed and it

is recommended that the telemetry data available with the supplier may be linked to scheduling of supplies to make the system more efficient.

- The subgroup decided to implement a system of "Oxygen Stewardship Programme" and resolved to draft a proforma for same. Through this programme, opportunities for improvement in oxygen utilisation through self-evaluation will be identified by hospitals and shall serve as a quality improvement measure for optimising oxygen consumption. Hospitals should be encouraged to perform self-evaluation regularly so as to document progress in saving medical oxygen. GOI guidelines on Oxygen Audit can be utilised for drafting this proforma and should have a component addressing the same.

- It was decided that team of officials from AIIMS, New Delhi and Dr. Sandeep Budhiraja will be drafting a proforma for "Oxygen Stewardship Programme" and this shall be placed before the subgroup in next meeting.

- The list of hospitals, preferably big hospitals which are major consumers of LMO, should also be identified for making site visit for better understanding of the LMO requirement.

- Data collected by Delhi Govt through google sheet and proforma on LMO consumption from various hospitals shall be made available for perusal of the subgroup. It was suggested that a one-page instruction sheet shall be made available to various hospitals for filling the LMO data on COVID portal/google sheet/ proforma for improving the quality of data. Guidelines/protocols for optimal utilisation of oxygen consumption may be drafted.

- Subgroup decided to meet on 22.05.21 if suitable to everyone.

These are issued with the approval of Chairperson.

(Dr. Vijaydeep Siddharth)
Assoc. Prof., Hosp. Admin
AIIMS New Delhi

ANNEXURE II

MGC/A/6426
3-5-2021
Mumbai.

I S Chahal IAS
Commissioner
MCGM, Mumbai

To,

The Private Secretary to the Hon. Union Minister
of Commerce and Industry,
Government of India,
New Delhi.

Sir,

Mumbai currently has approximately 16 million population within City limits and serve such a huge population through several main hospitals and peripheral Hospitals apart from large private hospitals.The number of Covid cases during second wave has started moving upwards from March 15th of 2021 onwards and the positive cases as well as the number of patients seeking admission has also started increasing.

The following table shows the positivity of cases in Mumbai city from 15th March 2021 to 2nd May 2021 :-

Sr No.	Date	No. of sample Positive	Cumulative Covid Active cases
1	15.03.2021	1922	15263
2	16.03.2021	2377	16751
3	17.03.2021	2877	18424
4	18.03.2021	3062	20140
5	19.03.2021	2982	21335
6	20.03.2021	3775	23448
7	21.03.2021	3260	25372
8	22.03.2021	3512	27672
9	23.03.2021	5185	30760
10	24.03.2021	5504	33961
11	25.03.2021	5513	37804

Municipal Head Office, Mahapalika Marg, Mumbai - 400 001.
Tel. No. : +9122 - 2262 0525. Fax. No. : +9122 - 2265 5927 Email : mc@mcgm.gov.in

Sr No.	Date	No. of sample Positive	Cumulative Covid Active cases
12	26.03.2021	6123	41609
13	27.03.2021	6923	45140
14	28.03.2021	5888	47453
15	29.03.2021	4758	49167
16	30.03.2021	5394	51411
17	31.03.2021	8646	55005
18	01.04.2021	8832	58455
19	02.04.2021	9090	62187
20	03.04.2021	11163	68052
21	04.04.2021	9857	74522
22	05.04.2021	10030	77495
23	06.04.2021	10428	81886
24	07.04.2021	8938	86279
25	08.04.2021	9200	90333
26	09.04.2021	9327	91108
27	10.04.2021	9989	92464
28	11.04.2021	6905	90267
29	12.04.2021	7898	86866
30	13.04.2021	9925	87443
31	14.04.2021	8217	85494
32	15.04.2021	8839	85226
33	16.04.2021	8834	87369
34	17.04.2021	8479	87698
35	18.04.2021	7381	86410
36	19.04.2021	7214	83934
37	20.04.2021	7684	84743
38	21.04.2021	7410	83953
39	22.04.2021	7221	81538
40	23.04.2021	5888	78775
41	24.04.2024	5542	75740
42	25.04.2021	3876	70373
43	26.04.2021	4014	66045
44	27.04.2021	4966	65589
45	28.04.2021	4192	64018
46	29.04.2021	3925	61433
47	30.04.2021	3908	59318
48	01.05.2021	3672	57342

MCGM to cater to such a demand has a real time DASH BOARD created that gives information on the number of normal beds, oxygen beds and ICU beds availability all across 24 wards including availability in Private Hospitals totaling 176 Hospitals. For example, Mumbai as on 02/05/2021 has a bed capacity of 30,189 out of which occupied was 18,712 and available was 11,477. About 15,753 beds were occupied out of 21,883 beds available in DCH and DCHC category. In the "oxygenated beds" category 9,424 beds were occupied out 11,244 beds available. In the "Critical ICU beds" category 2853 were occupied out of 2,923 beds available. In the "Ventilator beds category" 1479 were occupied out of 1501 beds with 22 beds available for patients. This Dash board is updated real time. Based on the availability of beds and based on the judgement of bed requirement for a particular patient the bed is allotted only through Ward War rooms which work 24 by 7.

The Dash board captures not all beds available as 20 percent of the beds in enlisted private Hospitals are available in their management quota. They are used as decided by the hospital management and hence not part of the DASH Board. Moreover there are many small private hospitals which are not enlisted by MCGM but admit the Covid patients and treat them. They are also not included in the DASH BOARD. Apart from these Covid management, there are other emergency operations and also maternity homes functioning catering to the needs of patients. This makes the actual number of petients treated in Mumbai at least 20 per cent more than that is shown on the Dash Board.

The number of Cumulative active cases in the City reached a peak of 92,464 on 10th April and after that it is very slowly tapering-off. On 19 th April, it became 83,934 and on 25th April it further came down to 70,373. As on 04/05/2021 the cumulative active cases stand at 57,342 cases.

OXYGEN MANAGEMENT OR HEALTH CARE FACILITIES in MUMBAI:

Health care facilities consume oxygen in two major ways. The bigger Hospitals have Liquid Oxygen Storage unit at their premises and the suppliers of liquid Medical Oxygen(LMO) bring their LMO tankers to these storage facilities and decant the liquid oxygen. From these storage facilities the LMO is vaporized into gaseous form and supplied to the beds through internal pipelines.

The smaller hospitals does not require storage facilities because of low demand for oxygen. Such facilities use readily filled gaseous cylinders called Jumbo cylinders (roughly equal to 0.1 MT) or liquid gas filled larger dura cylinders (roughly equal to 0.25 MT). Both these type of cylinders are supplied from re-filler supply agencies. The main role of re-filler agencies is that to procure the LMO from large manufactures and bottle them into smaller cylinders like Dura cylinders or Jumbo cylinders and supply to smaller hospitals.

OXYGEN MANAGEMENT for COVID PANDEMIC:

During the first wave expecting the increased demand for the oxygen MCGM has established additional Oxygen storage capacities in our bigger Hospitals and temporary Jumbo Hospitals. We installed large 13 KL LMO storage tanks in 13 locations, 11KL tanks in 3 locations, 6 KL in 8 locations. These works were carried out on war footing and all these works were completed within 40 days including the foundation and PESO certification. Even though during Covid first wave these tanks were underutilized, these tanks took the load during Covid wave two very effectively. These storage tanks helped in a big way to cater to the needs of higher number of patients during the second wave as the ICU patients consume oxygen at very higher rates.

The LMO suppliers supply to these storage tanks as per the requirement and the contracts for the same are in place. All major private hospitals also use these LMO for their patients and the LMO suppliers use the Food and Drug

Administration allotted quota of LMO to fill these storage tankers. It was observed that the number of refilling visits by these agencies have increased as they fill LMO directly from production facilities and there are hardly stored LMO available with manufacturers.

The total oxygen available for the Re-filling agencies which serve the small hospitals faced problems initially. The LMO availability to these agencies touched rock bottom levels as they depend on large manufacturers for their LMO. Large Manufacturers use their LMO to served increased demand of their bigger clients like big hospitals which left very little LMO available for the re-filler gas agencies. So the supply schedule of these agencies of DURA and JUMBO cylinders created problems and supply disruption for several days. After taking note of the supply disruptions the State Government has allotted 30 MT LMO from Raigad district and after this allocation things became smooth for these Re-filler agencies also.

Mumbai City has a daily requirement of about 275 MT LMO on an average. This is considering the number of Covid patients with MCGM Hospitals, Private Hospitals, 20 percent beds available private hospital management and also other hospitals not taken over by MCGM that treat Covid patients. Apart from these the emergency Non-Covid operations also demand oxygen. It is pertinent to note that the 20 per cent beds given to Private hospitals under their management quota are mostly ICU beds which require high volume of oxygen. These beds are used by patients coming from the Mumbai Metropolitan Region (MMR) who are being referred to Mumbai in advanced stage criticality.

EMERGENCY MANAGEMENT of OXYGEN SUPPLY DISRUPTION:

Supply disruptions happen due to two main reasons namely non availability of LMO and non-availability on time at consumption points. The quantity of LMO requirements are being looked after by the Food and Drug Administration and Senior Officers including the undersigned have been

instrumental in getting much needed LMO even from out of State. For example, Mumbai has received some tankers from Jam Nagar Plant in Gujarat and also by Rail from Vizag.

Mumbai has a state Government allotted quota of 235 MT per day which is slightly below the daily demand of 270 MT. So all efforts are being taken to conserve use of oxygen. IN spite of best efforts to conserve oxygen, still emergency calls are received for Oxygen from different Hospitals.

Structure of Emergency Handling: To co-ordinate the emergency management of oxygen, Six Officers from MCGM are deputed to FDA office for co-ordination. They inform Oxygen supply criticalities to the FDA and accordingly help real time decisions by FDA. There are two officers appointed in each ward level who gets the calls for the oxygen emergency situations. The situation is discussed with suppliers of oxygen first by these officers. If the problem is not resolved at this level, the issue is escalated to the Ward Officer and from Ward Officer to the MCGM Central Team. The Central team for managing Oxygen emergencies include a Deputy Commissioner, a Chief Engineer, Two Executive Engineers and a Deputy Dean. This Central team handles the extreme emergency situations including emergency diversions and re-routing of Oxygen supplies.

EMERGENCY RESERVES and TEAMS:

MCGM has a google sheet which tracks the movements of tankers and their locations. We also have identified the person who looks after the oxygen subject in each of the Hospitals and real time information is collected from them on a need to know basis. All Hospitals have been instructed to create alerts at least four hours before the oxygen available is likely to exhaust.

MCGM has identified six strategic points from which all the Hospitals can be reached within half an hour. These six strategic points are equipped with sixvehicles having 25 jumbo cylinders each. Whenever emergency calls are received from Hospitals, after ascertaining the emergency, these vehicles are

deputed to help those hospitals by providing temporary stock from these 25 cylinders. Similarly some extra Dura cylinders are kept in some designated hospitals and whenever emergency calls are received Dura cylinders (One or maximum Two) are shifted to the needy hospitals.

Future strategy:

Considering the increased demand for Oxygen MCGM has floated tender for installation 2000 LPM and 3000 LPM oxygen generation machines. These Machines are likely to be installed before the mid of June 2021.

MCGM is also in the process of installation of Pressure Swing Oxygen Generator machines donated under CSR.

MCGM has finalized tender for 10 LPM Oxygen Concentrators for patients. About 1200 numbers will be supplied to different hospitals based on demand.

There are some instructions given to conserve oxygen to all our deans and medical superintendents.

- Keeping oxygen saturation at 93 to 94 percent in patients
- Non-use of High flow nasal cannula as far as possible
- Bringing down oxygen consumption by at least 10 percent in each of the facility
- Getting ready for an oxygen audit of all these facilities
- Establishment of a refilling facility within the limits of MCGM.

Yours Sincerely,

(I.S. CHAHAL)

3/5-21

I S Chahal
IAS
Commissioner
MCGM, Mumbai

No. MGC/A/6428
Date : 3rd May 2021.

To
The Private Secretary to the Hon. Union Minister
of Commerce and Industry,
Government of India,
New Delhi.

Sir,

This is in continuation of my earlier letter No.MGC/A/6426 dt. 3.5.2021 and the discussion followed with the Hon'ble Union Minister of Commerce and Industries. The Covid positive cases peaked around the end of first week of April and the resultant patient load on the infrastructure of MCGM increased in the second week of April, 2021. The highest Covid cases were observed during the second week and due to increased patient admission in the hospitals and the resultant increased demand of Oxygen, we created specific protocols for the management of Oxygen during the third week of April. The various teams were formed by different Orders during third week and the Oxygen consumption in a systematic fashion has been captured from 20.04.2021 onwards.

