# Beebe Healthcare

**Patient Care Manual**

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| Oxygen Therapy | Date Issued: 5/10 |
| Issued by: Chris Steele, Director, Respiratory Care<br><br>Approved by: Victor Banzon, MD, Medical Director, Respiratory Care<br>Lynne Voskamp, DNP, RN, CEN, Vice President, CNO<br>Rick Schaffner, Executive Vice President and COO | Revised: CPC 9/13, CPC 1/15, CPC 8/15, 12/15, 9/16, 5/17, MEC 4/18, MEC 6/19, 5/21 |
| [ ] Condition of Participation<br>[ x] Joint Commission Standard reference NFPA 99-2012, 11.6.5.2 and 11.6.5.3<br>[ ] Department Specific Regulation | Reviewed: 10/10, MEC 5/12/17 |

**PURPOSE**
To define procedures for the use of oxygen therapy and monitoring patients on oxygen.

**SCOPE**
Patient locations within Beebe Healthcare that administer oxygen.

**DEFINITION**
Oxygen is a drug and you must have a provider order or an indication must be present that warrants initiation of the oxygen protocol when starting and restarting oxygen on all patients.

**POLICY**
Hypoxemia is PaO2< 60 & hypoxia is SaO2< 92% on room air or current oxygen therapy level.

Oxygen therapy must be ordered by a physician unless included in an approved protocol or clinical service unit standard (oxygen protocol algorithm on page 5 of this policy). Oxygen administration will be initiated, monitored and adjusted by a licensed Respiratory Care Practitioner, Registered Nurse or other caregiver authorized to complete/monitor the therapy.

Oxygen may be initiated by a qualified caregiver in the presence of any situation/indication in which hypoxia is suspected. A practitioner is to be contacted as soon as possible after initiation of oxygen therapy, for verification and documentation of the order for oxygen therapy.

Beebe Healthcare does not administer oxygen to visitors unless in emergency situations.

An oxygen tank is considered full when the meter on the gauge reads anywhere in the green full zone or higher.

Partial and full tanks may be used. Refer to the "How Long Will the Oxygen Tank Last" chart to determine if the tank contents are sufficient prior to use. This chart is posted with tanks and can be located on BeebeNet under standardized signage.
Tank storage:

-Full and partial tanks will be stored together. All other tanks should be placed in the empty holder. Empty is defined as 500 psi or less.
-Tanks found on transport holders are considered in use (wheelchair, pull carts, stretchers, etc.)

**PROCEDURE**

a. Verify indication/order for oxygen.
b. Use emergency oxygen set-up when necessary.
c. Check patient periodically to see that the flow is correct.

**1. INDICATIONS FOR OXYGEN ADMINISTRATION**

a. Suspected or documented hypoxemia/hypoxia
b. Suspected or known carbon monoxide poisoning
c. Trauma
d. Acute myocardial infarction
e. Post-operative oxygen therapy
f. Extubation
g. Maintaining patients stated prescribed oxygen levels
h. Oxygen saturation <92% on room air

**2. TITRATION**

a. Oxygen therapy may be titrated to maintain Sp02 ≥ 92%
    1. Exclude the following patients from automatic titration: carbon monoxide poisoning, sickle cell disease, pediatric and neonatal patients.
b. Criteria for titration:
    1. Hemoglobin > 8 grams%
    2. No signs of hypoxemia /hypoxia
c. Notify physician and respiratory where applicable if patient requires increased oxygen by 15% fio2 or has an increase of 3 LPM or greater
d. Titrate to room air unless patient has home oxygen (maintain home O2 level)
e. Oxygen may be discontinued when Sp02 ≥ 92% on room air x 24 hours and tHb > 8 grams %

**3. MONITORING**

a. Assessment of oxygenation (measurement of PaO2 or SpO2 in any patient treated with oxygen):
    1. Upon initiation of therapy
    2. Once every **4** hours (+/- 1 hour) for patients with artificial airways also during swallowing study
    3. Once every **4** hours (+/- 1 hour) for high flow oxygen devices
    4. Once every day for low flow oxygen devices
    5. Once every **4** hours (+/- 1 hour) for patients requiring ≥ 50% FiO2

b. Continuous Pulse Oximetry Indications:
   1. Patient requiring mechanical ventilation.
   2. Neonate with respiratory impairment
   3. Patients on PCA pumps
   4. Patients with artificial airway
   5. Patients on BIPAP/CPAP (including home units)
   6. Patients on Vapotherm
   7. Patients on FIO2 > 50%

**4. DOCUMENTATION**

a. Oxygen therapy is documented in the medical record for each oxygen therapy check and setting adjustment
b. Oxygen therapy documentation includes but is not limited to:
   1. Date and time
   2. Oxygen delivery device
   3. Oxygen liter flow and/or FiO2
   4. SpO2 (per pulse oximetry policy)
   5. Respiratory rate
   6. Heart Rate

