Site Applicability

Applicable in all clinical areas at BC Children’s Hospital, including Sunny Hill Health Centre.

Practice Level/Competencies

Initial hypoxemia management is a Nurse Initiated Activity per BCCNP and is endorsed by BCCH. This includes the Registered Nurse’s ability to:

- Make a nursing diagnosis identifying hypoxemia as the cause of the signs or symptoms of the individual
- Administer oxygen without an order

Ongoing oxygen therapy using low flow oxygen delivery devices is a foundational healthcare provider (HCP) competency. HCP’s initiate low flow oxygen weaning per prescriber’s order and continue to monitor patient and evaluate response to weaning throughout process.

Oxygen therapy using high flow oxygen delivery devices is considered an advanced nursing competency and is practiced after the nurse has the required education and has had his/her learning validated at the bedside with the appropriate clinical support person. See “High Flow Humidified Nasal Prong Oxygen Therapy” Procedure.

Oxygen therapy and delivery is a foundational competency for Respiratory Therapists.

Policy Statement

Healthcare provider assessment of the patient must occur, along with oximeter or blood gas monitoring, to determine the patient’s need for oxygen and responsiveness to oxygen therapy.

Hypoxemia (SpO2 <92%, or per patient baseline) must be treated urgently with oxygen delivered by face mask or nasal cannula.

Ongoing management of oxygen therapy requires a prescriber’s order. The order must specify oxygen flow rate and/or minimum oxygen saturation levels to maintain.

Oxygen weaning must only occur when weaning a patient from nasal cannula. Use of the simple mask is recommended for emergency management only and weaning does not apply in these circumstances.

Equipment & Supplies

- 3 L oxygen flow meter
- 15 L oxygen flow meter
- Oximeter with cable and probe
- Appropriate sized nasal cannula
- Appropriate sized simple face mask
- Duoderm™, Tender grips™ and/or Tegaderm™ for nasal prong securement
- Portable oxygen tank for transport

Protocol

Assessment

Oxygen therapy is indicated when the HCP assessment of the patient identifies inadequate oxygen tensions and/or saturations by invasive or non-invasive methods (pulse oximetry or capillary/arterial blood gases). Unless otherwise indicated, do not give oxygen if the SpO2 is ≥92%. Both hypoxemia and hyperoxemia are harmful. There is no evidence for oxygen therapy in patients with increased work of breathing (WoB) with normal oxygen saturations. Transient, self-correcting desaturations with no physiological symptoms do not routinely require oxygen therapy.
SpO₂ Targets via pulse oximetry monitoring:
- ≥ 90% for patients with bronchiolitis
- ≥ 92% asthma and/or other acute respiratory conditions
- as prescribed in patients who have congenital heart disease
- as prescribed
  - Note: prescriber’s order always takes precedence over above SpO₂ targets

Frequent HCP reassessment of the patient must occur to determine the responsiveness to oxygen therapy. It is recommended that, wherever possible, measurement of the patient’s SpO₂ at rest be done, in order to correctly determine the presence of hypoxemia. Reassessment must occur by monitoring these parameters to determine the responsiveness to oxygen therapy.