The following Table shows the positivity of cases and Oxygen consumption in Mumbai city from 20.04.2021 till 01.05.2021.

Sr No.	Date	No. of sample Positive	Cumulative Covid Active cases	Oxygen consumption per day (MT)
1	20.04.2021	7684	84743	245
2	21.04.2021	7410	83953	230
3	22.04.2021	7221	81538	243

Municipal Head Office, Mahapalika Marg, Mumbai - 400 001.
Tel. No. : +9122 - 2262 0525, Fax. No. : +9122 - 2265 5927 Email : mc@mcgm.gov.in

Sr No.	Date	No. of sample Positive	Cumulative Covid Active cases	Oxygen consumption per day (MT)
4	23.04.2021	5888	78775	233
5	24.04.2024	5542	75740	239
6	25.04.2021	3876	70373	237
7	26.04.2021	4014	66045	232
8	27.04.2021	4966	65589	229
9	28.04.2021	4192	64018	229
10	29.04.2021	3925	61433	225
11	30.04.2021	3908	59318	222
12	01.05.2021	3672	57342	220

Yours sincerely,

(I. S. Chahal)

3/5-21.

ANNEXURE III

Form for auditing use of oxygen at hospitals

(Draft Ver 4.0: 11 May)

- To be filled, signed and stamped by Nodal officer or Medical Superintendent or CEO of the hospital. **(This form will be treated as an Affidavit and submitted to court)**
- Number of beds under each of the 4 categories (Ventilator, HFNO, CPAP/BIPAP, O2) must be unique and the same bed must not be counted at more than one place.
- In Row 26, please list all reasons you feel the Oxygen supply to your hospital was inadequate (low allocation, arranging vehicle, vendor declined, hurdles in transport, inadequate storage etc.)

SN	Query	Reply
1	Name of Institution	
2	Full address	
3	Nodal person (Medical Superintendent or CEO)	
4	Mobile number of Nodal person	
5	Email address of Nodal person	
6	Total number of existing and functional beds in hospital	
7	Total number of existing and functional dedicated COVID beds	
8	Sanctioned Daily Oxygen quota (Tons)	
	24 hour data (00.01 AM on 11th May to 00.01 AM on 12th May**)**	
	OXYGEN STORAGE CAPACITY (Existing and functional)	
9	LMO (in Tons)	
10	Compressed Oxygen (in Litres)	
11	Total oxygen stock at 00.01 AM on 11th May 2021	
12	Total oxygen stock at 00.01 AM on 12th May 2021	
	Total COVID beds with functional invasive ventilators	
13	EXISTING	
14	OCCUPIED and USED with Ventilators	
	Total COVID beds with functional HFNO devices	
15	EXISTING	
16	OCCUPIED and USED with HFNO	
	Total COVID beds with functional CPAP/BiPAP devices	
17	EXISTING	
18	OCCUPIED and USED with CPAP	
	Total COVID beds with functional oxygen (Nasal prong/ Mask/ NRBM)	
19	EXISTING	
20	OCCUPIED and USED with oxygen	
	OXYGEN GENERATION CAPACITY (Existing and functional)	
21	Oxygen Generation Capacity (PSA etc) in Tons/day	
22	Oxygen Concentrators available and used (numbers)	
	Amount of oxygen supply received in last 24 hours	
23	LMO (in Tons)	
24	Compressed Oxygen (in Litres)	
25	Was supply received sufficient to meet daily need? (Yes/No)	
26	If No, cause for shortage (please explain)	

To be filled, signed, stamped, and returned by 12 noon on 12th May

ANNEXURE IV

FINDINGS FROM PESO REPORT ON LMO SUPPLIES TO DELHI

11.05.2021

PESO Study

- PESO conducted **a study in collaboration with the major manufacturers, hospitals & refillers** in Delhi to assess the status of –
  - available storage infrastructure for LMO,
  - daily stock positions &
  - daily average usage of LMO
- Total LMO Storage Capacity available in Delhi :

PARTICULARS	Nos.	TOTAL AVAILABLE STORAGE CAPACITY (MT)
HOSPITALS	68	702.1
REFILLERS	11	187.3
GRAND TOTAL	- 59	**889.4**

PESO Study – Key Findings

- PESO **Study was conducted from 05.05.2021 to 11.05.2021** and and **involved collection of data twice a day**, the following **key findings** have emerged:
  - **LMO stock** with the hospitals and refillers has gone up from 309 MT (48% of total capacity surveyed) on morning of 6th May to 501 MTs (71% of total capacity surveyed) on morning of 11th May 2021;
  - Almost 80% of the major hospitals surveyed had more than 12 hours of the stock. Most others do not have adequate storage to increase stock;
  - **Average daily consumption** was reported between 284 MTs to 372 MTs.
- **Inferences from the Study** :
  - As such, there appears to be **sufficient quantity of LMO available with major hospitals and refillers** in Delhi
  - **There is inadequate storage infrastructure** in Delhi **to accommodate LMO in case 700 MT is supplied on a daily basis**.

PESO Study – Key Findings (Contd...)

- Since 09.05.21, **GNCTD is trying to get alternate storage space in nearby states** especially at the LMO manufacturer premises to store excess LMO in their storage tanks, as follows:

  Air Liquide :

  - GNCTD lifted only 150 MT of LMO from their plants at Panipat and Roorkee against the allocated quota of 190 Mt and
  - requested through Email that not to release 42 MT of LMO from Panipat and 20 MT of LMO from Roorkee Plant and store these amounts in their storage tanks.

  Inox Surajpur : 37 MT to stored in tanks of M/s INOX Surajpur plant and

  Refillers : 37.5 MT to re-fillers storage tanks.

- **M/s Goyal Gases** : When asked to explain the reason for shortfall in their supplies to Delhi they have informed that shortfall is due to non-availability of space in the storage tanks of Delhi's hospitals, resulting in increase of turnaround time of tankers, and inability to execute supplies in time

Non availability of storage space for LMO at Delhi's hospitals

- Since 09.05.21 Delhi Government is trying to get alternate storage space in nearby states
- Delhi Government had lifted only 150 MT of LMO on 10/5/2021 from M/s Air Liquide plants at Panipat and Roorkee against the allocated quota of 190 MT and requested M/s Air Liquide through Email not to release 42 MT of LMO from Panipat and 20 MT of LMO from Roorkee Plant and store these amounts in their storage tanks.
- In response Air Liquide Panipat stored 38 MT of LMO in their tanks on 10.05.21 and assured Delhi Govt that they will store 62 MT in their tanks from 11.05.21.

Short fall in supplies to Delhi: some reasons

- As informed by M/s Linde short fall in supply on 08.05.21 is due to delay in supply from their eastern sector plants and short fall in the supply on 09.05.21 is due **to return back of 74 Mt of LMO by Delhi Government** to their Linde, Faridabad plant on 09.05.21 due to non-availability of space in the LMO storage tanks/less demand.
- Short fall in supply from JSW, Jharsuguda is due to **non-lifting of allocated LMO** by Delhi Government from their plant.
- As informed by M/s MG Goel Gases shortfall is due to **non-availability of space in the storage tanks of Delhi's hospitals** resulting in to increase of turnaround time of tankers and they are unable to execute supplies in time.

Details of excess LMO stored at various places

Date	Place	LMO Stored in (MT)	Remark
09.05.2021	Linde Faridabad	74	Out of 120 MT supplied directly to Delhi Govt. from Linde eastern sector plants, 74 MT was returned by Delhi Govt. to Linde Faridabad plant due to non-availability of storage space/less demand in Delhi.
10.05.2021	Air Liquide, Panipat	38	M/s Air Liquide was Requested by Delhi Govt. to store their 62 MT LMO everyday at their plants at Roorkee and Panipat.
10.05.2021	INOX Surajpur	37	M/s INOX was requested by Delhi Govt. to store 37 MT LMO at their Surajpur plant
10.05.2021	Various re-fillers of Delhi	37.5	Directed by Delhi Govt to store at their re-filling plants.

Arrangements made by GNCTD to augment storage facilities

- It is ascertained from reports that at 12 midnight on 10 May 2021, **GNCTD has created a Delhi Govt Reserve of 112.5 MTs** as follows :

LOCATION	STORAGE CAPACITY (MT)
Inox Surajpur	37.00
Seth Refiller	37.50
Air Liquide	38.00
TOTAL	**112.50**

- Reports from the suppliers suggest that GNCTD has filled all storage tanks of the small dealers to the brim, and potentially all hospital tanks as well.

Delhi – Active Cases – Trend of Falling Case Loads

- The trend of number of active cases in Delhi is showing a declining trend as follows :

Date	No of active cases
6 April	17332
13 April	43510
29 April	103424
5 May	91859
10 May	85258

Source: MoHFW

Emerging Scenario

- **Actual requirement** of Delhi is much less than what is demanded.
- With Delhi receiving excess oxygen, **other States** like Rajasthan, UP, Haryana, HP, Uttarakhand, Punjab and even J&K are suffering badly
- Inadequate availability of tankers and containers to transport LMO to these states - whereas four of Delhi containers are reportedly parked at INOX Surajpur due to issues of excess supplies and no place to store; and **slow decantation** due to lack of storage is **holding up turnaround time** for containers (eg RIL Jamnagar).
- **Delhi is neither auditing** its usage, nor assessing its realistic demand to enable central Government to reallocate supplies to other Northern States in a fair manner.
- Today even the **Air Force station** has given as SOS for Oxygen for their Stations in North India.

Supplies to Delhi & Case load

- Supplies made to Delhi over past several days are as follows :

Date	Sales of LMO (MT)
5 May	750.5
6 May	547.5
7 May	535.63
8 May	475.86
9 May	543.34
10 May	628.71

Source: PESO

North Indian States – A Snapshot of cases and supply

STATE / UT	AS ON 11MAY2021		SOURCES (MT)		SOURCES (%)	
	ACTIVE CASES	ALLOCATION (MT)	NORTH	FAR	NORTH	FAR
UP	225271	894	354	540	40%	60%
RAJASTHAN	203017	435	225	210	52%	48%
HARYANA	113232	307	167	140	54%	46%
DELHI	85258	590	390	200	66%	34%
PUNJAB	75800	247	137	110	55%	45%
UTTARAKHAND	74480	183	123	60	67%	33%
J&K	49951	41	41	0	100%	0%
HP	34417	15	15	0	100%	0%
CHANDIGARH	8653	40	40	0	100%	0%

Letters received from States / UTs in North India for higher allocations

- **Haryana** : Letter dated 08 May – Hon'ble CM – Haryana has more case loads than Delhi; caters to 20-40% of Delhi patients in NCR hospitals; still has lesser allocation vis-à-vis Delhi;
- **Punjab** : Letter dated 04 May – Hon'ble CM – Punjab requires additional allocation of 50 MT from nearby sources;
- **Uttar Pradesh** : Letter dated 06.05.2021 – Hon'ble CM – Require additional allocation of 360 MT from specified plants – RIL, Linde Rourkela, JSPL, Angul & Vedanta Electrosteel
- **Rajasthan** : Letter dated 07.05.2021 – Chief Secretary – Rajasthan has receive one of the lowest allocation vis-à-vis active case loads; Require additional allocation of MO (705 MT by 10MAY) and 26 tankers (470 MT capacity);
- **Uttarakhand** : Letter dated 07.05.2021 – Chief Secretary - 60 MT (40 MT from Linde, Jamshedpur and 20 MT from Linde, SAIL, Durgapur) be allocated from nearby sources.
- **Chandigarh** : Letter dated 05.05.2021 – Advisor to the Administrator of UT - Enhance allocation from 30 MT to at least 35 MT, from INOX, Barotiwala (Baddi) or any other nearby place.

THANK YOU

ANNEXURE V

Government of India
Petroleum & Explosives Safety Organisation [PESO]
North Circle, Hall No. 502 & 507
Level 5, Block II, Old C.G.O. Complex Faridabad 121001
Email: jtccefaridabad@explosives.gov.in Website: www.peso.gov.in
Telephone No.- 0129-2410730-34 Fax No.- 2410733

No. FBD(3)169 Dated:11/05/2021

To
The Additional Secretary
DPIIT

Subject: Report on daily Liquid Medical Oxygen (LMO) supply to Delhi…reg.

Respected Madam,

The following are the detail of LMO supplied to Delhi since 01.05.2021.

