Institution Name: Directorate General of Specialized Medical Care, MoH

Document Title: Policy and Procedure of Oxygen via Nasal Cannula

Approval Process

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Acknowledgement

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Acronyms:

ABG's	Arterial Blood Gases
DOB	Difficulty of Breathing
FIO2	Fraction of inspired oxygen
LPM	Liter Per Minute
NC	Nasal Cannula
O2	Oxygen
RCS	Respiratory Care Services
RT	Respiratory Therapists
SpO2	blood oxygen saturation

Policy and Procedure of Oxygen via Nasal Cannula (NC)

1. Introduction

Low-flow oxygen delivery devices include nasal cannula (NC) which is generally used wherever small amounts of supplemental oxygen are required, without rigid control of respiration, such as in oxygen therapy. This device consists of a lightweight tube which on one end splits into two prongs which are placed in the nostrils and from which a mixture of air and oxygen flows. The other end of the tube is connected to an oxygen supply such as a portable oxygen generator, or a wall connection in a hospital via a flowmeter.

The standard nasal cannula delivers an FiO2 of 24-44% at supply flows ranging from 1-6 liters per minute (LPM). The best clinical indications for the nasal cannula are for patients who have a relatively stable respiratory pattern, who needs supplemental oxygen during an operative or diagnostic procedure, or for chronic home care. Cannula with smaller prongs intended for infant or neonatal use can carry less than one liter per minute.

A humidification device is recommended for flows greater than 4 LPM to insure humidification of the dry inspired gas. Even with humidity, added flows 6-8 LPM can cause nasal dryness and bleeding (Rates above 5 L/min can result in discomfort to the patient, drying of the nasal passages, and possibly nose bleeds (epistaxis)). Also with flow rates above 6 L/min, the laminar flow becomes turbulent and the oxygen therapy being delivered is only as effective as delivering 5-6 L/min.

2. Scope

This policy is applicable to all Respiratory Therapist and Nurses in all health care institutions of the Ministry of Health

3. Purpose

3.1. To ensure that all patients requiring supplemental Oxygen therapy receives therapy that is appropriate to their clinical conditions.

3.2. To safely administer supplemental oxygen using nasal cannula to infant, pediatric, and adolescent patients.

3.3. To facilitate oxygen delivery using nasal cannula and achieve the desired target oxygen saturation.

4. Definitions

4.1. Oxygen therapy: A medically supervised use/provision of pure oxygen, (also hydrogen peroxide, or ozone) in greater inspired concentration than the ambient/room air (that is, the fraction of inspired oxygen [FiO2] is greater than 21%), to treat a wide range of health problems

4.2. Low flow: Flow rates that are lower than patients' inspiratory demands.

4.3. Hypoxia: Inadequate supply of oxygen to tissues or cells.

4.4. FiO2: The concentration of oxygen in the gas actually being inspired into the lungs and written as a fraction of 1 (i.e. 40% oxygen = 0.40 FiO2). When breathing air, the FiO2 is approximately 20%.

4.5. LPM: Flow rate in liters per minute.

4.6. SpO2: The measurement of functional saturation of oxyhemoglobin. This measurement is obtained noninvasively by pulse oximetry.

4.7. Epistaxis : An acute hemorrhage from the nostril, nasal cavity, or nasopharynx

5. Policy

5.1. A practitioner's order is required to initiate oxygen (O2) therapy, except in an emergency situation and to discontinue oxygen therapy.

5.2. Respiratory Care Services will provide equipment and therapy according to physician's orders for patient requiring supplemental oxygen to maintain adequate blood levels of oxygen.

5.3. Humidification

5.3.1. Humidifiers will not be given to adult patients on 4 liters or less of oxygen or will not be routinely humidified unless requested specifically by a physician or the patient.