**Intervention**

### Oxygen Initiation and Hypoxemia Management

<table>
<thead>
<tr>
<th>STEPS</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>PERFORM</strong> hand hygiene and <strong>DON</strong> personal protective equipment (PPE).</td>
<td>To reduce transmission of microorganisms.</td>
</tr>
<tr>
<td>2. <strong>VERIFY</strong> patient with two patient identifiers.</td>
<td>Ensures identification mechanism is present to prevent treatments, medications, and procedures to wrong child.</td>
</tr>
<tr>
<td>3. <strong>REVIEW</strong> patient history, including baseline oxygen saturations. <strong>ASSESS</strong> patient for signs and symptoms of inadequate oxygenation and ventilation, including increased WoB, and <strong>OBTAIN</strong> oxygen saturations (SpO₂) by pulse oximetry. See “<strong>Assessment: Oximetry (SpO₂) Monitoring</strong>” procedure.</td>
<td>Required data to make a nursing diagnosis.</td>
</tr>
<tr>
<td>4. <strong>PROVIDE</strong> individualized, developmentally appropriate education to patient and family. <strong>EXPLAIN</strong> oxygen delivery device, including rationale for its use.</td>
<td>Increases patient and family involvement and understanding of care.</td>
</tr>
<tr>
<td>5. <strong>CORRECT</strong> any obvious causes of hypoxemia which might immediately reverse the condition (Airway, Breathing, and Circulation). Patient repositioning, including jaw thrust, and/or suctioning may be required. <strong>ASSESS</strong> if patient has received any medication that may decrease respiratory drive (ie. opioids or sedatives). If so, <strong>IMMEDIATELY COMMENCE</strong> “<strong>Naloxone Administration for Opioid Induced Respiratory Depression</strong>” procedure and <strong>CALL</strong> Code Blue <strong>STAT</strong>.</td>
<td>Hypoxemia may be corrected without oxygen. Providing oxygen in these circumstances may not be beneficial and in some cases may mask the presenting issue. Respiratory depression is considered clinically significant when requiring intervention (i.e. stopping analgesic infusion, providing physical stimulation or administering naloxone to reverse it and prevent respiratory arrest). Because more opioid is required to produce respiratory depression than is required to produce sedation, patients with clinically significant respiratory depression are usually also sedated. This is why monitoring of sedation levels is as important as monitoring respiratory status. Respiratory depression can be prevented by taking actions when you detect an increasing level of sedation.</td>
</tr>
</tbody>
</table>
6. **INITIATE** the minimal amount of oxygen necessary to reverse the signs and symptoms of hypoxemia:
   - via nasal cannula/cannula (0-4 L/min) OR
   - via oxygen mask (6-10 L/min)
**EVALUATE** oxygen delivery device for proper fit and appropriate oxygen delivery. **ENSURE** monitor is set to appropriate patient profile and parameters. **RECORD** oxygen saturations, HR, RR, and WoB q1h x 4 on flowsheet.
If unable to reverse with above, **CALL** Respiratory Therapist and Physician. If required, **INITIATE** cardiac arrest management and/or **CALL** Code Blue **STAT**.

Ensures prompt and appropriate intervention as oxygen uptake by the lungs and oxygen delivery to the tissues are typically reduced in patients in respiratory distress.

The correct size device ensures optimal oxygen delivery and reduces risk of skin breakdown. See **Appendix A: Oxygen Device Considerations** for appropriate device, FiO₂, sizing and other considerations.
Adequate tissue oxygenation requires: sufficient SaO₂, blood flow to tissues (cardiac output), and distribution of blood flow to the tissues.

7. If selected oxygen device upsets the patient, **CONSIDER** changing to another method or allow caregiver to introduce the oxygen delivery device. **ALLOW** patient to remain in a position of comfort.

Agitation can increase oxygen demand and respiratory distress. Comfort will minimize respiratory effort and help keep airway open. This position may be in the arms of the caregiver.

8. **NOTIFY** physician that oxygen has been initiated. **Physician to ASSESS** within 30 minutes and **ESTABLISH** ongoing oxygen therapy and management, if needed. **INITIATE** continuous oxygen saturation monitoring.

Alerts physician of patient deterioration and need to assess patient.
A physician’s order is required for ongoing oxygen therapy and management. Oxygen is a medication and its use must be prescribed and documented.