Date	INOX (MT)	LINDE (MT)	Goyal Gas (MT)	Air Liquide (MT)	Indian Glycol (MT)	Additional Supply from Reliance Jamnagar to Delhi Govt (MT)	Additional supply from IOCL Bokaro/ Import (MT)	Supply in bulk LMO in MT	Supply in Cylinders in MT	Total Supply in MT
01.05.21	81	105	48	195	12			408.5	32.5	441
02.05.21	82.54	198	46.225	174.34	0			467.8	33.3	501.1
03.05.21	102	75.3	26.69	161	15			341.99	38	379.99
04.05.21	81.19	197.5	26	187	0			451.69	40	491.69
05.05.21	90	227.5	16	175	0	140	102	711.5	39	750.5
06.06.21	92	184	36.5	175	0	60		492.5	55	547.5
07.05.21	81	177	21.13	181	0	60	15.5	476.63	59	535.63
08.05.21	85	96	15.86	186	0	93		422.86	53	475.86

09.05.21	69	138	28.34	178	0	130	0	484.34	59	543.34
10.05.21	73	297	12.11	150	0	82	14.6	567.71	61	628.71

Note: - Total allocation to Delhi is 590 MT/Day

It appears from above data that average supply to Delhi for last 10 Days is 529.5 MT/Day.

Study on LMO stock position of Delhi's Hospitals: -

A study was conducted based on 5 days and 10 cycles of stock data (for morning and evening, Annexure-1) of Liquid Medical Oxygen (LMO) for 45-64 hospitals out of 68 hospitals situated in Delhi and having Liquid Medical Oxygen (LMO) storage tank. LMO to these hospitals are being supplied by 4 suppliers namely INOX, LINDE, Air Liquide and Goyal Gases. Same data were collected from 11 No. of oxygen cylinders re-fillers also where LMO tank is installed.

Data pertaining to stock position of these hospitals across Delhi were collected in the morning and evening for 5 days from the LMO suppliers of these hospitals and re-fillers. Daily average consumption of each hospital and their total storage capacity were also collected.

It appears from stock data of 9th May morning, that almost 75% of the hospitals had 12 hours, 68% of hospitals had 15 hours, 56% of hospitals had 18 hours, 47% of hospitals had 20 hours and 43% hospitals had 24 hours and in the evening of 9th May 83% of hospitals had 12 hours, 74% of hospitals had 15 hours, 69% of hospitals had 18 hours, 62% of hospitals had 20 hours, 53% of hospitals had 24 hours of LMO stock available with them at the time of collecting stock data.

On 10th May morning 80% of the hospitals had 12 hours, 74% of the hospitals had 15 hours, 64% of the hospitals had 18 hours, 59% of the hospitals had 20 hours and 52% of the hospitals had 24 hours of LMO stock available with them at the time of collecting stock data.

Stock of LMO during 10 cycles of study in these hospitals varied from 309 MT (48% of total storage capacity) on 6th May Morning to 477 MT (67%) on 10th May Morning. It was also observed that LMO stock with re-fillers varied from 39%-74% of their total storage capacity.

Non availability of storage space for LMO at Delhi's hospitals:-

Since 09.05.21 Delhi Government is trying to get alternate storage space in nearby states specially at the LMO manufacturer premises to store excess LMO in their storage tanks. As per communication received from M/s Air Liquide, Delhi Government had lifted only 150 MT of LMO on 10/5/2021 from their plants at Panipat and Roorkee against the allocated quota of 190 MT and requested M/s Air Liquide through Email **(Annexure-2)** that not to release 42 MT of LMO from Panipat

and 20 MT of LMO from Roorkee Plant and store these amounts in their storage tanks. In response to the request of Delhi Govt. Air Liquide Panipat had stored 38 MT of LMO in their tanks on 10.05.21 and assured Delhi Govt that they will store 62 MT in their tanks from 11.05.21.

It is revealed from 10th May supply data of Delhi Govt **(Annexure-3)** that they have stored excess 38 MT at M/s Air Liquide Panipat plant, 37 MT to storage tanks of M/s INOX Surajpur plant and 37.5 MT to re-fillers storage tanks.

Details of excess LMO stored at various places: -

Date	Place	LMO Stored in (MT)	Remark
09.05.2021	Linde Faridabad	74	Out of 120 MT supplied directly to Delhi Govt. from Linde eastern sector plants, 74 MT was returned by Delhi Govt. to Linde Faridabad plant due to non-availability of storage space/less demand in Delhi.
10.05.2021	Air Liquide, Panipat	38	M/s Air Liquide was Requested by Delhi Govt. to store their 62 MT LMO everyday at their plants at Roorkee and Panipat.
10.05.2021	INOX Surajpur	37	M/s INOX was requested by Delhi Govt. to store 37 MT LMO at their Surajpur plant
10.05.2021	Various re-fillers of Delhi	37.5	Directed by Delhi Govt to store at their re-filling plants.

Short fall in supplies: -

Suppliers were asked to explain the reason behind shortfall in their supplies to Delhi and they have informed the following reasons for shortfall

i. As informed by M/s Linde short fall in supply on 08.05.21 is due to delay in supply from their eastern sector plants and short fall in the supply on 09.05.21 is due to return back of 74 Mt of LMO by Delhi Government to their Linde, Faridabad plant on 09.05.21 due to non-availability of space in the LMO storage tanks/less demand.
ii. Short fall in supply from JSW, Jharsuguda is due to non-lifting of allocated LMO by Delhi Government from their plant.
iii. As informed by M/s MG Goel Gases shortfall is due to non-availability of space in the storage tanks of Delhi's hospitals resulting in to increase of turnaround time of tankers and they are unable to execute supplies in time. communication of m/s Goyal MG gases is enclosed **(Annexure 4)**.

ANNEXURE- 1

Annexure-1: Summary of Stock of Oxygen over 10 morning & evening cycles

No		Stock at Evening 5th May	Stock at Morning 6th May	Stock at Evening 6th May	Stock at Morning 7th May	Stock at Evening 7th May	Stock at Morning 8th May	Stock at Evening 8th May	Stock at Morning 9th May	Stock at Evening 9th May	Stock at Morning 10th May
	No. of Hospitals	56	55	55	55	64	62	45	64	64	64
1	Current stock (in MT)	280	220	247	251	320	328	258	323	361	364
2	Avg daily consumption (in MT)	290	287	264	264	287	279	202	287	287	287
3	Storage capacity (in MT)	478	455	455	455	522	509	416	522	522	522
4	% Capacity Filled	59%	48%	54%	55%	61%	64%	62%	62%	69%	70%
	No. of Refillers	11	11	11	11	11	11	11	11	11	11
1	Current stock (in MT)	73	89	83	122	100	117	139	129	121	113
2	Avg daily consumption (in MT)	82	82	82	82	82	82	82	82	82	82
3	Storage capacity (in MT)	187	187	187	187	187	187	187	187	187	187
4	% Capacity Filled	39%	48%	44%	65%	53%	63%	74%	69%	65%	60%
	Total (Hospitals + Refillers)										
1	Current stock (in MT)	353	309	330	373	420	445	397	452	482	477
2	Avg daily consumption (in MT)	372	369	346	346	369	361	284	369	369	369
3	Storage capacity (in MT)	665	642	642	642	709	696	603	709	709	709
4	% Capacity Filled	53%	48%	51%	58%	59%	64%	66%	64%	68%	67%

आर. एन. मीना
R. N. MEENA
संयुक्त मुख्य विस्फोटक नियन्त्रक
Joint Chief Controller of Explosives
उत्तरी अंचल, फरीदाबाद
North Circle, Faridabad
10/5/21

Email

Dr sanjay kumar singh controller of explosives PESO

Fwd: Approval for temporary reserve of LMO

From : zafar khan <zafar.khan@airliquide.com> Mon, May 10, 2021 10:52 PM

Subject : Fwd: Approval for temporary reserve of LMO

To : Dr sanjay kumar singh controller of explosives PESO <sksingh@explosives.gov.in>

Cc : Sushil Kamlakar Satpute <sushil.satpute@nic.in>, sumita dawra <sumita.dawra@nic.in>, bertrand monnoie <bertrand.monnoie@airliquide.com>, herve chorosz <herve.chorosz@airliquide.com>, hitangshu majumdar <hitangshu.majumdar@airliquide.com>

Dear Sir,

As discussed and communicated by me the reason of Delhi shortfall by 38 tons today is the acceptance of mail
(given below) by the Delhi Govt. for creating a buffer of 300 tons MLOX in coming days as emergency stock.

Thanks & Regards

Zafar Khan

9871392705

---------- Forwarded message ---------
From: **Udit Prakash Rai** <ss2covid19@gmail.com>
Date: Mon, May 10, 2021 at 10:35 PM
Subject: Re: Approval for temporary reserve of LMO
To: KHAN, Zafar <zafar.khan@airliquide.com>

Sir as agreed by you we approve the creation of buffer with air liquid for delhi Govt.
Today we have 38 ton of LMO buffer with air liquid.

On Mon, 10 May 2021 at 22:00, KHAN, Zafar <zafar.khan@airliquide.com> wrote:

Dear Sir,

As discussed please confirm that "AIr liquide started stocking MLOX for you from today with 40 tons
and from tomorrow it will be 62 tons per day and we shall keep all 300 tons of MLOX at our Panipat plant
as an emergency stock for Delhi.

Thanks & Regards

Zafar Khan

9871392705

On Mon, May 10, 2021 at 2:41 PM KHAN, Zafar <zafar.khan@airliquide.com> wrote:

Dear Sir,

we agree to stock your 62 tons (Panipat 42+ Roorkee 20) from tomorrow onwards.

Please make a note we shall intimate you soon if we face issues like evaporation losses & loss of sales.

Thanks & Regards

Zafar Khan

9871392705

On Mon, May 10, 2021 at 2:14 PM Udit Prakash Rai <ss2covid19@gmail.com> wrote:

Sir,

In continuation of your email dated 9th May 2021 on the subject approval of creation of temporary static reserve of LMO at Air Liquid plant Panipat and in pursuance of Hon'ble Supreme Court Order, I am to inform you that in principal approval of the creation of temporary buffer have been obtained by the competent authority.

Therefore, the proposed temporary reserve may be opertionalised from today as per following guideline

1. The supply which Delhi is receiving from LINDE shall be distributed by Delhi Govt as per the distribution plan approved by the competent authority.
2. As per latest allocation order for Air Liquid, the quota of Refillers of Delhi from Panipat and Roorkie plant is 44 + 20 = 64 MT.
3. Air Liquid shall not release the quota to the refillers to the extent which has been provided by Delhi Govt to the refillers (44+20=64) and secure it as DELHI GOVT RESERVE in its own facility at Panipat. In lieu of that, Delhi Government shall ensure that the refillers of Air Liquid shall get their allocated quota (64 MT) from its special or other supply.
4. Air liquid shall keep on building the reserve on a daily basis as per the quota being released to refillers by DELHI Govt to the ceiling of 300 MT.
4. As and when the demand is raised by DELHI GOVT against the reserve being kept by AIR LIQUID, it shall provide the same to DELHI GOVT as per the mutually agreed rates & terms & Conditions.
5. Air liquid and Delhi Govt. shall maintain detailed account for the amount of LMO stored on a daily basis and reconcile it on a regular basis.
6. As and when Delhi Govt shall make the demand for supply of the reserve it shall be released from Air Liquid facility Panipat.
7. No amount of LMO can be released from the facility or diverted to any state except with the approval of the OSD OXYGEN Delhi Govt from the temporary reserve being created in the Air Liquid facility. Any diversion, other than those approved by OSD Oxygen Delhi Govt would be violation of Hon'ble Supreme Court orders.
8. The transportation, evaporation and other losses incurred in decanting and loading of LMO shall be taken into account as per the normal industrial standard on a mutually agreed basis.

You are again requested to kindly immediately operationalise the reserve.

