Site Applicability
Coastal

Practice Level

- **RN**
- **LPNs** may provide care and maintenance for patient's receiving low flow oxygen therapy as per PCG and as ordered by a physician, or in collaboration with an RN or RT. This includes nasal prongs or a simple mask, and administration of aerosol medications or titration of oxygen as per physician orders.
- **PT**
- **RT**

RN: All aspects of O2 therapy

LPN (Initiate Low Flow 02 therapy as per Physician's Orders via nasal prongs with direction from an RN or RT)

Note: Low Flow 02 is less than or equal to 6Lpm 02 via nasal prongs.

- Assess all patients receiving Low Flow 02 therapy via nasal prongs on an ongoing basis.
- Titrate Low Flow 02 (either up or down, as appropriate based on assessments) of patients receiving 02 therapy as per physician's orders
- Contact RN or RT to assess any patient whose respiratory condition changes.

Note: Throughout the document, wherever RT is mentioned, for facilities without an RT resource, the expectation is an RN/Physician shared role.

Policy Statement

1. A physician's order is required for oxygen therapy except in an emergency situation as per NIA Policy.
2. In an emergency situation, a RN may initiate O2 therapy by simple face mask or nasal cannula if oxygen saturation is less than 92% and patient has signs and symptoms (e.g., angina, cyanosis, dyspnea).
3. O2 saturation is kept at 92% or above or as otherwise ordered by the physician.
4. LPN may initiate Low Flow O2 therapy (O2 6 LPM) via nasal prongs as per physician's orders in collaboration with an RN or RT.
5. Contact Respiratory Therapist to assess any patients with the following:
    - An order for oxygen greater than 40% (high flow oxygen set-up)
    - Oxygen saturation less than 92% and oxygen = 40% despite interventions such as deep breathing and coughing, rousing patient, suctioning, etc.
    - In acute respiratory distress (e.g., sudden dyspnea, tachypnea)
    - Transport of patient on high flow oxygen (e.g. Radiology)

- Artificial airway or tracheostoma.

6. All orders must include SpO2 target or range unless oxygen delivery system (and l/min or FiO2) is specified by the physician.
7. All orders must **have oxygen saturation to be maintained** unless the physician specifies oxygen delivery system.
8. **Oxygen delivery by nasal cannula 1-5 l/min will not be routinely humidified.**
9. **Ensure that patient understands the importance of following safety precautions. "Oxygen Safety Precautions" are enforced at all times.**

SAFETY PRECAUTIONS

- **All sources of ignition such as open flames, electrical appliances that spark and combustible material is removed from the area where oxygen is in use. Oxygen is a highly combustible gas.**
- **Ensure that facemask or other administration device fits properly and oxygen flow into the eyes is minimized as this may lead to the development of corneal abrasions.**
- **Observe the patient wearing a mask for vomiting in order to avoid accidental aspiration of emesis.**
- **Maintain stability of portable Oxygen tanks.**

Videos:

- **Grab n' Go Advanced Respiratory System**
- **To view specific sections of the video click on the following topics:**
  - **Product Description**
  - **How to Set-Up & Use**
  - **Proper Handling & Storage**
  - **Safety Precautions**

Need To Know

Note: Low Flow 02 is less than or equal to 6Lpm 02 via nasal prongs.

- **Assess all patients receiving Low Flow O2 therapy via nasal prongs q shift and PRN.**
- **Titrate Low Flow O2 (either up or down, as appropriate based on assessments) of patients receiving O2 therapy as per physician's orders.**
- **Contact RN or RT to assess any patient whose respiratory condition changes.**

Oxygen Titration Guidelines

- **Patient should be at rest, and should not have received bronchodilators in the previous 20 minutes prior to titration.**
- **Changes in oxygen percentage should be in 5 - 10% increments.**
- **Changes in liter flow (when using nasal prongs) should be in 1 - 2 LPM increments.**
- **Recheck the SpO2, and reassess patient's condition 5 minutes following any change in oxygen delivery.**
- **Follow specific physician orders for SpO2 for each patient.**
- **Aim to always use the lowest FiO2 that will deliver the required SpO2.**
- **If SpO2 is less than ordered, and delivered oxygen is greater than or equal to 40%, follow your hospital guidelines for calling a Respiratory Therapist or physician.**

PLEASE NOTE: UNDER REVIEW

To provide a higher than atmospheric concentration of 02 in order to relieve hypoxemia and/or to minimize cardiopulmonary workload.