**5. HAZARDS/COMPLICATIONS**

1. Ventilatory depression may occur in spontaneously breathing patients with chronic CO2 retention (PATIENTS WITH NORMALLY HIGH PCO2 AND LOW PO2)
2. With FIO2 greater than 50% absorption atelectasis, oxygen toxicity, and/or depression of ciliary and/or leukocytic function may occur
3. Fire hazard with increased FIO2, for example during laser procedure
4. Bacterial contamination from humidification systems

**6. LOW FLOW DEVICES**

a. Nasal cannula
   1. Provides supplemental oxygen up to 6L/min or approximately 44% oxygen
   2. Excessive flow rates are to be avoided as they will not increase the FIO2 and may cause considerable pain in the front sinuses
   3. Humidification required in the following:
      - Flow >4 L/pm
      - All pediatrics
      - Patients complaining of nasal dryness

b. Non Re-Breather (NRB) mask
   1. Set flow at 10 – 15 LPM and adjust flow so that reservoir bag does not collapse by more than 1/3 on inhalation
   2. Non-rebreather only to be used for a **maximum of 8 hours**.

**7. HIGH-FLOW DEVICES**

a. Venturi Mask
   1. Follow package instructions for proper assembly of venturi mask
   2. Select proper FiO2 and flow per package directions
b. Cool Aerosol Therapy
   1. Follow package instructions for assembly of aerosol nebulizer
   2. Attach nebulizer to flowmeter
   3. Set FiO2 per package instructions and adjust flow rate (minimum 10 LPM) on flowmeter
   4. Do not use aerosol nebulizer device for FiO2 > 50% (use blender or misty-ox)
   5. Attach wide bore tubing to nebulizer
   6. Attach appropriate patient interface; aerosol mask, tracheostomy collar, face tent or oxyhood to tubing
c. Blender Device
   1. Obtain blender with appropriate flowmeter (low flow or high flow)
   2. Attach blender to 50 PSI wall outlets
   3. Set FiO2 on blender and adjust flow to meet patient flow demand
d. Oxymizer High Flow Cannula
   1. Used for a patient in need of a higher flow of oxygen or Fio2>44%.
   2. Humidification is contraindicated with the Oxymizer.
   3. Flow rates are 1-12 liters per minute (LPM).

e. Vapotherm
   1. Must be setup by a trained respiratory therapist
   2. High flow, active humidification device

**8. OXYGEN CONCENTRATION RANGES**

| | | |
|---|---|---|
| Nasal Cannula | 24-44% | 1-6LPM |
| Simple Mask | 35-55% | (6-10 LPM) |
| Partial Rebreather | 35-60% | (6-10 LPM*) |
| Non-rebreather | 95% +/- 5% | (*) |
| Venturi Masks | 24%,28%,31%,35%,40%,50% | |
| Oxymizer | 26-82% | 0.5 – 12LPM |
| Vapotherm | 21-100% | 5-40LPM |

*= flow adjusted to the patient

**REFERENCES**


- AARC (2007). AARC guideline: Oxygen therapy in the home or alternative site health care facility. *Respiratory Care,* 52 (1), 1063-1068. http://rc.rcjournal.com/content/respcare/52/8/1063.full.pdf

- AARC. (2002) Oxygen Therapy for Adults in the Acute Care Facility – 2002 Revision & Update *Respiratory Care*, 47 (6), 717-720.