Udit

ANNEXURE - 3

Details of Oxygen Received in Delhi at 12 MID NIGHT FROM 01.05.2021 to 10.05.2021

NAME OF MANUFACTURER	LOCATION	ALLOCATED	01.05.2021	02.05.2021	03.05.2021	04.05.2021	05.05.2021	06.05.2021	07.05.2021	08.05.2021	09.05.2021	10.05.2021
			RECEIVED	RECEIVED	RECEIVED	RECEIVED	RECEIVED	RECEIVED	RECEIVED	RECEIVED	RECEIVED	RECEIVED
AIR LIQUID	PANIPAT	170	194.73	150.07	154.74	176.97	171.37	147.13	137.07	184.43	148.97	211.84
	ROORKEE	20	0	17.5	12	0	18	9.4	20	10	20.2	0
LINDE	JAMSHEDPUR- 30 KALINGNAGAR-75 JSW-BPSL JHARSUGUDA-25 ROURKELA-40 SELAQUI (FARIDABAD)-55	255	95.17	90.747	75.91	170.27	171.72	158.779	159.7	104.583	195.343	216.622
	DURGAPUR-30		0	90	0	0	0	0	0	0	0	0
INOX	SURAJPUR	35	24.76	28.04	40.61	30.35	22.02	26.21	30.75	36.29	25.83	19.18
	MODI NAGAR	30	65.13	62.027	63.57	62.18	62.514	58.54	46.53	50.564	40.45	55.475
	BARTIWALA	20	0	0	0	0	0	0	0	4.6	3.5	0
GOYAL GASSES	GHAZIABAD	30	21.9	9.21	6.26	18.74	28.58	15	18.43	15.54	12.1	23.3
INDIA GLYCOLS	KASHIPUR	30	20.35	0	0	16.5	0	0	0	0	0	0
ONE TIME ADDITIONAL SYUPPLY OF 80 MT FROM GOI			0	0	80	0	0	0	0	0	0	0
ADDITIONAL SYUPPLY FROM RELAINCE JAMNAGAR	JAMNAGAR		0	0	0	80	103	162	60	93	130	82
ADDITIONAL SYUPPLY FROM M/S DP WORLD	MUNDRA		0	0	0	0	140	0	0	0	0	0
ADDITIONAL SUPPLY FROM IOCL BOKARO							13.5	0	15.5	0	0	14.6
RECEIVED BACK FROM HARYANA GOVT.											20	0
	TOTAL	590	422.04	447.594	433.09	555.01	730.704	577.059	487.98	499.007	596.393	623.017

NOTE 1: ADDITIONAL SYUPPLY OF FROM IOCL BOKARO THROUGH TANKER NO JH-05-BB-1555 (HR-38-R-8197)

NOTE 2: ADDITIONAL SYUPPLY OF 82 MT FROM M/S RELIANCE, JAM NAGAR AT DELHI CANTT RAILWAY STATION

*: ADDITIONAL SYUPPLY OF 140 MT FROM M/S LINDE KALINGNAGAR AT okhla RAILWAY STATION RECEIVED.HOWEVER, WHEN THE PROCESS WAS INITIATED IT WAS FOUND THAT ONE OF THE TANKER,

DELHI GOVT RESERVE		
INOX SURAJPUR	37	
REFILLERS	37.5	RECEIVED FROM SPECIAL SUPPLY
AIR LIQUIDE	38	FROM AIR LIQUIDE

ANNEXURE VI

1. **LMO stock capacity of hospitals –**

   a. The data pertaining to the LMO storage capacity in hospitals of Delhi is not consistent with our records.

Total hospitals having LMO	89
LMO capacity of 89 hospitals	670.03 MT
Oxygen capacity in cylinders of 89 hospitals	94.1 MT

   b. Study says that major hospitals have more than 12 hours of stock. Even then, 12 hours of stock is not enough in the face of uncertain supplies. In fact, the uncertainty of supply is demonstrated by the fact that suppliers have not given us the schedule of replenishing the stock, nor are they following any consistent schedule of supply.
   c. The hospitals and the health facilities are required to maintain adequate LMO stock so that they are in a position to look after/treat the COVID patients as per the protocol.
   d. It has been the endeavor of Delhi government to regularly replenish the LMO stock in the hospitals and refillers to avoid the SOS situation which the state witnessed after 24th April on a consistent basis.

2. **Inadequate storage infrastructure –**

   a. As per the study itself, 29% of the storage is still vacant. This means that LMO stock is still not up to its full storage capacity.
   b. Delhi government has been able to decant all the Reliance and Linde containers within a record time of 6-8 hours despite facing shortage of tankers and lack of compatible equipment. This clearly shows that there is still large absorption capacity available in hospitals and refillers in the NCT of Delhi as decanting process has been smooth.

3. **Alternate storage space in nearby states –**

a. GNCT of Delhi has already placed orders for about 250 MT of static cryogenic tanks in Delhi. However, the same will take 3-4 weeks to be available.
b. Hon'ble Supreme court of India vide its order dated 30 April, 2021, in Writ Petition (Civil) No.3 of 2021, has observed

> *"We therefore, direct the Central Government in collaboration with the States to prepare a buffer stock of oxygen to be used for emergency purposes to ensure supply lines continue to function even in unforeseen circumstances. The location of the emergency stocks shall be decentralized so as to be immediately available if the normal supply chain is disrupted to any hospital for any reason. The emergency stocks shall be created within the next four days. The replenishment of the emergency stocks will also be monitored on a real time basis through the virtual control room in active consultation with each state/UT. This is in addition to the day today allocations."*

In pursuance of the directions of Honorable Supreme Court, GNCT of Delhi had created buffer reserves even when the Central government has not provided additional supplies which it was supposed to provide as per the directions of SC.

c. With regards to the data of Air Liquide, in pursuance of the directions by Hon'ble SC, the GNCT of Delhi had to create buffer reserve. As no additional supplies were given by the Centre, some part of our regular supplies from Air Liquide has been converted into buffer reserve.
d. Despite several reminders to Goyal Gases to submit its supply schedule, it has failed to do so. It serves some big hospitals like LNJP, GTB and RML where its supply has been very irregular. This had resulted in frequent drying of cryogenic tanks many times, and our SOS team had to rush to save the situation. LMO supplies through alternate sources had been given to all the hospitals which are being served by Goyal Gases whenever there was any delay/uncertainty by Goyal Gases. It was made clear to Goyal Gases and other suppliers that only if regular schedule of delivery of LMO is followed by them then GNCT of Delhi would not get SOS or need to provide LMO on an urgent basis to any of the hospitals.

4. Shortfall of supplies –

a. It is made evidently clear that Delhi government has never ever returned back 74 MT of LMO to Linde, due to non-availability of space in LMO storage. In fact, on the contrary, Linde has been witnessing reduced supplies from its Selaqui plant of Dehradun from where it is only receiving 25-30 MT against a committed supply of 55 MT. To cater to its clients, Linde has been requesting Delhi government to provide 50 MT of LMO from the eastern sector supplies on a daily basis so that it can cater to its demand of about 80 MT to the hospitals Linde is serving.

b. Delhi government has repeatedly asked the Central government and Linde to ensure that the supplies of eastern sector are provided to Delhi at its border, so that they can be utilized by the hospitals and health facilities of Delhi. However, even after the allocation of 200 MT from the eastern sector, Central government and Linde have not been able to provide more than 70-80 MT to Delhi from the eastern sector against the allocation of 200 MT.

c. Goyal Gases is having only two tankers with which it is not being able to lift the supplies and provide it to its hospitals in Delhi. This also results in irregular and uncertain supplies from Goyal Gases which obligates Delhi government to provide supplies on SOS basis to different hospitals being served by Goyal Gases.

5. Current scenario of the COVID cases –

a. The yardstick of comparison of active cases amongst the states is not appropriate. It doesn't establish oxygen usage. Instead, the number of hospitalized patients where the oxygen is actually used should be compared to assess the requirement of LMO amongst the states.

b. Although the active cases and positivity rate have shown a decline in the past few days. However, the ICU occupancy still remains very high at 92% even after beefing up of ICU infrastructure. Therefore, the conclusions being drawn with the declining trend of active cases is not right.

c. Delhi has never demanded any amount of LMO in excess of its requirements. In fact, when Delhi computed its requirement at about 700 MT, the actual allocation was fixed at 590 MT by the Centre. Even the 590 MT was made available to Delhi on only 3 days. Moreover, the oxygen requirement is dynamic and as soon as Delhi's requirement decreased, a proactive communication was sent to the Central government restating its current requirement.

d. The finding that Delhi received excess of oxygen is incorrect. Delhi has never received excess oxygen. Only on May 5th it received 730 MT of oxygen which was more than its allocation.

e. The central and the state audit team has visited various hospitals and has accordingly engaged with the medical professional to rationalise the demand. For example, in the case of Deen Dayal Upadhyay hospital, the usage has reduced from 6.9 MT to 4.7 MT after due consultation with medical professionals and suggested rationalisation. In another example, as a responsible state, we have already requested the Centre to reduce our special supplies by 50 MT.

ANNEXURE VIII

OFFICE OF THE PRINCIPAL SECRETARY-CUM-
COMMISSIONER TRANSPORT &
OSD HEALTH & FAMILY WELFARE DEPARTMENT
GOVT. OF NCT OF DELHI
5/9 UNDERHILL ROAD, DELHI-110 054

No. PA/OSD/H&FWD/2021/16 Dated: 14-05-2021

Minutes of the 4th Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD) have been received. The matter was discussed with Chief Secretary, Delhi and it appears that the Committee has not taken the totality of the picture into consideration. The comments of GNCT of Delhi as approved by the Chief Secretary, Delhi are enclosed, which may brought before the Sub-Group before its final recommendations are made.

Ashish Kundra, IAS
OSD (Health)
Govt. of NCT of Delhi

Pr. Secretary (Home)
Govt. of NCT of Delhi

Copy to:-
Pr. Secretary, Health

The minutes of the 4th meeting of Sub group for conducting oxygen audit were received.

The following issues merit attention:

a) Sub group was mandated to see if the distribution supply chain was efficient enough to ensure that oxygen as allocated is received, and oxygen as received is delivered in a timely, orderly and efficient manner. A detailed note on the same has been submitted on the formula of arriving at oxygen demand, the basis for making pro rata allocations to institutions and the system adopted for streamlining distribution.

b) There has been no rational explanation given for why the range of 290-400 MT of LMO has been suggested for Delhi. In fact, no calculation whatsoever has been shown. It is as if a best-guess scenario was taken quickly by the committee without following the time-honoured principles of evidence collection and analysis before carefully arriving at conclusions.

c) Clearly, the assumption that only 50% of non-ICU beds use oxygen is not correct in the context of a respiratory disease like Covid-19. In fact, almost all hospitalized patients need a regular supply of oxygen in such case. Fall in oxygen saturation is the first and primary reason that patients get admitted to a hospital after contracting Covid-19, and most are put on oxygen. If there is any doubt or confusion about the percentage of non-ICU beds that need oxygen under such circumstances, it can only be resolved through an actual on-ground audit of hospitals and ascertaining from them, in what percentage of non-ICU cases did the patient need oxygen support. It will be misleading to use the figure of 50% for this calculation.

d) What's worse – the actual allocation of 300 MT that has been recommended even falls short of the committee's own formula (though strongly disputed) that only 50% beds need oxygen. Even by that calculation, the requirement is 415 MT only for Covid hospitals. Requirements for non-covid hospitals, ambulances, and for smaller covid nursing homes not reflected on the portal are additional.

e) The GNCTD figure of 568 MT has been arrived at based on **actual bed occupancy**, and using oxygen utilization formulae which have also stood the test before the Hon'ble Supreme Court. Using a figure of 50% for beds that need oxygen amounts to nothing more than a paper exercise, ignoring the hard on-ground data points that are available to us. There is absolutely no need to assume something for which specific data is available.

f) Further, even while the representative of GNCTD has pointed out, no provision has been made for non-Covid hospitals, individuals requiring oxygen support at home, ambulances and small nursing homes admitting Covid patients but not reflected in the database.

g) It may be recalled that the SOS calls in Delhi stabilized only after the average daily supply crossed 550 MT (including 700MT plus one one day). It is clear that this quantity was actually being consumed in Delhi. While this may come down with decreasing case-load and positivity, currently we are not in a position where Delhi can survive with an allocation of only 300 MT per day.

h) The key point for the consideration of sub-group was to see if the oxygen supplied to hospitals and other institutions is being used efficiently and as per industry norms. That was the primary purpose of roping in experts and doctors into the sub group. From a perusal of minutes, and the proceedings, it appears to have been a perfunctory desktop exercise, conducted hurriedly, without even conducting an audit of a single institution in the true sense. Audit, by definition is an exercise which entails physical checking of inventory to assess the fidelity of information, data and usage. The idea is the ensure that no institution is wasting precious resource or is using it sub optimally. It is also meant to advise the government on a more rational method of distribution, storage and usage. Sadly, it is noted that none of the experts actually visited a single institution or interacted with their heads to get a first-hand account of the grim realities which were created by supply shortages. Data formats appear to have been hurriedly circulated, with a short timeline of response, leading to erroneous entries and even more erroneous conclusions.

i) Observations of "Chairperson" regarding the department being unable to offload tankers is also strange, given that several SOS calls had been received for his own institution for tanker supplies. It is only when the system has stabilized that this strange narrative is finding place in a committee of experts.

j) A fundamental principle of jurisprudence is to arrive at a judgement after affording an opportunity of hearing to the other side. It is sad and shocking to note that the sub-group has arrived at sweeping conclusions without even adhering to this principle, even though the group itself has been constituted by the court.

k) The committee needs to begin with the GNCTD calculation of 568 MT which is a scientifically modelled and data-driven estimate, and then point out where it feels the actual requirements could be higher or lower. Pulling out random numbers based on speculation or conjectures will only complicate the situation. The only rational point where the committee can disagree with the figure of 568 MT is by insisting that only 50% of the non-ICU beds need oxygen. This fact cannot be determined through an arm-chair paper exercise but through an actual survey on the ground.

