Institution Name: Directorate General of Specialized Medical Care, MoH

Document Title: Policy and Procedure of Oxygen Therapy

Approval Process

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Acknowledgement

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Acronyms:

ABG	Arterial Blood Gas
DOB	Date of Birth
FIO2	Fraction of inspired oxygen
LPM	Liters Per Minute
PaCO2	Arterial carbon dioxide tension
PaO2	Arterial oxygen tension/ Partial pressure of Arterial blood
PCO2	Partial Pressure of Carbon Dioxide
PO2	Partial Pressure of Oxygen
RCS	Respiratory Care Services
RT	Respiratory Therapists
SaO2	Oxygen saturation in ABGs
SpO2	Oxygen saturations measured by pulse oximetry

Policy and Procedure of Oxygen Therapy

1. Introduction

Oxygen therapy is the administration of oxygen at concentrations greater than that in ambient air with the intent of treating or preventing the symptoms and manifestations of hypoxia. Normally, your lungs absorb oxygen from the air you breathe. But some conditions can prevent you from getting enough oxygen. Lung disease is the usual cause for needing supplemental oxygen, other diseases, such as heart disease, may require treatment with oxygen. Low blood oxygen may make you feel short of breath, tired, or confused, and can damage your body.

Oxygen is a medication and requires a prescription from your healthcare provider. They will prescribe your oxygen at a specific flow rate and a specific number of hours per day. It can be given for a short or long period of time. There is no doubt about the importance of oxygen therapy, but its incorrect use causes specific damage. A high concentration of oxygen may cause absorption atelectasis, surfactant inactivation, and release of free radicals, and in premature infants it can cause bronchopulmonary dysplasia and retinopathy of prematurity.

Oxygen supplementation is monitored on the basis of the assessment of SpO2. Usually, an SpO2 of 92% is the target for patients requiring continuous oxygen supplementation.

2. Scope

This policy is intended for all healthcare professionals initiating, delivering and monitoring oxygen in all health care institutions in the Ministry of Health, Oman.

3. Purpose

3.1. To administer supplemental oxygen to infant, pediatric, and adolescent patients (via nasal cannula, simple mask, non-rebreathing mask or venturi mask) for all non-mechanically ventilated patients.

3.2. To insure that the Respiratory Care Practitioner maintains high quality patient safety and precaution standards while utilizing any of the delivery systems for oxygen therapy.

3.3. To achieve adequate tissue oxygenation using the lowest possible FiO2

3.4. To prevent cellular hypoxia, caused by hypoxemia (low PaO2) which can cause irreversible damage to vital organs

3.5. To treat or prevent hypoxemia thereby preventing tissue hypoxia which may result in tissue injury or even cell death

3.6. To decrease work of breathing and decrease myocardial work

4. Definitions

4.1. Hypoxemia: A decreased PaO2 in the blood below normal range

4.2. Hypoxia: Refers to a condition where the amount of oxygen available to the cells is not adequate to meet metabolic need.

4.3. Oxygen: A colorless, odorless reactive gas, the chemical element of atomic number 8 and the life-supporting component of the air

4.4. Ambient Air: An atmospheric air in its natural state, not contaminated by air-borne pollutants typically 78% nitrogen and 21% oxygen.

4.5. Atelectasis: The collapse or closure of a lung resulting in reduced or absent gas exchange

4.6. Retinopathy of Prematurity: A disease that affects immature vasculature in the eyes of premature babies.

4.7. Ductus Arteriosus: A blood vessel connecting the main pulmonary artery to the proximal descending aorta.

4.8. Oxygen Saturation (SaO2): A measurement of the percentage of how much hemoglobin is saturated with oxygen.

4.9. Arterial Blood Gas: A measure of oxygen level directly from patient's blood. ABG is the most accurate tests

5. Policy

5.1. All patients requiring oxygen therapy will have a prescription for oxygen therapy incorporating a target saturation recorded on the patient system.

5.2. The appropriate oxygen delivery system for the patient shall be chosen.

5.3. Oxygen delivery devices listed in this procedure will be available for all sizes of patients as served in each hospital.

5.4. The multidisciplinary team will administer and monitor the patient in keeping with the target saturation range.

5.5. All patients who require supplementary oxygen therapy should receive therapy that is appropriate to their clinical condition

5.6. Oxygen shall be used to treat hypoxia, not dyspnea or breathlessness.

5.7. Oxygen therapy shall be administered continuously unless the need has been shown to be associated only with specific situations

6. Procedure

6.1. Check for Indications

6.1.1. Documented Hypoxemia

6.1.1.1. In adults, children and infants < 28 days old, PaO2 > 60 torr or SaO2 > 90% breathing room air or PaO2 and/or SaO2 below desirable range for specific clinical situation.

6.1.1.2. In neonates or infants > 28 days old, a PaO2 >50 torr and/or SaO2 >88% or PCO2 > 40 torr

6.1.2. Suspected Hypoxemia in an acute care situation

6.1.3. Severe trauma

6.1.4. Acute myocardial infarction

6.1.5. Short term therapy as in post anesthesia recovery

6.2. Identify the Need for Assessment

6.2.1. Determined by the measurement of oxygen tensions (PaO2) and/or saturations (SaO2), by invasive (ABG) or non-invasive (pulse oximetry) methods as well as the presence of clinical indications previously described

6.3. Take the necessary precautions

6.3.1. If PaO2: > or = 60: ventilatory depression may occur in spontaneously breathing patients with elevated PaCO2

6.3.2. If FIO2 > or = to 50%: absorption atelectasis, O2 toxicity and/or depression of ciliary and/or leukocytic function may occur