9. **EXPLAIN** the following to the patient and family:
   - Expected duration and outcome of supplemental oxygen delivery
   - Signs and symptoms of hypoxemia and respiratory distress
   - Necessary assessments during supplemental oxygen delivery
   - Safety precautions for oxygen use

**ENCOURAGE** patient and family to ask questions, and answer as they arise.

Increases patient and caregiver comfort. Ensures patient and caregivers are active members of patient care and can identify respiratory distress, thus reducing risk of further deterioration in the patient’s condition.
Fire is a significant hazard where oxygen is used. Do not permit flames, sparks, or smoking. Highly flammable products (ie. vaseline/petroleum or alcohol based products) must not be used. Consider water-based moisturizers, aloe vera, or cocoa butter. Nasal cannula and face masks increase risk of strangulation. Ensure tubing is not around patient neck.

10. **REMOVE** PPE and **PERFORM** hand hygiene.

To reduce transmission of microorganisms.

11. **DOCUMENT** in appropriate records:
   - Initial and ongoing assessment data
   - Diagnosis of Hypoxemia
   - Date and time oxygen was initiated
   - Method of administration
   - Oxygen concentration or flow
   - Patient response to treatment
   - Date & time Respiratory Therapist and/or Physician consulted
   - Date & time Respiratory Therapist and/or Physician in to assess patient
   - Any related orders for ongoing oxygen therapy and management
   - Any other pertinent actions or observations
   - Patient teaching

Communication of assessment of hypoxemia and related interventions to additional members of the health care team. Assists with meeting Professional Standards for documentation and legal requirements.
## Ongoing Oxygen Assessment and Management

<table>
<thead>
<tr>
<th>STEPS</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>PERFORM</strong> hand hygiene and <strong>DON</strong> PPE.</td>
<td>To reduce transmission of microorganisms.</td>
</tr>
<tr>
<td>2. <strong>VERIFY</strong> patient with two patient identifiers.</td>
<td>Ensures identification mechanism is present to prevent treatments, medications, and procedures to wrong child.</td>
</tr>
<tr>
<td>3. <strong>ASSESS</strong> patient need for ongoing oxygen delivery. <strong>ADJUST</strong> oxygen flow and oxygen delivery device to maintain oxygen saturations within acceptable range. <strong>CHECK</strong> oxygen delivery system from site to source q1h. <strong>RECORD</strong> oxygen flow rate and oxygen delivery q1h.</td>
<td>To ensure proper oxygen delivery, function of equipment and evaluate tubing entanglement risk. Changes in oxygen delivery to avoid oxygen-related complications are based on the patient’s condition. The pulse oximeter requires pulsatile blood flow to determine oxygen saturation. If it fails to detect a signal or if oxygen or pulse is not within patient parameters, prompt assessment of the patient is required. Do not assume malfunction or malposition of oximetry probe.</td>
</tr>
</tbody>
</table>
| 4. **MONITOR** oxygen saturation continuously, unless otherwise ordered (ie. patients on home O₂). **EVALUATE** patient immediately if oximeter:  
  - Fails to detect a signal  
  - Displays an inaccurate pulse rate  
  - Indicates a weak signal  
  - Indicates a fall in oxygen saturation | If the oxygen flow is too low, hypercapnia may develop. |
| **ENSURE** monitor is set to appropriate patient profile and parameters. **RECORD** oxygen saturations and HR q1h and vital signs (oxygen saturations, HR, RR, WoB, BP, temperature, and LOC) q4h or per prescriber’s order and PRN. **CHANGE** oxygen saturation probe site at least q4h. | The nose and cheeks are prone to skin breakdown due to oxygen delivery device and/or increased moisture and secretions. |
| 5. **MONITOR** for signs of hypercapnia, including increasing agitation, rapid and deep respiration, dyspnea, and progressive lethargy. | Oxygen has a drying effect to the respiratory system. It may result in nasal mucosa breakdown or thick secretions that are difficult to mobilize. Normal saline nebulizers are not recommended as they increase the aerosolization of microorganisms. |
| 6. **ASSESS** skin for breakdown. **APPLY** Duoderm™ directly on patient skin as a barrier between skin and oxygen delivery device, as applicable. If using nasal cannula, **SECURE** with Tender Grips™ and/or Tegaderm™ on top of the Duoderm™. | Allows early identification and prompt intervention for patient deterioration. |
| 7. **MONITOR** for signs of dry mucous membranes, including dry or cracked mucous membranes or epistaxis. **CONSULT** RT for humidification options. |  |
| 8. **NOTIFY** Respiratory Therapy and physician if the patient:  
  - Requires increasing oxygen flow/concentration to maintain oxygen saturation as ordered  
  - Is in increasing respiratory distress  
  - Has nasal cannula at maximum flow for age |  |
9. If transporting a patient on oxygen therapy, the nurse must accompany with necessary safety equipment. **ENSURE** oxygen cylinder safety, including adequate remaining oxygen in cylinder and secured safely (i.e. in a carrier). See “[Patient Transport Inter-Unit](#)” procedure.