ANNEXURE X

Fwd: Approval for temporary reserve of LMO

From : zafar khan <zafar.khan@airliquide.com> Mon, May 10, 2021 10:52 PM
Subject : Fwd: Approval for temporary reserve of LMO
To : Dr sanjay kumar singh controller of explosives PESO <sksingh@explosives.gov.in>
Cc : Sushil Kamlakar Satpute <sushil.satpute@nic.in>, sumita dawra <sumita.dawra@nic.in>, bertrand monnoie <bertrand.monnoie@airliquide.com>, herve chorosz <herve.chorosz@airliquide.com>, hitangshu majumdar <hitangshu.majumdar@airliquide.com>

Dear Sir,

As discussed and communicated by me the reason of Delhi shortfall by 38 tons today is the acceptance of mail
(given below) by the Delhi Govt. for creating a buffer of 300 tons MLOX in coming days as emergency stock.

Thanks & Regards

Zafar Khan

9871392705

---------- Forwarded message ---------
From: **Udit Prakash Rai** <ss2covid19@gmail.com>
Date: Mon, May 10, 2021 at 10:35 PM
Subject: Re: Approval for temporary reserve of LMO
To: KHAN, Zafar <zafar.khan@airliquide.com>

Sir as agreed by you we approve the creation of buffer with air liquid for delhi Govt.
Today we have 38 ton of LMO buffer with air liquid.

On Mon, 10 May 2021 at 22:00, KHAN, Zafar <zafar.khan@airliquide.com> wrote:

Dear Sir,

As discussed please confirm that "AIr liquide started stocking MLOX for you from today with 40 tons
and from tomorrow it will be 62 tons per day and we shall keep all 300 tons of MLOX at our Panipat plant
as an emergency stock for Delhi.

Thanks & Regards

Zafar Khan

9871392705

On Mon, May 10, 2021 at 2:41 PM KHAN, Zafar <zafar.khan@airliquide.com> wrote:

Dear Sir,

we agree to stock your 62 tons (Panipat 42+ Roorkee 20) from tomorrow onwards.

Please make a note we shall intimate you soon if we face issues like evaporation losses & loss of sales.

Thanks & Regards

Zafar Khan

9871392705

On Mon, May 10, 2021 at 2:14 PM Udit Prakash Rai <ss2covid19@gmail.com> wrote:

Sir,

In continuation of your email dated 9th May 2021 on the subject approval of creation of temporary static reserve of LMO at Air Liquid plant Panipat and in pursuance of Hon'ble Supreme Court Order, I am to inform you that in principal approval of the creation of temporary buffer have been obtained by the competent authority.

Therefore, the proposed temporary reserve may be opertionalised from today as per following guideline

1. The supply which Delhi is receiving from LINDE shall be distributed by Delhi Govt as per the distribution plan approved by the competent authority.
2. As per latest allocation order for Air Liquid, the quota of Refillers of Delhi from Panipat and Roorkie plant is 44 + 20 = 64 MT.
3. Air Liquid shall not release the quota to the refillers to the extent which has been provided by Delhi Govt to the refillers (44+20=64) and secure it as DELHI GOVT RESERVE in its own facility at Panipat. In lieu of that, Delhi Government shall ensure that the refillers of Air Liquid shall get their allocated quota (64 MT) from its special or other supply.
4. Air liquid shall keep on building the reserve on a daily basis as per the quota being released to refillers by DELHI Govt to the ceiling of 300 MT.
4. As and when the demand is raised by DELHI GOVT against the reserve being kept by AIR LIQUID, it shall provide the same to DELHI GOVT as per the mutually agreed rates & terms & Conditions.
5. Air liquid and Delhi Govt. shall maintain detailed account for the amount of LMO stored on a daily basis and reconcile it on a regular basis.
6. As and when Delhi Govt shall make the demand for supply of the reserve it shall be released from Air Liquid facility Panipat.
7. No amount of LMO can be released from the facility or diverted to any state except with the approval of the OSD OXYGEN Delhi Govt from the temporary reserve being created in the Air Liquid facility. Any diversion, other than those approved by OSD Oxygen Delhi Govt would be violation of Hon'ble Supreme Court orders.
8. The transportation, evaporation and other losses incurred in decanting and loading of LMO shall be taken into account as per the normal industrial standard on a mutually agreed basis.

You are again requested to kindly immediately operationalise the reserve.

Udit

ANNEXURE XI

Email

Dr sanjay kumar singh controller of explosives PESO

Fwd: Facing the practical difficulties Since last two/three days.

From : Dr sanjay kumar singh controller of explosives PESO <sksingh@explosives.gov.in> Mon, May 10, 2021 12:42 PM
1 attachment

Subject : Fwd: Facing the practical difficulties Since last two/three days.

To : Senthil Nathan S <senthil.nathan@gov.in>

From: mukeshgupta@goyalgroup.com
To: "Dr sanjay kumar singh controller of explosives PESO" <sksingh@explosives.gov.in>
Cc: "Joint Chief Controller of Explosives Faridabad, PESO" <jtccefaridabad@explosives.gov.in>
Sent: Monday, May 10, 2021 12:29:09 PM
Subject: FW: Facing the practical difficulties Since last two/three days.

Dear Sir,

As discussed with you,
Please find the below two mails which are self-explanatory.

Apart from this , Ghaziabad plant actual liquid medical oxygen is coming around 54/55 MT , Cso we are not in position to give 24/25 MT per day liquid Medical oxygen to delhi from our Ghaziabad plant. So please revise the allocation for Delhi.
For Uttar pradhesh our allocation is current which is 30 MT per day

Regards,

Mukesh Gupta ..... Mobile : +91 9643311915
GOYAL GROUP
Goyal MG Gases Pvt Ltd

From: mukesh gupta [mailto:mukeshgupta@goyalgroup.com]
Sent: Monday, May 10, 2021 10:54 AM
To: ss2covid19@gmail.com; Prince Dhawan (prince.dhawan@ias.nic.in); Vivek Mittal (vivek.mittal26@nic.in)
Cc: 'Goyal Gases,GZB (gzb@goyalgroup.com)'
Subject: RE: Facing the practical difficulties Since last two/three days.

Dear Sir,

In reference of below mail incidents and unfortunately Two more indent happened with us in DDU Hospital

1) Incident 1: Delhi Government tanker arrived on dated 9.5.2021 afternoon in DDU hospital at level of 1500 mmwc when critical level is 600 mmwc. And there was time of 7 hours to reach at critical level when our tanker was just 2 hour away. they have decanted the tanker sent by Delhi Gove (Tanker of M/s Semicon Speciality Gases limited) without informing to us which is leading lot of practical difficulties which are not attributable to us causing hindrances in supplying the allocated quality of oxygen delivered to the hospitals. Adversely hampered the Turnaround of our tanker and hampered the lifting of procurement qty and also reduce our qty which is mentioned in allocation.
2) Incident 2 : Delhi Government tanker arrived again on dated 10.5.2021 at 10 am (Informed by Mr Anand) in DDU hospital at level of 1900 mmwc when critical level is 600 mmwc. DDU hospital has informed us to not send the tanker today which is leading lot of practical difficulties which are not attributable to us causing hindrances in supplying the allocated quality of oxygen delivered to the hospitals. Adversely hampered the Turnaround of our tanker and hampered the lifting of procurement qty and also reduce our qty which is mentioned in allocation.

Request you to kindly resolve this issue immediately ,

Regards,

Mukesh Gupta ..... Mobile : +91 9643311915
GOYAL GROUP
Goyal MG Gases Pvt Ltd

From: mukesh gupta [mailto:mukeshgupta@goyalgroup.com]
Sent: Saturday, May 8, 2021 1:01 PM
To: ss2covid19@gmail.com; Prince Dhawan (prince.dhawan@ias.nic.in); Vivek Mittal (vivek.mittal26@nic.in)
Cc: 'Goyal Gases,GZB (gzb@goyalgroup.com)'
Subject: Facing the practical difficulties Since last two/three days.

Dear Sir,

We as a supplier are facing lot of practical difficulties which are not attributable to us causing hindrances in supplying the allocated quality of

oxygen delivered to the hospitals.

1. Since last two days, reliance vehicles are unloading the material in LNJP and other hospitals .

2. Due to that our vehicles are waiting for many hours in unloaded at hospital end. Accordingly turn around and quantity is decreasing from allocation qty.

3. Yesterday one of our tanker HR 38 4074 reached LNJP at 12 noon dated 7.5.2021 and decanted fully at 0850 hrs dated 8.5.2021 because hospital was unloading one reliance vehicle of approximately 15 mt. Infact our tanker has unnecessary waited there for 20 hrs that has adversely hampered the Turn around of our tanker and hampered the lifting of procurement qty and also reduce our qty which is mentioned in allocation.

4. The hospitals are not informing to vendors and unnecessary our tankers and drivers are waiting in covid hospitals for a very long period.

5. Even Our drivers have now started objecting strongly that they are not going to wait for a longer period in covid hospital risking their lives.

6. The hospital administration and the nodal officers are hereby requested to kindly look into this issue at the earliest and evolve a mechanism to avoid this long waiting period and smooth delivery and turn around of our tanker to enable us to meet out commitments.

Request you to kindly do the needful and resolve these issues.

Many Thanks with Best Regards,

Mukesh Gupta ..... Mobile : +91 9643311915
GOYAL GROUP
Goyal MG Gases Pvt Ltd

From : mukeshgupta@goyalgroup.com Mon, May 10, 2021 12:30 PM
Subject : FW: Facing the practical difficulties Since last two/three days. 1 attachment
To : Dr sanjay kumar singh controller of explosives PESO <sksingh@explosives.gov.in>
Cc : Joint Chief Controller of Explosives Faridabad, PESO <jtccefaridabad@explosives.gov.in>

Dear Sir,

Interim Report on Oxygen Audit of NCT of Delhi

As discussed with you,
Please find the below two mails which are self-explanatory.

Apart from this , Ghaziabad plant actual liquid medical oxygen is coming around 54/55 MT , Cso we are not in position to give 24/25 MT per day liquid Medical oxygen to delhi from our Ghaziabad plant. So please revise the allocation for Delhi.
For Uttar pradhesh our allocation is current which is 30 MT per day

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Goyal MG Gases Pvt Ltd

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Request you to kindly do the needful and resolve these issues.

Many Thanks with Best Regards,

Mukesh Gupta ..... Mobile : +91 9643311915
GOYAL GROUP
Goyal MG Gases Pvt Ltd

ANNEXURE XII

Proforma for Oxygen Stewardship Programme at Delhi Hospital

Version: 2

Name of the Hospital:

Details pertaining to Healthcare facility:

Total number of inpatient beds	
Total number of operation theatres	
Total number of ICU beds	
Total number of ventilators installed and functional	
Total number of HFNCs installed and functional	
Total number of NIV equipment installed and functional	
Oxygen storage capacity • LMO (in cm of H_20) • D type cylinders	
Oxygen concentrators – Number (Cumulative O_2 production capability in KL)	
Availability of PSA plant – Number (Cumulative O_2 production capability in KL)	
Time duration for which total storage can last (in hours)	
Average Bed Occupancy Ratio • Ward • ICU	
Oxygen Stewardship Team *Recommended constitution:* • *Faculty/Doctor (Anaesthesia/Medicine/Pulmonary Medicine)* • *Hospital Administrator* • *Oxygen Nurse*	
Dedicated trained staff for operating Manifold Services	
CAMC/AMC of manifold services & installations	
Fire safety measures at Manifold Services	

Details pertaining to patient care area (To be filled by patient care areas individually) –

Patient care area details	Ward/ICU/ Emergency
Total number of inpatient beds including observation beds as notified by Hospital Administration	
Number of oxygen points for patients- Available (functional)	
Oxygen outlets checked for any leakages	
Oxygen flowmeters - Available (functional)	
Number of oxygen cylinders available • D Type • B type	
Number of oxygen concentrators - Available (functional)	
Number of patients on oxygen: • Face mask • Nasal Prongs • NIV • HFNC • Ventilators	
Pulse oximeters - Available (functional)	
Five para cardiac monitors - Available (functional)	
O_2 prescription should contain following information: • Baseline physical examination and observations (Respiratory rate, respiratory effort, cyanosis, level of consciousness etc) • Target saturation • Flow rate • Method of administration • Review timings • Future plan of management	
Capacity building of staff in optimising use of oxygen (%)	

Oxygen prescription Audit: an audit designed to evaluate the different aspects of Oxygen therapy: prescription, transcription, administration, and monitoring.