## HOW LONG WILL THE OXYGEN TANK LAST?

Cylinder Pressure from Gauge

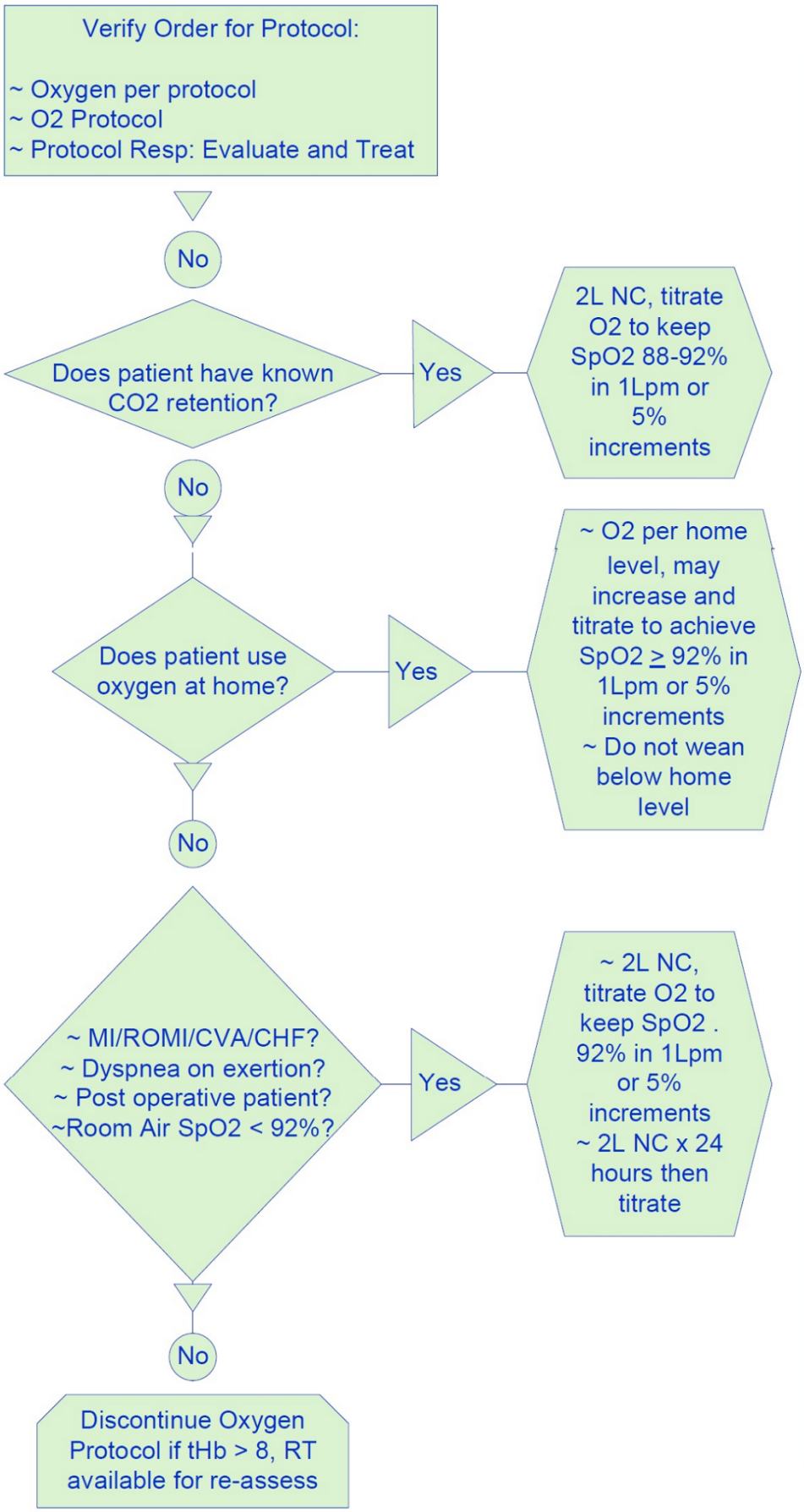
FLOW RATE

| L/Min | 2000 | 1500 | 1250 | 1000 | 750 | 500 |
|---|---|---|---|---|---|---|
| 0.5 | 16h 23m | 10h 55m | 8h 12m | 5h 28m | 2h 44m | EMPTY |
| 1 | 8h 12m | 5h 28m | 4h 6m | 2h 44m | 1h 22m | EMPTY |
| 1.5 | 5h 28m | 3h 38m | 2h 44m | 1h 49m | 55m | EMPTY |
| 2 | 4h 6m | 2h 44m | 2h 3m | 1h 22m | 41m | EMPTY |
| 3 | 2h 44m | 1h 49m | 1h 22m | 55m | 27m | EMPTY |
| 6 | 1h 22m | 55m | 41m | 27m | 14m | EMPTY |
| 8 | 61m | 41m | 31m | 20m | 10m | EMPTY |
| 15 | 33m | 22m | 16m | 11m | 5m | EMPTY |
| 25 | 20m | 13m | 10m | 7m | 2m | EMPTY |

Flow Duration Remaining (h= hours m= minutes

# OXYGEN PROTOCOL ALGORITHM

Evaluate & Treat Algorithm




**Key Points:**

~ Notify Physician if patient requires an FiO2 of 0.50 or greater.

~ Re evaluate Q 12 hrs.

~Patient refusal: Notify Physician if patient refuses to wear oxygen and shows signs of clinical deterioration.

~ Once patient has been on room air for 24 hrs, D/C protocol.

~ Evaluate clinical indicators in the order of the algorithm. Patients meeting either of the 1st two categories will remain on those orders and weaning parameters.

~ Notify Physician if pt requires increase greater than 15% or 3 Lpm.

~If O2 demand increases by 3L or 15% within a 24 hour period, physician must be notified.

~Please refer to minimum and maximum flow requirements for oxygen administration devices. If patient demand exceeds current device capabilities, place patient on appropriate device.

~ Non-Rebreather only to be used for a maximum of 8 hours. Convert to alternate device.

~ Assessment of oxygenation (measurement of PaO2 or SpO2 in any patient treated with oxygen):

1. Upon initiation of therapy
2. Once every 4 hours (+/- 1 hour) for patients with artificial airways.
3. Once every 8 hours (+/- 1 hour) for high flow devices
4. Once every day for low flow oxygen devices
5. Once every 4 hours (+/- 1 hour) for patients requiring ≥ 50% FiO2