Equipment and Supplies

- Oxygen source (wall outlet or Praxaire portable tank).
- Flow meter (Ward Stock)
- Humidifier (Ward Stock)
- Oxygen tubing – regular or large bore (Ward Stock)
- Oxygen administration equipment as ordered:
  - Nasal cannula (ward stock)
  - Simple face mask (ward stock)
  - Face tent (stores)
  - Aerosol mask (ward stock)
  - High flow set-up (ward stock)
  - Tracheostomy mask or T-piece (stores)
  - Partial rebreather mask (ward stock)
- white stem and wing nut for flow meter (for nasal cannula, simple face mask) (CPD)

Procedure

See Appendix A for Oxygen Equipment – Types, Uses, Set-up (at end of this document)

1. NASAL CANNULA

Check patency of nasal passages.

- Oxygen administration is ineffective when nasal passages are obstructed.
- Attach nasal cannula tubing to flow meter and turn on to prescribed flow rate.

Note: For COPD patients, oxygen as low as ½ L/min may be ordered.

- Check to see that oxygen is flowing through the cannula by directing the flow onto the hand.
- Enlarge the loop of the cannula so it will slip easily over the patient's ears and place prongs in the nares. Tighten loop under chin for patient comfort. Ensure the nasal prongs mold with the nares directing the oxygen flow toward the back of the patient's head (curved down).

2. SIMPLE FACE MASK

- Check fit of the mask.
- Set prescribed flow rate on flow meter and ensure oxygen is flowing through mask.
- Usual flow rate is 6L/min – 10 L/min (should not be less than 6L/min).
- Always turn oxygen on before applying mask.
- Apply mask to patient's face so that it fits snugly, not tightly. Ensure oxygen is not blowing into patient's eyes.
- For patient comfort place strap below ears and around neck.

3. FACE TENT

- Connect large bore tubing to nebulizer bottle and face tent.

- Set prescribed oxygen concentration on nebulizer and turn up flow meter until a mist is visible. Note: This flow is required in order to ensure sufficient room air is drawn into the nebulizer to dilute the oxygen to preset concentration.
- The minimum flow rate should be 15L/min but higher flow may be necessary to maintain mist production.
- Place face tent on patient. Adjust straps behind head to hold mask in place. Ensure chin is in molded support for comfort.
- Remove mask as necessary to dry patient's face and the interior part of the mask.

4. AEROSOL MASK (FOR MEDICATION ADMINISTRATION)

- Place prescribed medication in receptacle at bottom of mask.
- Ensure patient understands procedure (do not assume explanation has been given)
- Attach mask comfortably but snugly to patient's face.
- Set flow meter until a mist is clearly visible (i.e., 8L/min)
- Confirm patient is at ease and that aerosol container is producing a thick mist.
- The mask is malfunctioning if medication is not administered in 30 minutes. Continue using new mask as long as medication is delivered within 20 minutes.
- Nebulized medication may be ordered to be given by Pulmoaide for certain patients (e.g. COPD)
- Change administration set when soiled, contaminated or patient discharged.

5. AEROSOL MASK FOR HIGH FLOW SET-UP

- Attach Nebulizer bottle to flow meter. Connect large bore tubing and nebulizer mask.
- Set prescribed oxygen concentration on the nebulizer bottle and turn flow meter to the appropriate flow written on Nebulizer.
- Remove mask as necessary for patient comfort to dry face and inside of mask.
- Flow meter set to at least 15L/min.

6. TRACH MASK OR T-PIECE

- Attach Nebulizer to flow meter. Connect large bore tubing to trach mask or T-piece.
- A minimum flow rate of 15L/min is needed but higher rates may be necessary to maintain mist production.
- Set prescribed oxygen concentration on the nebulizer and turn flow meter to appropriate flow as written on Nebulizer.
- Place trach mask over tracheostomy tube, or attach T-piece to endotracheal tube or tracheostomy tube.
- Attach 6 inch piece wide bore tubing to distal arm of T-piece
- Ensure expiration port of T-piece is kept unobstructed.

7. NON REBREATHER MASK

- Connect O2 tubing from mask to the flow meter.
- Always remove one of the exhalation port one-way valves to prevent suffocation in case the O2 source runs out, or the tubing gets kinked.
- Set O2 flow rate 10-15 lpm. Apply mask.
- (Flow rate must be high enough to ensure that the reservoir bag remains Inflated during inspiration).
- Theoretically delivers 100% O2, but realistically delivers 60-80% O2 due to leaks in the mask.
- Quick and easy for high O2 delivery, but will very rapidly cause drying or airway mucosa so should only be used for short periods (i.e., Less than an hour).