5.3.2. All oxygen administered by nasal cannula to pediatric/neonates patients shall be humidified

5.3.3. When refilling humidifier bottles, any remaining water will be discarded and the bottle filled with sterile water in acute care and distilled water in home care or long term care. Bottles will not be "topped-up"

5.4. Nasal Cannula oxygen therapy is assumed to be continuous unless otherwise specified

6. Procedure

6.1. Equipment:

6.1.1 Oxygen Flow-meter

6.1.2 Humidifier (simple bubble type)

6.1.3 Connective Tubing

6.1.4 Nasal Cannula (Neonatal, Pediatric and Adult size)

6.1.5 Oxygen source (wall outlet or oxygen cylinder)

6.2. Nasal Cannula therapy may be contraindicated for:

6.2.1. Patients with nasal blockage.

6.2.2. Patients with facial injuries that would preclude the use of a cannula.

6.2.3. Patient who will not leave the nasal cannula in place

6.3. Approximate concentrations, but should be regarded as an estimate only.

Low Flow System	Litter flow L/M	Approx. O2 % Delivered*
Nasal Cannula	1	24
	2	28
	3	32
	4	36
	5	40
	6	44
	* Approximately 4% / litre	

6.4. Method:

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

The written physician's order must include:

6.4.1.1. Liter flow of oxygen

6.4.1.2. Adults 1-6 L/min

6.4.1.3. Neonatal/ Pediatric - 0.1-5 L/min

6.4.1.4. Specified FIO2 for blender when being used to wean neonatal patients.

6.4.1.5. Mode of administration.

6.4.1.6. In the absence of a complete order, nasal cannula oxygen therapy will be administered only in an emergency. The order must be secured at the earliest possible time after an emergency administration has occurred. Otherwise, the complete order must be secured before the therapy can be administered

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

6.4.3. Proceed to the patient's bed, check the patient's name and DOB verbally and by the patient's wristband. Introduce yourself, and explain the procedure according to doctor's order. Instruct the patient as follows:

6.4.3.1. Explain to the patient why he/she is receiving oxygen. Relate it to his/her disease or injury state.

6.4.3.2. Reassure the patient that this is a safe procedure.

6.4.3.3. Inform the patient that he/she may remove the oxygen device only if going to the bathroom (have to place it back after) and if it has order to remove it gradually.

6.4.3.4. Discontinue use of the oxygen device if only with physician's order.

6.4.3.5. Instruct patient in safe use of oxygen. Be sure there is no ignition material at the patient's bedside

6.4.4. Wash your hands.

6.4.5. Connect the flow-meter to the oxygen source and to the humidifier. Attach the connecting tube and nasal cannula.

6.4.6. Be sure there is flow from the cannula. Test for leaks, loose connections and proper operation of the pressure relief valve by pinching the connecting tube close to the cannula. Turn off the flow-meter.

6.4.7. Gently place the cannula in the patient's nostrils and adjust the plastic adjusting tie for maximum comfort and security.

6.4.8. Turn the flow-meter on to the dose prescribed in the doctor's order. Observe the initial effects of the treatment and make any necessary adjustments.

6.4.9. Charge the patient for the equipment used and for the appropriate oxygen hourly usage. (For private institutions).

7. Responsibilities

7.1 Respiratory Therapists are responsible for:

7.1.1. The evaluation, recommendation, and administration of appropriate oxygen therapy for your patients.

7.1.2. Identifying various oxygen delivery devices, assembly of the device to use, Initiation and setting –up, documentation and discontinuance of the oxygen therapy

7.1.3. Estimating the FIO2 for an oxygen delivery device if given the operating flow rate

7.1.4. Performing a post-assessment on the patient in order to determine how well they responded to the therapy

7.1.5. Recognizing adverse reactions of the therapy.

7.1.6. Identifying and troubleshooting any problems with the oxygen devices.

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

7.2.3 To be contacted as soon as possible after initiation of oxygen therapy in emergency situations for verification and documentation of the necessity for oxygen therapy and to obtain any further orders.

7.3 Nursing Staff is responsible for:

7.3.1 Assessment of a patient's respiratory status, including oxygen saturation in any patient treated with oxygen.

7.3.2 Monitoring clinical assessment parameters and Hemodynamic instability.

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

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

7.3.5 Checking and documenting of devices if being used appropriately.

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

8. Document History and Version Control

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Respiratory Care Services Team	Khalsa Al Siyabi Haifaa Mohammed Al Saadi	Dr. Kadhim Sulaiman	

9. Related Documents:

There are no related documents for this policy

10. References:

Title of book/ journal/ articles/ Website	Author	Year of publication	Page
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AARC Clinical Practice Guidelines. Oxygen Therapy in the Home or Extended Care Facility. Respiratory Care.		1992	37:918-922
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Oxygen flow through nasal cannulae ;Can J Anaesth;	Henderson CL1, Rosen HD, Arney KL.	1996 Jun	43(6):636-9.
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College of Respiratory Therapists of Ontario Oxygen Therapy: Clinical Best Practice Guidelines		2013	