Oxygen prescription audit in any patient care area should be carried out at least once every six months to identify improvement opportunities. Should be a peer review by a team comprising of a Doctor and Nursing Officer. Findings of

the same may be discussed during **Oxygen Review Meetings** of the hospital to be held once every quarter.

ANNEXURE XIII

GOVERNMENT OF NCT OF DELHI
HOME DEPARTMENT
DELHI SECRETARIAT

F. No. PSH/Oxygen/2021/7 Dated: 23rd May 2021

This is with reference to the Minutes of the 5th meeting of the Audit Sub-Group for NCT of Delhi held at 7 pm – 9.30 pm on 15th May 2021 posted on the Whatsapp group of the Sub-Group at 6.05 pm on 19th May 2021.

The detailed edits/comments of GNCTD on the draft Minutes were forwarded to all the Members vide my note dated 21st May 2021.

As per the suggestion received yesterday evening on the group, comments of Govt of NCT of Delhi on the draft Minutes are enclosed herewith as a document, which should be included/attached before the Minutes are forwarded to any authority.

(Bhupinder S. Bhalla)
Principal Secretary (Home)
& Member of the Audit Sub-group

Enclosed: As above

Members of the Audit Sub-group for NCT of Delhi

Comments of GNCTD on the Draft Minutes dated 19.05.2021 of the 5TH Meeting of the Sub-group for conducting oxygen audit for National Capital Territory of Delhi (NCTD)

1. The draft minutes circulated and comments of GNCTD on the specific paras, where needed, are given below, *based on actual discussion in the meeting but not reflected in the minutes*:

   - At the outset, Chairperson informed the house that a meeting of National Task Force for COVID 19 was held today morning i.e., 15.05.2021, where various member states presented their oxygen requirement. He also informed that there is huge surge in COVID 19 cases in Tamil Naidu and CMC Vellore is left with barely 8 hours of LMO. He urged the members and officials to take a holistic view, to ensure equitable distribution of LMO to all needy areas of the country instead of focussing on only one state.

   - Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, appraised the house that current production capacity for LMO is 7,300 MTs, while the allocation done to various states is 10,500 MTs. As a result, LMO reserves which are 47,800 MTs are depleting and another 30,000 MTs including LMO can be utilised from reserve. She stressed upon the judicious use utilisation of LMO as there is increase in demand from Southern part of the country, while demand from Northern and Western part of the country has not gone down.

   - Principal Secretary (Health), Govt of NCT Delhi informed that data on oxygen requirement, gathered for 12th May on the proforma made by this subgroup, has been further updates after the last meeting and data from 214 hospitals has been fed into spreadsheet, however, it still lacks additional data from 2 to 3 big hospitals for e.g. GTB & LNJP hospital which have added 500 additional beds each for COVID 19 patients. In addition, some data on oxygen cylinders available with hospitals, refillers and certain other establishment is missing. Also, some buffer component needs to be factored in while calculating requirement.

     COMMENT:
     It was mentioned that the data of 214 hospitals is based on signed forms received from them. The spreadsheet was shared with the Sub-group prior to the meeting. It was mentioned that the requirement of oxygen for oxygen cylinders with home isolation patients, refillers and certain other establishment is has to be taken into account. Also, oxygen for non-COVID requirement and some buffer component need to be factored in while calculating the total oxygen requirement of Delhi.

   - It was informed that as per the latest calculations, with given occupancy as on date i.e. 12593 oxygen beds and 4766 ICU beds, total O_2 consumption is 449 MTs, while as per GOI formula it is 342 MTs, however it is 474 MTs by Delhi Government formula. Due to the cylinders being not accounted and including buffer stock an error of 2 to 3% may be considered. In the current calculations, there are no large negative figures,

as pointed out previously, however, there are certain hospitals having large positive variation for e.g. Mool chand Hospital has variation of 800%. It was also informed that on direct enquiry with the hospital, it had been stated by them that their actual consumption is the correct value.

COMMENT:
It was mentioned that the Delhi Government formula is based on ICMR guidelines. It was also mentioned that due to the usage pattern observed for the additional requirements mentioned above, a buffer (of around 75 MT) may be considered.

- A presentation was made by OSD, Health & Family Welfare, Govt of NCT Delhi and salient points from the same have been highlighted below:

  - NCT of Delhi receives LMO supplies from eastern parts of the country, Panipat and Ghaziabad.

    COMMENT:
    It was mentioned that NCT of Delhi receives LMO supplies traditionally from neighbouring states of Haryana, Uttarakhand and UP. These have been largely tanker based supplies and have during the peak pandemic period been erratic and unreliable. Container based supplies started from eastern parts of the country: Jamshedpur, Durgapur and Kalinganagar, which added a degree of reliability and predictability. So was the case with special supplies from Jamnagar.

  - Total allocation being made to Delhi is 590 MTs, however, only on two days this allocated amount has been made available.

    COMMENT:
    This allocated amount was made available only for three days between 4th May till 14th May.

  - Data presented was from 10th May onwards and it was assured that trends from 29th April onwards will be made available to the subgroup for evaluation.
  - Occupancy of COVID beds (ICU and Non-ICU oxygenated) is showing a downward trend, however, ICU occupancy as on date is still 90%, while oxygen use of non-ICU beds has come down to 70%.
  - Delhi had its peak on 2nd May and thereafter, the number of cases is showing a downwards trend.
  - It was clarified that only oxygenated beds have been taken into consideration while calculating oxygen requirement by the Delhi Government formula, while the GOI formula considers all beds including non-oxygen beds.
  - An assured supply should be made available to Delhi as delivery schedules are not being provided by the suppliers.
  - It was reiterated that the situation is dynamic, however, adequate, and reliable supplies should be made available to NCT Delhi considering all logistical challenges.
  - It was informed that data captured on the Delhi Govt portal was more reliable than data submitted in the forms created specifically by the sub-group and actual

consumption as per portal data is 442 MTs. Requirement of LMO calculated from data captured using excel sheet is 490 MTs.

- It was concluded that total consumption of Delhi is not less than 500 MTs.

COMMENT: It was also highlighted that the group should consider aspects of supply chain management and distribution network equally, as stipulated in the terms of reference of the Supreme Court Order.

- Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, expressed anguish over the way the data was collated by Govt of NCT Delhi, as it still has lot of errors which have been pointed out. It is still not clear on what basis had an allocation of 700MT been sought by Govt of Delhi in the Supreme Court of India when collated data had so many gross errors and it took an oxygen audit to point out the same. It also appears that Govt of Delhi used a wrong formula and made exaggerated claims on 30th April. It was also evident that some hospitals could not differentiate between KL and MT and the same was not examined while projecting 700 MTs.

COMMENT:
Principal Secretary (H&FW), GNCTD clarified that the calculation for 700 MT has been made as per the standard Oxygen requirement specified by GOI/ICMR ie 24 LPM for ICU beds and 10 LPM for NON ICU beds. The non-ICU oxygenated beds figure was taken into account and not the total non-ICU beds. Thus the non-oxygenated non-ICU beds were excluded from oxygen requirement calculation. Further, the number of ICU beds and Non ICU(oxygenated beds) was projected based on the active cases being witnessed in the concurrent period which was round 1 lakh. Hence, the calculation for 700 MT was fully in line with the guidelines and directions of GOI.

- Controller of Explosives, PESO informed that Delhi government has created a reserve of 300-400 MTs and as per given trend, requirement of LMO in Delhi should be 400 MTs.

COMMENT:
The creation of Buffer Reserve is as per the directions of Hon'ble Supreme Court, which had also directed GOI to provide additional supply over and above the regular allocation to create the buffer. Delhi Govt had in compliance of the Hon'ble Supreme Court orders created reserve to meet emergency requirements in the event of disruption of supply chain.

- It was suggested that actual consumption as on date, along with trend in positivity rate should be taken into consideration while calculating oxygen requirement for Delhi.

- Lot of apprehensions were placed regarding the quality of data and collated data for oxygen requirement in the Excel sheet cannot be relied upon for arriving at requirement. Reliability of data is low because of errors in calculation.

COMMENTS:

Apprehensions on reliability of part of the data were also raised mentioning that some figures are too large for being true.

Principal Secretary (H&FW), GNCTD stated that while there could be slight errors in some of the cells related to a few hospitals, these are being cleaned up by calling the hospitals and finding out the correct figures. It was suggested that the data on the NIC portal, where data is filled in by the hospitals themselves, should be used as a reference for future discussions, since regular meetings may be held.

Principal Secretary (Home), GNCTD stated that all the data is based on signed forms received from 214 hospitals, and these forms, in original, can be handed over to the Sub-group for record purpose and submission to the Court if needed. The data in the spreadsheet can be verified from the forms as well.

Representatives from Delhi Government insisted on an assured allocation of 500 MTs. This was not agreeable to the Chairperson as it appeared from the data provided that 400 MTs is enough as assured and a 100 MTs could be made available till 4pm. Also, given the drastic reduction in number of cases and installation of PSA plants in many hospitals, this requirement is bound to be significantly less. Subgroup decided to meet again to review situation, which has been very dynamic. Finally, as a compromise it was concluded that for the next few days Delhi may have an assured allocation of 500 MTs and if this is not consumed, it can be provided to other states. It was decided to meet again over the next 3 to 4 days and if the cases continue to decline and positivity rate also comes down this allocation may be significantly decreased.

COMMENTS:

Dr Sandeep Budhiraja also stated that at least 500 MT of oxygen should be allocated to Delhi for another week so that the current demand is taken care of.

Joint Secretary, MOHFW & DOWR stated as per his own feedback the conditional allocation based on a cut-off time is not practical. This was echoed by Principal Secretary (Home) who said that such conditional allocation should not be made.

Hence, it was agreed that for the next few days, Delhi may have an assured allocation of 500 MT per day and the unutilised portion for a day can be reallocated by Govt of India to other states the following day.

The Sub-group agreed that since the situation is dynamic in view of the declining number of cases and positivity rate, regular meetings may be held to review the requirement of oxygen for Delhi.

2. OTHER COMMENTS

a) A copy of order designating the Chairman of the Sub-group may be sent to all the members. In its absence, the minutes should list all members as "Member".

b) The Hon'ble Supreme Court in para 25 of its order has clearly directed that the Audit Sub-Group for NCT will be composed of four members (only). There is no fifth member of the sub-group in terms of the said direction. Participation of experts to assist the Sub-Group is, however, most welcome.

ANNEXURE XIV

GOVERNMENT OF NCT OF DELHI
HOME DEPARTMENT
DELHI SECRETARIAT

F. No. PSH/Oxygen/2021/8 Dated: 31st May 2021

This is with reference to the draft Interim report of the Sub-Group for conducting oxygen audit for NCT of Delhi, received by email on 30th May 2021 for perusal and approval.

The detailed Objections/Comments of the undersigned and the Govt of NCT of Delhi on the draft Interim Report are enclosed herewith.

It is requested that the draft Report be revised accordingly and shared again with all the members so that it can be approved and signed.

(Bhupinder S. Bhalla)
Principal Secretary (Home)
& Member of the Audit Sub-group

Enclosed: As above

Members of the Audit Sub-group for NCT of Delhi

Objections/Comments of Principal Secretary (Home), GNCTD and Govt of NCT of Delhi to the Draft Interim Report received on 30th May 2021

A perusal of the draft Interim Report of the Audit Sub-Group for NCT of Delhi received on 30th May 2021 has raised certain issues of grave and pressing concern which are being highlighted below:

A. Errors with regard to the findings/observations on Merits of the Report

Page 3:

- Medical oxygen consumption as per actual bed occupancy was 250 tonnes in late April, 470-490 MT in 1st week of May and 900 MT as claimed on 10th May 2021.