PLEASE NOTE: UNDER REVIEW

Transport

1. **Leaving on transport:**

   - **Consult with Respiratory Therapist if required (see policy statement criteria above).**
   - **Estimate length of transport and ensure adequate pressure in the tank (see table 1).**
   - **Connect patient interface to tank output as per procedure below.**
   - **Turn on tank by rotating dial clockwise.**
     NOTE: ensure the dial is set to a flowrate in the display window – flow could be interrupted if dial rests between flow settings.
   - **Stabilize patient on transport oxygen setup to ensure SpO2 > 93% for 5 minutes prior to leaving on transport.**
   - **Secure tank to stretcher, bed, walker or wheelchair as applicable. Ensure all oxygen delivery connections are secure.**

2. **On return:**

   - **Reconnect patient to wall oxygen and ensure SpO2 > 93% or as ordered. If patient is on humidified nebulizer, remove and discard the *Tubing Adaptor*, reconnect corrugated tubing to aerosol face mask or tracheostomy mask, fill nebulizer if necessary, check FiO2 setting and turn on flowmeter. If patient is on FiO2 > 0.40, call RT to reassess.**
   - **Turn off Grab N' Go tank by rotating dial counter-clockwise until red OFF flag shows in window.**
   - **Return Grab N' Go tank to cylinder storage area.**
   - **When tank is empty or < 500 psig, tear off the bottom portion of the green tag to indicate tank needs replacement.**

PLEASE NOTE: UNDER REVIEW

Table 1

Oxygen Cylinder Duration Chart (*Time in Minutes)

E SIZE									
Cylinder Pressure (PSIG)	2000	1800	1400	1200	1000	800	600	500	250
Flow (L/min)									
0.5	1098*	972	721	596	470	345	220	157	0
1	549	486	361	298	235	172	110	78	0
1.5	366	324	240	199	157	115	73	52	0
2	274	243	180	149	118	86	55	39	0
3	183	162	120	99	78	57	37	26	0
4	137	122	90	74	59	43	27	20	0
6	91	81	60	50	39	29	18	13	0
8	69	61	45	37	29	22	14	10	0
15	37	32	24	20	16	11	7	5	0
25	22	19	14	12	9	7	4	3	0

*NOTE: It is recommended that when a cylinder falls into the shaded area it is not to be used to transport patients. At minimum, ensure a second full cylinder is transported with the patient.

-

PROCEDURE:

PLEASE NOTE: UNDER REVIEW

- 

- **Step 1**
  Check pressure in tank.

- 

- **Step 2**
  Turn on tank to desired flowrate.

- 
- 

- **Step 2A (for nasal prongs)**
- Connect oxygen tubing from nasal prongs directly to tank.
- Set oxygen flowrate ≤ 6 l/min.

PLEASE NOTE: UNDER REVIEW

- 
- 

- **Step 2B (for simple face mask)**
- Connect oxygen tubing from simple face mask directly to tank.
- Set oxygen flowrate 8 l/min.

- 

- **Step 2C (for aerosol face mask)**
- Connect *Tubing Adaptor* to oxygen tubing
- Remove corrugated tubing and connect *Tubing Adaptor* to face mask outlet
- Connect oxygen tubing from *Tubing Adaptor* to tank. Set oxygen flowrate to 8 or 15 l/min as necessary to keep SpO2 > 93% or as ordered.
- **NOTE:** Patient will not receive humidity for duration of transport.

PLEASE NOTE: UNDER REVIEW

-    

- **Step 2D (for tracheostomy mask)**
- Connect *Tubing Adaptor* to oxygen tubing
- Remove corrugated tubing and connect *Tubing Adaptor* to tracheostomy mask outlet
- Connect oxygen tubing to tank.
- Set oxygen flowrate to 8 or 15 l/min as necessary to keep SpO2 > 93% or as ordered.
- **NOTE:** Patient will not receive humidity for duration of transport.

