

OXYGEN THERAPY

- PURPOSE:** To outline the management of the patient receiving oxygen therapy by cannula, or mask. Oxygen is a drug, and except for an emergency situation, a provider's order is required.
- ASSESSMENT:**
1. Assess the following a minimum of every 8 hours adults (every 4 hours Pediatrics and ICU, every 2 hours NICU).
 - Rate and Depth of respirations
 - Signs of respiratory distress (e.g. accessory muscle use, nasal flaring)
 - Skin color
 - Breath sounds
 - Mental status
 - Vital signs
 - Need for humidification (e.g. dry mucous membranes)
 - Set up and application of required equipment
 - Skin irritation, pressure areas, pressure injuries from devices
- ADMINISTRATION:**
2. Administer oxygen therapy as ordered; order to include:
 - Liters/min or concentration (%)
 - Device
 3. Humidify oxygen for the following:
 - Oxygen provided by specific devices, see chart below
 - Subjective complaints or objective findings related to the lack of humidification
 - Patient comfort or physiological complaint necessitating humidification
 4. Ensure patient comfort by proper application, size and fit of mask/cannula
- SAFETY:**
5. Do not use petroleum- based products on patient.
 6. Maintain patency and function of oxygen delivery device/source. If using oxygen tanks:
 - Verify that oxygen tank level maintained above 500 psi
 - Ensure that oxygen tank is secured to carrier
- PULSE OXIMETRY:**
7. Monitor oxygen saturation via pulse oximetry as ordered.
- INFECTION CONTROL:**
8. Drain condensation in tubing to outside of delivery system.
 9. Ensure entire oxygen delivery system is changed when soiled.
- REPORTABLE CONDITIONS:**
10. Report the following to provider:
 - Deteriorating respiratory status / respiratory distress
 - Mental status changes
 - Chest pain
 - Deterioration in vital signs from baseline
 - Pressure injuries/areas
- PATIENT/CAREGIVER EDUCATION:**
11. Instruct on the following:
 - Explain rationale and importance of oxygen therapy
 - Reinforce the *No Smoking Policy*Notify nurse of:
 - Any difficulty breathing
 - Change in patient's color or mentation
 - Chest pain

- Disruption in oxygen delivery therapy i.e. Tube disconnection, inform nurse to reconnect (safety tubing misconnections)
- Dry mucous membranes

ADDITIONAL
STANDARDS

12. Implement the following;
 - High Flow Nasal Cannula
 - Pressure Injury

DOCUMENTATION:

13. Document the following in electronic health record:
 - SpO₂
 - SpO₂ location (if continuous)
 - Oxygen therapy
 - FiO₂ Oxygen flow rate (if on HFNC)

ADULTS & PEDIATRICS

Apparatus	Flow Rate Liters Per Minute (L/min)	Approximate FiO ₂	Humidification Required
Nasal Cannula	1-6 L/min (routinely 1-5 L/min)	25-35%	Yes for over 4 L/min
Simple Mask	5-12 L/min (6-10 LPM; not less than 5 LPM due to CO ₂ rebreathing)	30-50% (40% - 60%)	Yes for flow rates less than 8 lpm
Partial Rebreathing Mask (Non-Rebreathing Mask with flap removed)	10-15 L/min (10 L/min is minimum – increase flow if reservoir bag collapses)	35-60%	Yes (No, as the water/condensate will ‘spray’ to the pt, and humidifier will be unable to handle the high flow rates)
Non-Rebreathing Mask	10-15 L/min (10 L/min is minimum – increase flow if reservoir bag collapses) (25 lpm during an emergency/life threatening event)	90% (+/- 5%)	Yes (No, as the water/condensate will ‘spray’ to the pt. mask diaphragm/one-way valve will fail and humidifier will be unable to handle the high flow rates)
Venti-Mask	Flow determined by preset concentration	24-100%	No
Tracheostomy Mask	8-12 L/min (no less than 5 lpm. To prevent CO ₂ rebreathing) (5-10 LPM if paired with an Air-Entrainment Nebulizer)	30-50% (28% to 98% if paired with an Air Entrainment Nebulizer)	Yes
Face Tent	8-12 L/min	40-70% (28% - 98%)	Yes
Aerosol Mask	8-12 L/min (no less than 5 lpm. To prevent CO ₂ rebreathing) (5-10 LPM if paired with an Air-Entrainment Nebulizer) (6-10 LPM if used for delivery of aerosolized medications)	≥50% (28% to 98% if paired with an Air Entrainment Nebulizer)	Yes
High Flow Nasal Cannula OR Heated High Flow Nasal Cannula	10- 60 L/min adult (in increments 5L/min) (default) 2-25L/min (in increments of 1L/min) (Jr. Mode)	21%-95%	Yes

NOTE : High Flow Nasal Canula Usage

High flow oxygen delivery requires pulse oximetry as follows:

Environment	FiO ₂ Range	Flow Rate Range	SpO ₂ Monitoring	Code Status
ICU	Any	Up to 60 L/min	Continuous	Any
PCU	40-60%	Up to 60 L/min	Continuous	Any
Telemetry	≤ 40 %	Up to 50 L/min	Continuous	Any
Med-Surg Units with Palliative Care Room	>= 90%	Up to 60 L/min	Every 4 hours with vital sign checks*	DNR/DNI

* Pulse oximetry monitoring is **not** required for patients who are on comfort measures, or for patients who are DNR/DNI **and** are at the highest levels of FiO₂ (>= 90%) whereby there is no further intervention (i.e. respiratory escalation) to treat a patient in severe respiratory failure.

NICU

Apparatus	Flow Rate Liters Per Minute (L/min)	Approximate FiO ₂	Humidification Required
Nasal Cannula	1/32-1 L/min	Variable dependent on patient status	Yes
Heated Nasal Cannula	1-2 L/min		Yes
Trach Mask	10-12 L/min		Yes

Signs of Respiratory Distress

Early	Late
Restlessness	Shortness of breath
Dyspnea	Tachycardia
Confusion	Labored and rapid breathing
Tiredness	Thick frothy sputum
Low blood pressure	Abnormal breath sounds (Crackles)
Change in patient behavior	Cyanosis (Blue skin, nails, and lips)
<ul style="list-style-type: none"> • Disorientation 	
<ul style="list-style-type: none"> • Mood swings 	
<ul style="list-style-type: none"> • Altered level of consciousness 	

Signs of Respiratory Distress:

Assessment	Normal	Respiratory Distress
General appearance	Calm, quiet, not anxious	Distressed, anxious obviously fighting for breath. Exhausted, decreased LOC
Speech	Normal conversation with no difficulty	Progresses from short sentences to phrases to words only to non-verbal
Chest auscultation	Quiet, no wheezes or crackles	Wheezes, crackles, silent chest, inspiratory stridor
Respiratory rate	Adults 12- 16 breaths /min	Tachypnea greater than 24/breaths/min
Respiratory effort	Minimal apparent effort	Marked chest/abdominal movement of accessory muscles, intercostal retraction. Sternal retraction
Pulse rate	60-80 beats/min	Tachycardia greater than 100/min
Skin	Pink, Normal	Sweaty, pale, maybe flushed Cyanosis is a late sign
Conscious state	Alert, orientated	Altered
SpO2	96% or greater on Room air	

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References:

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