  This para should be deleted as it is neither correct nor based on verified data. With the number of new positive cases peaking in the first week of May, and hospital bed occupancy continuing to rise even after that, the oxygen requirement based on occupancy was around 625 MT at end of April and 700 MT in the first week of May.

- The formula used by Government of India and the formula used by Govt of Delhi were discussed. It was clarified that formula used by GOI was devised by a group of experts and is used for making LMO allocation to various states. This formula assumes that only 50% of the non-ICU beds use oxygen. However, the formula used by the Government of Delhi assumes that all non-ICU oxygenated beds use oxygen. Calculations were then made using both formulae and discussed.

  The following should be added:

  GNCTD stated that the Delhi Government formula is based on ICMR guidelines.

Page 4

- It was clarified that COVID 19 patients admitted in a patient care facility are at various stages of treatment and not all would require oxygen administration, even when they are occupying an oxygen bed. Even though the hospital policy is to only admit moderate and severe disease requiring oxygen, many such patients no longer require oxygen during recovery but cannot be discharged, sometimes due to comorbidities or a waxing and waning course. They continue to occupy the 'Oxygen non-ICU beds' particularly if all the COVID beds in the hospital have oxygen capability or the non-oxygen COVID beds are full. This is the real-life experience of all major hospitals including AIIMS. Thus, assuming that all patients admitted on 'oxygenated non-ICU COVID' beds will need oxygen for calculating LOM, requirement will be an overestimation.

  This 'clarification' has been added now. It may be attributed clearly to members who state this as Principal Secretary (Home), GNCTD does not agree to it.

Further, the following para should be added:

GNCTD is of the view that the formula it uses is based on ICMR guidelines and has stood the test before the Hon'ble Supreme Court. Further, the assumption that only 50% of non-ICU beds use oxygen is not correct in the context of respiratory disease like COVID-19. In fact, almost all hospitalised patients need a regular supply of oxygen. Fall in oxygen saturation is the first and primary reason that patients get admitted to a hospital and most are put on oxygen. Doubts about percentage of non-ICU beds that need oxygen can only be resolved through an actual on-ground audit of hospitals, which the Audit Sub-Group is yet to do.

Page 4

- Since this is a moving pandemic, medical oxygen requirement in a particular region/state is a very dynamic situation, which varies as days progress. Hence, it is extremely important to collate the actual current requirement of NCT Delhi.

The following para should be added:

However, GNCTD is of the view that the mandate of the Sub-Group, in terms of paragraph 24 (v) of the order of the Hon'ble Supreme Court dated 6th May 2021, is to focus on the areas that were possibly acting as bottlenecks in the matter of smooth and efficient supply and distribution of oxygen to hospitals and nursing homes in the NCTD and performing that function, and not the task of recommending the quantity of LMO to be allocated to Delhi, thereby transgressing into an area reserved for the National Task Force in terms of paragraph 24 (i) and (ii) of the said order.

Page 8

- During subsequent discussions after the meeting, it was noted that there were certain hospitals that had reported negative consumption. While some negative consumption may have occurred due to more supplies than use, in some cases the values were too large to be correct. The actual consumption data was thus again revised after deleting the negative values and replacing deemed erroneous values with recommended consumption values.

Revised data should also be reflected here to correct the erroneous table on Page 7 which is being misleadingly highlighted.

The following should be added:

The revised data for the 183 hospitals showed total Actual Oxygen Consumption of 390 MT against 209 MT calculated earlier.

Page 8

- Principal Secretary (Health), Govt of NCT Delhi informed that data on oxygen requirement, gathered for 12th May on the proforma made by this subgroup, has been further updated after the last meeting and data from 214 hospitals has been fed into spreadsheet, however, it still lacked data from 2 to 3 big hospitals for e.g. GTB & LNJP hospital which have added 500 additional beds each for COVID 19 patients. In addition, some data on oxygen cylinders available with hospitals, refillers and certain other establishment is missing. Also, some buffer component needs to be factored in while calculating requirement.

  <u>The following paras should be added:</u>

  It was mentioned that the data of 214 hospitals is based on signed forms received from them. The spreadsheet was shared with the Sub-group prior to the meeting. It was mentioned that the requirement of oxygen for oxygen cylinders with home isolation patients, refillers and certain other establishment has also to be taken into account. Also, oxygen for non-COVID requirement and some buffer component need to be factored in while calculating the total oxygen requirement of Delhi.

  It is further an indisputable fact that 214 is not the sum total of hospitals / medical establishments catering to patients suffering from Covid-19, In fact, the figure is more than 260. Therefore, the entire basis of the assessment / quantification of the LMO requirement in Delhi has been made on incomplete data.

Page 9

- As per the latest calculations, the total O_2 consumption is 449 MT, while considering bed occupancy as on date (12593 oxygen beds and 4766 ICU beds) as per GOI formula it is 342 MTs, and it is 474 MTs by Delhi Government formula. Due to the cylinders being not accounted and including a buffer stock, an error of 2 to 3% may be considered. In the current calculations, there are no large negative figures, as pointed out previously, however, there are certain hospitals having large positive variation for e.g. MoolChand Hospital has variation of 800%. It was also informed that on direct enquiry with the hospital, it had been stated by them that their actual consumption is the correct value.

  <u>The para should be corrected to reflect the following:</u>

  It was mentioned that the Delhi Government formula is based on ICMR guidelines. It was also mentioned that due to the usage pattern observed for the additional requirements mentioned above, a buffer of around 75 MT may be considered.

- NCT of Delhi receives LMO supplies from eastern parts of the country, Panipat and Ghaziabad.

The para should be corrected as follows:

It was mentioned that NCT of Delhi receives LMO supplies traditionally from neighbouring states of Haryana, Uttarakhand and UP. These have been largely tanker based supplies and have during the peak pandemic period been erratic and unreliable. Container based supplies started from eastern parts of the country: Jamshedpur, Durgapur and Kalinganagar, which added a degree of reliability and predictability. So was the case with special supplies from Jamnagar.

- Total allocation being made to Delhi is 590 MTs, however, only on two days this allocated amount has been made available.

The para may be corrected as follows:

Total allocation being made to Delhi is 590 MTs, however, this allocated amount was made available only for three days between 4th May till 14th May.

Page 9-10

- A presentation was made by OSD, Health & Family Welfare, Govt of NCT Delhi and salient points from the same have been highlighted below:

The following para should be added as the last bullet point:

It was also highlighted that the group should consider aspects of supply chain management and distribution network equally, as stipulated in the terms of reference of the Supreme Court Order.

Page 10

- Lot of apprehensions were placed regarding the quality of data and collated data for oxygen requirement through drafted proforma cannot be relied upon for arriving at requirement. Reliability of data is low because of errors in calculation.

The following para should be added:

Principal Secretary (H&FW), GNCTD stated that while there could be slight errors in some of the cells related to a few hospitals, these are being cleaned up by calling the hospitals and finding out the correct figures. It was suggested that the data on the NIC portal, where data is filled in by the hospitals themselves, should be used as a reference for future discussions, since regular meetings may be held.

- The filled proformas are available with the Delhi government officers and it was suggested that these may be shared with the sub-group.

  The following para should be added:

  Principal Secretary (Home) stated that all the data is based on signed forms received from 214 hospitals, and these forms, in original, can be handed over to the Sub-group for record purpose and submission to the Court if needed. The data in the spreadsheet can be verified from the forms as well.

- Addl. Secretary, Department for Promotion of Indian Industry and Internal Trade, Govt of India, expressed anguish over the way the data was collated by Govt of NCT Delhi, as it still has lot of errors which have been pointed out. It is still not clear on what basis had an allocation of 700MT been sought by Govt of Delhi in the Supreme Court of India when collated data had so many gross errors and it took an oxygen audit to point out the same. It also appears that Govt of Delhi used a wrong formula and made exaggerated claims on 30th April. It was also evident that some hospitals could not differentiate between KL and MT and the same was not examined while projecting 700 MTs.

  The following para should be added:

  Principal Secretary (H&FW), GNCTD clarified that the calculation for 700 MT has been made as per the standard Oxygen requirement specified by GOI/ICMR ie 24 LPM for ICU beds and 10 LPM for NON ICU beds. The non-ICU oxygenated beds figure was taken into account and not the total non-ICU beds. Thus the non-oxygenated non-ICU beds were excluded from oxygen requirement calculation. Further, the number of ICU beds and Non ICU(oxygenated beds) was projected based on the active cases being witnessed in the concurrent period which was round 1 lakh. Hence, the calculation for 700 MT was fully in line with the guidelines and directions of GOI.

Page 11

- Controller of Explosives, PESO informed that oxygen supply to Delhi and LMO tankers level are being monitored on daily basis and as per 8 am report on 13.05.2021 most of the LMO tanks in Delhi were filled with more than 75%, while few tanks were completely filled. It is obvious that there is excess oxygen supply in NCT Delhi, which is further substantiated by the fact that NCT Delhi has picked up only 11MT LMO from Air Liquide plant at Panipat by 11am on 13.05.2021. It was also pointed out that Delhi was unable to store all the LMO allotted to it and had asked the suppliers to hold oxygen in reserve at their own plants. *(Annexure X)*

  The following paras should be added:

However, GNCTD stated as follows:

> *The figures quoted are totally incorrect. On 13th May Delhi picked up 189.32 MT from Air Liquid Panipat. Hence the allegation that NCT of Delhi has not been picking up the supplies allocated to it, is wrong and misleading.*
>
> *Further, with regards to LMO tanks of the hospitals and the health facilities being filled, it is submitted that the LMO tanks are required to maintain adequate LMO stock so that they are in a position to look after/treat the COVID patients as per the protocol. Also if a particular amount of LMO is not maintained in the tank it may also result in drop of pressure and may endanger the patients which are on oxygen supply. Hence, to say that LMO tanks are 70% filled and to use it as an argument that NCT of Delhi does not require the allocated quantity is frivolous and irrational.*
>
> *GNCT has developed Buffer reserve with INOX and Air liquid as per the directions of Hon'ble Supreme Court, which vide its order dated 30 April, 2021, in Writ Petition (Civil) No.3 of 2021, observed:*
>
> > *"We therefore, direct the Central Government in collaboration with the States to prepare a buffer stock of oxygen to be used for emergency purposes to ensure supply lines continue to function even in unforeseen circumstances. The location of the emergency stocks shall be decentralized so as to be immediately available if the normal supply chain is disrupted to any hospital for any reason. The emergency stocks shall be created within the next four days. The replenishment of the emergency stocks will also be monitored on a real time basis through the virtual control room in active consultation with each state/UT. This is in addition to the day today allocations."*
>
> *In pursuance of the directions of Hon'ble Supreme Court, GNCT of Delhi had created buffer reserves even when GOI has not provided additional supplies which it was supposed to provide as per the directions of the Court.*

- Tankers in Delhi are not able to offload oxygen and are lying idle as oxygen tanks in various hospitals are completely filled. In this regard, a complaint has been received from M/S Goel Gases that their tanker has been parked at LNJP hospital and could not offload oxygen for many hours, leading to breakdown in supply chain. *(Annexure XI)* Similar, instances have been observed at AIIMS, New Delhi.

> *<u>The following paras should be added:</u>*
>
> *GNCTD has stated that the allegation is not correct and PESO appears to be relying on the supplier's claim without taking inputs from GNCTD indicating prejudice against the NCT of Delhi.*

GNCTD has informed that despite several reminders to Goyal Gases to submit its supply schedule, it has failed to do so. It serves some big hospitals like LNJP and DDU where its supply has been very irregular. This had resulted in frequent drying of cryogenic tanks many times endangering the lives of patients. GNCTD's SOS team had to rush to save the situation. LMO supplies through alternate sources had been given to all the hospitals which are being served by Goyal Gases whenever there was any delay/uncertainty by Goyal Gases. It was made clear to Goyal Gases and other suppliers that only if regular schedule of delivery of LMO is followed by them then GNCT of Delhi would not get SOS or need to provide LMO on an urgent basis to any of the hospitals.

GNCTD has also informed that none of the suppliers have submitted the schedule till now. This was repeatedly brought into the notice of DPIIT many times but to no avail. GNCT of Delhi has never intervened into the supplies schedule of any supplier except only in the SOS situation. GOI should direct the suppliers to provide the schedule so that any untoward situation can be averted in future.