Oxygen cylinders must be secured in position during transportation, storage, or use as they are combustible and may result in injury. Do not roll, slide, or drop oxygen cylinders.

10. **REMOVE** PPE and **PERFORM** hand hygiene.

To reduce transmission of microorganisms.

11. **DOCUMENT** on appropriate records:

- Method of oxygen delivery
- Rate and concentration of oxygen
- Vital signs and SpO\textsubscript{2} readings
- Patient’s response to treatment
- Date and time Respiratory Therapist and/or Physician consulted
- Date and time Respiratory Therapist and/or Physician in to assess patient
- Any related orders for ongoing oxygen therapy and management
- Any other pertinent actions or observations
- Patient/family education

Communication of ongoing oxygen need and related interventions to additional members of the health care team. Assists with meeting Professional Standards for documentation and legal requirements.

---

### Oxygen Weaning

<table>
<thead>
<tr>
<th>STEPS</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>PERFORM</strong> hand hygiene and <strong>DON</strong> PPE.</td>
<td>To reduce transmission of microorganisms.</td>
</tr>
<tr>
<td>2. <strong>VERIFY</strong> patient with two patient identifiers.</td>
<td>Ensures identification mechanism is present to prevent treatments, medications, and procedures to wrong child.</td>
</tr>
</tbody>
</table>
| **3. DETERMINE** if patient is ready to be weaned from low flow oxygen. Weaning should be commenced when the following criteria are met:  
  - SpO\textsubscript{2} is ≥ 92% or ordered parameter  
  - Vital signs are within normal parameters  
  - Mild to no WoB  
  - Alert and normal behaviour  
  - Feeding well |
| **NOTE**: Unless clinically indicated, an assessment and attempt to wean should be done at least once per shift. | This will avoid hyperoxemia and facilitate prompt discharge. |
| 4. **WEAN** patients by decreasing oxygen flow 1/8 – 1 L/min every hour, but never more than 50% of current rate as long as SpO\textsubscript{2} stays at or above minimum ordered oxygen saturation. **OBSERVE** patient for at least 5 minutes following each weaning step. **REMOVE** nasal cannula and discard appropriately once weaned to room air. **NOTE**: If patient does not tolerate a weaning step, increase oxygen flow to lowest flow rate necessary to maintain target SpO\textsubscript{2}. **ATTEMPT** weaning again in 2-4 hours if patient meets criteria as in #1 above. | Weaning is best accomplished during the day when the patient is more alert and awake. Weaning is not to be attempted while the patient is feeding orally. Leaving nasal cannula in without oxygen flow can result in airway obstruction or increased oxygen demands. Allows early identification and prompt intervention for hypoxemia. |
### NOTE:
For patients on chronic oxygen therapy, see individualized respiratory careplan. These patients may require slower weaning.