6.3.3. Newborns:

6.3.3.1. In premature infants PaO2 > 80 torr should be avoided because of the possibility of retinopathy of prematurity

6.3.3.2. Increased PaO2 can contribute to the closure or constriction of the ductus arteriosus

6.4. Prepare equipment to use

6.4.1. Appropriate O2 Delivery Device

6.4.1.1 Nasal Cannula

6.4.1.2 Simple Mask

6.4.1.3 Non- Rebreathing Mask/ Partial Rebreathing Mask

6.4.1.4 Venturi Mask with Appropriate oxygen diluter adapter

6.4.2. Oxygen Flow meter: 0-15 LPM

6.4.3. Humidifier

6.4.3.1 Bubble humidifier (Prefilled or refillable disposable type)

6.4.3.2 Sterile water

6.4.4. Oxygen Connecting Tube

6.4.5. Nipple Adapter for Non- humidified therapy

6.5. Obtain the necessary equipment in the Respiratory Therapy equipment room and proceed to the patient's nursing unit.

6.6. Read the patient's order sheet for the doctor's specific instructions. Verify the patient's name, DOB, and bed location.

6.7. Proceed to the patient's bed, introduce yourself, and explain the procedure that it has been ordered by the patient's doctor. Check the patient's name and DOB verbally and by the patient's wrist band. Be reassuring. Be sure there is no ignition material at the patient's bedside

6.8. Wash your hands.

6.9. Connect the flow meter to the oxygen source and to the humidifier.

6.10. Attach the connecting tube of the delivery device. Turn On the flow meter.

6.11. Be sure there is flow from the device. Test for leaks, loose connections and proper function of the pressure relief valve by pinching the tube close to the device. Turn off the flow meter.

6.12. Adjust the device on the patient's face for maximum comfort and security.

6.13. Turn the flow meter to the liter flow specified in the doctor's order. Observe the initial effects of the treatment and make any necessary adjustments.

6.14. Properly document respiratory charges for equipment and oxygen hourly usage.

6.15. Complete appropriate documentation including type of delivery system, time, oxygen saturation and oxygen set-up information.

6.16. Discontinuing Oxygen Therapy

6.16.1. Inform the patient that oxygen is being discontinued on his/her doctor's order or according to criteria

6.16.2. Discard all disposable equipment

6.16.3. Remove all oxygen therapy equipment from the patient room

6.16.4. Return all permanent equipment to the respiratory therapy department.

7. Responsibilities

7.1 Respiratory Therapists are responsible for:

7.1.1. Assessing patients, initiate and monitor oxygen delivery systems, recommends changes in therapy and discontinuation of the therapy.

7.1.2. Educating patients and family members in the safe use of oxygen therapy equipment preventing dangerous incidents or events.

7.1.3. Regular observations and detection of potential or existing problems to determine the effectiveness of oxygen therapy.

7.1.4. Document the settings of any equipment being used and your observations related to the client's condition.

7.2 Doctor or Physician is responsible for:

7.2.1 Evaluating the patients need for oxygen and writes a specific order for oxygen therapy with the appropriate settings.

7.2.2 Monitoring results of arterial blood gases (ABGs) to assess improvement in a patient's condition or needing discontinuation of therapy.

7.3 Nursing Staff is responsible for:

7.3.1 Initiating, monitoring changes in therapy and discontinues oxygen therapy if RT is unavailable by following doctor's order of the flow as prescribed.

7.3.2 Informing the patient and relatives of the necessary precautions when oxygen is administered.

7.3.3 Checking and documenting of devices if being used appropriately.

7.3.4 Assessment of physiologic parameters (measurement of PaO2s or saturation) in any patient treated with oxygen

7.3.5 Notifying a physician immediately if any signs of respiratory difficulty or distress occur

8. Document History and Version Control

Document History and Version Control			
Version	**Description of Amendment**	**Author**	**Review Date**
01	Initial Release	Respiratory Care Services Team	May/2024
02			
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Written by	**Reviewed by**	**Approved by**
Respiratory Care Services Team	Khalsa Al Siyabi	Dr. Kadhim Sulaiman

9. Related Documents:

There is no related document for this policy

10. References:

Title of book/ journal/ articles/ Website	Author	Year of publication	Page
Oxygen Therapy for Adults in the Acute Care Facility; AARC Clinical Practice Guideline — Respiratory Care	AARC	2002 Revision & Update	VOL 47 NO 6 pp 717 - 720
Oxygen Therapy Clinical Best Practice Guidelines; College of Respiratory Therapists of Ontario; http://www.crto.on.ca/pdf/PPG/Oxygen_Therapy_CBPG.pdf		2013 November	
https://medlineplus.gov/oxygentherapy.html			
https://www.nhlbi.nih.gov/health-topics/oxygen-therapy			
https://www.lung.org/lung-health-and-diseases/lung-procedures-and-tests/oxygen-therapy/			
Precision and Accuracy of Oxygen Flow Meters Used at Hospital Settings ,Respiratory Care, DOI: https://doi.org/10.4187/respcare.01230	Josy Davidson, Claudia Gazzeta, Luciano C Torres,	July 2012	57 (7) 1071-1075
Validation of the National Institutes of Health consensus definition of bronchopulmonary dysplasia; Pediatrics	Ehrenkranz RA, Walsh MC, Vohr BR, Jobe AH, Wright LL, Fanaroff AA, et al	2005	116(6):1353-1360.
http://what-when-how.com/nursing/oxygen-therapy-and-respiratory-care-adult-care-nursing-part-1-2/			