Copies of some of the relevant correspondence are attached as Annexures A, B, C, D and E.

- It was informed by Controller of Explosives, PESO that Delhi has built reserves of approximately 470 MTs. Current daily LMO requirement of Delhi should be less than 400 MTS, given the fact that an average of 463 MTs of LMO is being supplied to Delhi and much of it is being stored and not used on that day.

The following para should be added:

GNCTD has clarified that the creation of Buffer Reserve is as per the directions of Hon'ble Supreme Court, which had also directed GOI to provide additional supply over and above the regular allocation to create the buffer. Delhi Govt had in compliance of the Hon'ble Supreme Court orders created reserve to meet emergency requirements in the event of disruption of supply chain.

Page 13

INTERIM RECOMMENDATIONS

On 15.05.21

Representatives from Delhi Government insisted on an assured allocation of 500 MTs. This was not agreeable to the Chairperson as it appeared from the data provided that 400 MTs is enough as assured and additional 100 MTs could be made available till 4pm. Also, given the drastic reduction in number of cases and installation of PSA plants in many hospitals, this requirement is bound to be significantly less. Subgroup decided to meet again to review situation, which has been very

dynamic. Finally, as a compromise it was concluded that for the next few days Delhi may have an assured allocation of 500 MTs and if this is not consumed, it can be provided to other states. It was decided to meet again over the next 3 to 4 days and if the cases continue to decline and positivity rate also comes down this allocation may be significantly decreased. The Subgroup decided to seek more information on oxygen requirement as and when needed. In addition, it also decided to carry out random physical inspection of various hospitals as deemed appropriate.

In absence of any specific order so far designating the Chairman of the Sub-group, the report cannot mention any member as "Chairman" at any place in the report and should designate all members as "Member".

Further, the following should be added:

Dr Sandeep Budhiraja also stated that at least 500 MT of oxygen should be allocated to Delhi for another week so that the current demand is taken care of.

Joint Secretary, MOHFW & DOWR stated as per his own feedback the conditional allocation based on a cut-off time is not practical. This was echoed by Principal Secretary (Home) who said that such conditional allocation should not be made.

Page 14

On 18.05.2021

All members were informed of the meeting but Dr. Sandeep Budhiraja and Sh. Bhupinder S Bhalla did not attend the meeting.

The reasoning of Principal Secretary (Home), GNCTD and Dr Sandeep Budhiraja for not attending the meeting should be clearly recorded.

The following should be added:

Several requests were made by Principal Secretary (Home), GNCTD on the Whatsapp Group, and then by written communication dated 16.05.21, for circulation of draft minutes. Similar requests were made by Dr Sandeep Budhiraja on the Group.

Dr Sandeep Budhiraja and Principal Secretary (Home), GNCTD vide their signed communications dated 18.05.21 (sent on the group at 3.12 pm and 3.27 pm respectively) clearly stated that further meeting of the Sub-Group should be held only after finalising the minutes of the previous meeting.

The meeting was still held at 5 pm on 18.05.2021 despite non-finalisation of minutes of the previous meeting held on 15.05.21 and ignoring the consistent stand of two members of the Sub-group.

Names of Members

The Hon'ble Supreme Court in para 25 of its order dated 6th May 2021 has clearly directed that the Audit Sub-Group for NCT of Delhi will be composed of four members (only). There is no fifth member of the sub-group in terms of the said direction.

The designation of Sh. Bhupinder S Bhalla should be corrected as "Principal Secretary (Home), Govt of NCT of Delhi"

B. Errors with regard to jurisdiction aspects

A reading of the draft Interim Report makes it painfully apparent that the Sub-Group, instead of focusing on the task delineated for it in terms of paragraph 24 (v) of the order of the Hon'ble Supreme Court dated 6th May 2021, which was really to focus on the areas that were possibly acting as bottlenecks in the matter of smooth and efficient supply and distribution of oxygen to hospitals and nursing homes in the NCTD and performing that function, has assumed to itself, and almost completely focused on, the task of recommending the quantity of LMO to be allocated to Delhi, thereby transgressing into areas that were reserved for the National Task Force in terms of paragraph 24 (i) and (ii) of the said order.

It was the function of the National Task Force to, based on a possible revisiting of the formula to be adopted for determining the allocation of Oxygen, assess the genuine requirement of each State.

The manner in which the proceedings of the Sub-Group have been conducted, suggests that the purpose of proceedings was to justify a pre-conceived and predetermined conclusion and narrative, to recommend a lower quantity of a LMO to Delhi, and to further portray an impression that the assessment by the GNCTD before the Hon'ble High Court of Delhi and the Hon'ble Supreme Court was exaggerated or not genuine. The draft Interim Report is attempting to indicate an assessment of the LMO requirement qua Delhi, which is neither a reflection of its genuine demand or requirements at the various points in time that the discussions were held, especially during the period when, though the cases had peaked, the high requirement of oxygen continued due to consistently high bed occupancy in hospitals.

There is no gainsaying that this kind of exercise does not further the spirit, intent and objective of the order of the Hon'ble Supreme Court whereby the Sub-group was constituted.

In our assessment, these fundamental errors, in the approach of the Sub-Group, goes to the root of the matter and was, therefore, highlighted from time to time during the course of proceedings of the Sub-Group. Unfortunately, the draft Interim Report instead of taking cognizance of the said concerns is proceeding to indicate the quantity of LMO to be allocated to Delhi. This, in our considered view, vitiates the entire exercise conducted by the Sub-Group.

Gmail

Udit Prakash Rai <ss2covid19@gmail.com>

Supply of liquid oxygen in DDU hospital

HOD ANAESTHESIA DDUH <dduhanaesthesiahod@gmail.com> Tue, May 11, 2021 at 12:24 PM
To: ss2covid19@gmail.com, Dduh Ms <msdduh@yahoo.in>, Gzb Goyal Gases <gzb@goyalgroup.com>

Sir/Madam
this is to inform that M/s Goyal gases is the regular supplier of liquid oxygen to DDUH for the past many years.When the Corona pandemic struck again this year,m/s goyal gases was unable to provide us with the complete supply of liquid oxygen demand and even demanded extra charges for the extra supply he has to give to the hospital beyond the regular supply, for which the hospital had agreed in these extraordinary circumstances.
Even now when he has been directed to give daily supply of liquid oxygen of about 8.6MT ,he is supplying only when the level of the hospital LMO tank reaches to alarming level of 600 to 700 mmwc . But the level of oxygen being low leads to concern in the gas store as to whether the supply will reach in time or not.covid
In view of all the above and given the capacity of the hospital of 500 beds including 200 ICU , M/s Goyal gases must ensure to provide supply as per allocated quantity on daily basis whenever the level reaches 1000mmwc failing which hospital will be hard pressed to seek LMO from whichever earliest possible source in view of patients health concern

–
Dr. Vatsala Aggarwal, (SAG)
HOD
Dept. of Anaesthesia
DDU Hospital
9718990112

Gmail

Udit Prakash Rai <ss2covid19@gmail.com>

Supply of liquid oxygen in DDU hospital

Udit Prakash Rai <ss2covid19@gmail.com>
To: "dawras@ias.nic.in" <dawras@ias.nic.in>

Sat, May 15, 2021 at 9:39 PM

Maam

As directed pl help in getting the schedule of supply of LMO to different hospitals from the following suppliers

1. INOX
2. LINDE
3. Goyal gases
4. Seth traders

They have not provided us even after repeated requests.

Further it is submitted that till the time they provide the schedule and also deliver the LMO as per the schedule. Delhi govt will make all efforts to help the hospitals in making arrangements for LMO.

UDIT

---------- Forwarded message ---------
From: **HOD ANAESTHESIA DDUH** <dduhanaesthesiahod@gmail.com>
Date: Tue, 11 May 2021 at 12:24
Subject: Supply of liquid oxygen in DDU hospital
To: <ss2covid19@gmail.com>, Dduh Ms <msdduh@yahoo.in>, Gzb Goyal Gases <gzb@goyalgroup.com>

[Quoted text hidden]

Annexure - C

Gmail

Udit Prakash Rai <ss2covid19@gmail.com>

Schedule for supply by the suppliers pf delhi

Udit Prakash Rai <ss2covid19@gmail.com> Mon, May 17, 2021 at 9:22 AM
To: dawras@ias.nic.in

Maam

In continuation of the previous mail on the same subject and as per your dierctions as we havent received any response from DPIIT in this reagrd it is again brought to your kind notice that as we havent received any supply schedule or any information in this regard either from the supplier or from DPIIT we shall continue with our efforts to provide the LMO to the hospitals if the concerned suppliers dont commit and schedule or provide the LMO on schedule to their clients.

[Quoted text hidden]

 Annexure - D

Gmail

Udit Prakash Rai <ss2covid19@gmail.com>

Schedule for supply by the suppliers pf delhi

Udit Prakash Rai <ss2covid19@gmail.com> Sun, May 16, 2021 at 11:28 AM
To: dawras@ias.nic.in

Maam

as we havent received any supply schedule or any information in this regard either from the supplier or from DPIIT we shall continue with our efforts to provide the LMO to the hospitals if the concerned suppliers dont commit and schedule or provide the LMO on schedule to their clients.

Thanking you

Yours sincerely
Udit
[Quoted text hidden]

Gmail

Schedule for supply by the suppliers pf delhi

Udit Prakash Rai <ss2covid19@gmail.com> Sun, May 16, 2021 at 7:57 AM
To: "dawras@ias.nic.in" <dawras@ias.nic.in>

Maam

As directed by you yesterday kindly help us in getting the schedule by 10 am today for all the suppliers of delhi so that we plan accordingly.
If we dont get the schedule we will not be able to plan and suppliers will raise their unreasonable claim that their supply tankers are waiting at the hospitals.
Hence pl provide the schedule for every supplier by 10 am sir.

We have requested them many times but they not provided.
If they dont provide maam delhi govt shall make all efforts to help evry delhi hospitals to ensure adequate LMO for their covid patients maam.

Kindly help.
We haven't received any schedule as yet.

Udit

ANNEXURE XV

MAX Institute of Internal Medicine

Dr. Sandeep Budhiraja
MD, DNB, FACP, FRCP (Edin)
Group Medical Director – Max Healthcare
Senior Director – Max Institute of Internal Medicine
DMC No.: 8259
Appointments: 8860 444 888, M: 9911 101 316 (Ms. Saran)
Emergency: 011-4055 4055
For free Home Delivery of Medicine: 8744 888 888
E-mail: sbudhiraja@maxhealthcare.com

To

The Respected Members of the oxygen audit sub group for NCT Delhi

I have gone through the interim report and wish to make following suggestions for incorporation in the report, for clarity:

The subgroup, in the first meeting itself, took a decision to get actual details of oxygen consumption from all the hospital of NCT Delhi, and for this, a detailed Proforma cum affidavit was made and circulated to all hospitals. After repeated corrections (as hospital medical superintendent used a different format), the total calculation of O2 consumption (based on actual consumption data of 214 hospitals) came to around 490 MT. This did not take into account, oxygen cylinder refilling & non COVID requirement of hospitals. It was suggested on the basis of actual consumption & not on basis of formula, that O2 allocation for NCT Delhi be kept at 500 MT & then reviewed twice weekly thereafter. In the last subgroup meeting, it was decided not to discuss this agenda in the sub group, as an oxygen commissioner, would be taking decision regarding oxygen allocation to states / UT.

Also to bring to the notice, that I did not attend the meeting on 18/05/2021, after prior information to the group on the whatsapp, that minutes of the previous meeting (held on 15/05/21) should be circulated prior to fixing up the next meeting. This was never done. This may please be added on page 14.

Warm Regards

Dr. Sandeep Budhiraja
Group Medical Director
Max Healthcare

OPD Timings:
Max Saket: Tue & Wed: 10.00 am – 2.00 pm
Max Panchsheel Park: Mon: 9.30 am – 12.30 pm, Fri: 9.30 am – 11.30 am
Max Gurgaon: Thurs: 10.00 am – 12.30 pm

Max Super Speciality Hospital, Saket
(West Block)
1, Press Enclave Road, Saket, New Delhi - 110 017
For medical service queries or appointments,
call: +91-11 6611 5050
www.maxhealthcare.in

Max Healthcare Institute Limited
Regd. Office: 401, 4th Floor, Man Excellenza, S. V. Road,
Vile Parle (West), Mumbai, Maharashtra - 400 056
T: +91-22-6610 0461/62
E: secretarial@maxhealthcare.com
(CIN: L72200MH2001PLC322854)