Oxygen Protocol.

Purpose: To guide the delivery of oxygen therapy in Adult and Pediatric patients. This protocol includes adjustment of oxygen therapy for patients using CPAP devices for the treatment of obstructive sleep apnea.

Exclusions:

- CT Protocol Patients
- Patients with known or suspected Carbon Monoxide poisoning. Notify provider and follow recommendations
- Neonatal patients.
- Patients receiving BiPAP Therapy, High Flow Nasal Cannula ≥ 10 LPM or those requiring Mechanical Ventilation.

Special Considerations:

- **Chronic Obstructive Pulmonary Disease (COPD):** can have increased ventilation perfusion mismatch when high concentrations of oxygen are given. In these patients an SPO2 of greater than 94% should be avoided. Please notify the provider if patient has a diagnosis of COPD and chronically high CO2 level.
- **Chest Pain**: may be placed on oxygen regardless of SPO2

Oxygen Devices and Flow Rates

Device	Minimum Flow Rate	Maximum Flow Rate
Nasal Cannula	0.5LPM Pedi / 2LPM Adult	6LPM
Simple Mask	6LPM	10LPM
Venturi Mask	3LPM	15LPM
Non-Rebreather Mask	10LPM	15LPM
Aerosol Trach Collar	5LPM	10LPM
Aerosol Face Mask	5LPM	10LPM
Face Tent	5LPM	10LPM
CPAP – Bleed In	2LPM	4LPM

Starting and Adjusting Oxygen:

1. Select an appropriate device from the list based on patient assessment, condition and/or patient comfort.
2. Begin at the minimum flow rate for selected device unless otherwise indicated by patient assessment and SPO2
3. Use pulse oximetry (SPO2), respiratory rate and work of breathing to guide oxygen adjustments.
4. Increase or decrease oxygen in 0.5-1 Liter Per Minute (LPM) increments, or those specified by manufacturer on the selected device, to maintain SPO2 at or above target.
5. Wait a minimum of 5 minutes between adjustments to reassess.

Notify Provider:

The provider must be notified under the following conditions:

- A Non-Rebreather Mask is required to maintain targeted SPO2.
- The patient is unable to maintain targeted SPO2 using the maximum settings of the current device.
- Increasing oxygen requirements over the course of the shift.
- Initiating new oxygen therapy on a patient who did not require it before.

Provider notification should be documented in the medical record.

Weaning Oxygen:

1. Begin weaning once patient is at or above target saturation
2. Oxygen should be decreased in 0.5-1LPM increments or those specified by manufacturer for selected device to maintain SPO2 in target range
3. Do not wean below the minimum flow rate of the selected device. If further weaning is needed below the minimum flow rate, select a device that allows for a lower flow rate.
4. If the patient wears oxygen at home do not wean below this baseline setting.
5. Patients on non-rebreather should be transitioned to either a Venturi mask, Simple Mask or Nasal Cannula at highest setting before weaning down further.
6. Use Pulse Oximetry, respiratory rate and work of breathing to guide oxygen adjustments.
7. If SPO2 falls below target, respiratory rate increases, or work of breathing increases, return to the prior settings.
8. Wait a minimum of 5 minutes between adjustments to assess tolerance.

Discontinuing Oxygen

- Consider discontinuing oxygen under one of the following conditions:
    - SPO2 is consistently ≥ 94 on lowest setting of the device
    - SPO2 is above or at target goal on lowest setting of the selected device.
    - Once patient has been off of supplemental oxygen for at least 24 hours, consider discontinuing/completing Oxygen Protocol Order.
    - Patient is at baseline home oxygen setting.

References:

Gruber P, Kwiatkowski T, Silverman R, Flaster E, Auerbach C. *Time to equilibration of oxygen saturation using pulse oximetry*. Acad Emerg Med. 1995 Sep;2(9):810-5. doi: 10.1111/j.1553-2712.1995.tb03276.x. PMID: 7584768.

Piraino, T., Madden, M., Roberts, K. J., Lamberti, J., Ginier, E., & Strickland, S. L. (2022). *AARC clinical practice guideline: Management of adult patients with oxygen in the acute care setting*. American Association for Respiratory Care. https://www.aarc.org/wp-content/uploads/2022/10/cpg-clinical-mangement-adult-o2-acute-settings.pdf

Napolitano, N., Berlinski, A., Walsh, B. K., Ginier, E., & Strickland, S. L. (2021). AARC clinical practice guideline: Management of pediatric patients with oxygen in the acute care setting. American Association for Respiratory Care. https://www.aarc.org/wp-content/uploads/2021/08/management-of-pediatric-patients-with-oxygen-in-the-acute-setting.pdf

Open Resources for Nursing (Open RN); Ernstmeyer K, Christman E, editors. Nursing Skills [Internet]. Eau Claire (WI): Chippewa Valley Technical College; 2021. Table 11.3a, [Settings of Oxygenation Devices]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK593208/table/ch11oxytherapy.T.settings_of_oxygenation/