Site Specific Practices

Coastal

Documentation

IDD/24 Hr. Flow Sheet:

- **Date and time O2 therapy commenced**
- **Method of administration (i.e. mask, etc.) q shift and PRN**
- **Oxygen concentration or O2 litre flow set q shift and PRN**
- **Respiratory assessment including SpO2 q shift and PRN**
- **Patient reaction to therapy - q.shift & prn**

References

Respiratory Therapy Department – LGH
Infection Control Clinician – LGH
Respiratory Nurse Clinician – LGH
Oxygen Therapy and Respiratory Care Reference Manual 2009, Respiratory Services Department Vancouver Hospital.

- **VA CPD O-120 July 2010**

Smith, S.F., Duell, D.J., Martin, B.C. (2007) *Clinical Nursing Skills: Basic to Advanced,* (7th ed.). New Jersey: Prentice-Hall, pp. 887-896.
Oxygen Therapy for Adults in the Acute Care Facility. *Respiratory Care* (2002) 47(6): 717-720.
AARC Clinical Practice Guideline: Oxygen Therapy for Adults in the Acute Care Facility — 2002 Revision & Update.
McGloin, S. (2008). *Administration of Oxygen Therapy. Nursing Standard.* 22, 21, 46-48.

PLEASE NOTE: UNDER REVIEW

Oxygen Therapy: Initiation and Maintenance Policy Net – Vancouver Acute. PCG 0-120. August 2004.
Perry, A. & Potter, P. (2010). *Clinical Nursing Skills & Techniques.* Mosby

Revised By
Lead: Respiratory Nurse Clinician, Medical Nurse Clinician

Reviewed By
RCC

- **Sharepoint 1st Reading for Review and Feedback: June 2011**

(CANPAC / PCC group / CAIAC)

Endorsed by
Sharepoint 2nd Reading – Final Endorsement Dates: Nov 4th 2011 to Nov 18th, 2011
(Ops. Managers & Directors)

Approved for Posting
Director of Professional Practice Nursing and Allied Health, Coastal
Clinical Practice Improvement Leader, Coastal November 30th, 2011

Date of Creation / Review / Revision
Original publication date: May 1978
Review/revision date(s): Sep/86; Jan/91; Feb/91; May/94; Nov/99; Sep/04; Nov 2011

PLEASE NOTE: UNDER REVIEW

Appendix A

Oxygen Equipment – Types, Uses, Set-up
Normal room air contains: 21% Oxygen & 79% Nitrogen

To determine percentage of O2 being given from flow meter setting: Multiply number of litres on flow meter by 3 and add 21
e.g. O2 at 3L/min. = 3X3 + 21 = 30% O2 (This is the maximum FIO2 Fractional Inspired Oxygen Concentration the patient may receive)

Oxygen Equipment	*Set-Up*	*Usual Oxygen Flow Meter Setting*	*Uses – Key Points*
NASAL CANNULA (Low flow system)	Flow meter, nasal cannula with tubing	1 – 6L/min Can provide 24-45% O2	• Convenient as patient may eat and talk while receiving oxygen. • Not as effective if patient has blocked nares.
SIMPLE FACE MASK (Low flow system)	Flow meter, simple face mask with tubing	6 - 10L/min Can provide 35-55% O2	• Used to provide moderate oxygen concentration of up to 35-55%. Efficiency is dependent on how well mask fits and respiratory demands of patient. • Long-term use of simple mask can lead to skin irritation and pressure sores.
FACE TENT (High flow system)	Flow meter, high flow nebulizer head, 1 L sterile water, face tent with tubing.	Flow rate to ensure mist production. Minimum 15L/min. Can provide 36-100% O2	• Used to provide a controlled concentration of O2 and increased moisture for patients who have facial burns, broken nose or claustrophobia. • It is difficult to achieve high concentrations with this mask.
AEROSOL MASK (For medication administration)	Flow meter, small bore tubing, aerosol mask. Medication and normal saline. (Minimum 2.5 mls. Maximum 10 mls. In medication cup).	Turn flow meter to ensure mist production. (approx. 7-8 L over 10-20 minutes).	• Medication nebulizer and aerosol mask are used for passive inhalation of medication ie: bronchodilator • Use O2 with caution in COPD patients.
NON- REBREATHER MASK	Flow meter, non-rebreather mask with tubing	Set flow rate to 10-15 L/min Can provide 70-100% O2	• Used to deliver 70-100% 02. • Flow rate must be high enough to ensure that the reservoir bag remains inflated during inspiration. • Always remove one of the exhalation port one-way valves to prevent suffocation in case the O2 source runs out, or the tubing gets kinked.