| 5.  | **MONITOR** $\text{SpO}_2$ continuously, HR, RR, WoB and LOC q1h during the weaning process. If wean unsuccessful, **INCREASE** oxygen flow to lowest flow rate necessary to maintain target $\text{SpO}_2$. **ATTEMPT** weaning again in 2-4 hours if patient meets criteria. | **Allows early identification and prompt intervention for hypoxemia.** |
| 6.  | Upon oxygen discontinuation, **MONITOR** $\text{SpO}_2$ continuously for 1 hour. Continue to **MONITOR** $\text{SpO}_2$ intermittently for 1 hour. HR, RR, WoB and LOC q1h x 4, then q4h and PRN, unless otherwise ordered. If discontinuation unsuccessful, **INCREASE** oxygen flow to lowest flow rate necessary to maintain target $\text{SpO}_2$. **ATTEMPT** weaning again in 2-4 hours if patient meets criteria. | **Allows early identification and prompt intervention for hypoxemia.** |
| 7.  | **DOCUMENT** in appropriate records:  
- Assessment parameters that indicate patient is ready to be weaned  
- Date and time oxygen flow rate decreased  
- HR, RR, $\text{SpO}_2$, WoB, and LOC hourly during the weaning process  
- Patient’s response to the weaning process  
- Date and time of oxygen cessation  

**Communication of oxygen therapy weaning and/or cessation and patient response to care to additional members of the health care team.** |

### References


Definitions

**FiO₂**: fraction of inspired oxygen (e.g. pure oxygen is FiO₂ =1.0; room air is FiO₂ = 0.21)

**High flow oxygen**: oxygen delivery device that delivers a heated and humidified mixture of air and oxygen at a flowrate that meets or exceeds the patient’s peak inspiratory flow. The high flowrate prevents room air entrainment, and therefore provides a precise FiO₂ based on the set O₂%.

**Hypoxemia**: deficiency of oxygen in the blood. Note: "suspected hypoxemia" is the presence of signs and symptoms of hypoxemia with low arterial oxygen saturation on pulse oximetry, but without an actual arterial blood gas level.

**Hypoxia**: deficiency of oxygen in tissue. A condition in which there is insufficient oxygen in the arterial blood to meet the metabolic demands of the tissues and cells.

**Hypercapnea**: increased amounts of carbon dioxide in the blood

**Low flow oxygen**: oxygen delivery device that delivers oxygen at a flowrate that is less than the patient’s peak inspiratory flow. The additional gas needed by the patient is entrained from the room air, therefore providing a variable FiO₂ that depends on the patient’s inspiratory effort, respiratory rate and tidal volume.

**Oxygen therapy**: administration of oxygen at concentrations greater than room air (FiO₂ = 0.21)

**SaO₂**: arterial oxygen saturation measured by blood gas (% value)
SpO₂: arterial oxygen saturation measured via pulse oximetry (% value); does not indicate the amount of O₂ delivered to the tissues nor effectiveness of ventilation (carbon dioxide elimination) as it is the percent of total hemoglobin that is fully saturated with oxygen.

**Work of Breathing (WoB):** patients with deficiencies in oxygenation and/or ventilation may have some evidence of respiratory compromise, as indicated by increased WoB. Decreased work of breathing may be noted as the patient becomes fatigued and progresses toward respiratory failure and respiratory arrest.

Assessment of airway sounds, the patient's position of comfort, and use of accessory muscles provides information regarding the patient's work of breathing. A patient who has abnormal breathing sounds, is in a position to maximize airflow, and is using accessory muscles is in respiratory distress.

- **Airway sounds** - Abnormal airway sounds that can be heard without a stethoscope are often an indication of respiratory distress. These include stridor, snoring, grunting, and wheezing.

- **Positioning** - To maximize airway opening when there is obstruction, a patient may assume the "sniffing position" (neck and head mildly extended with jaw forward) to align the airway axes and improve airflow. For older patients, the tripod position, in which the patient is sitting up and leaning forward on outstretched hands, may be preferred.

- **Accessory muscle use** - Patients with inadequate oxygenation or ventilation often use accessory muscles (such as supraclavicular, intercostal, and/or substernal groups) to increase tidal volume, thereby improving minute ventilation. Retractions result from the use of accessory muscles. They can be supraclavicular, intercostal, and/or substernal. Severe retractions of more than one muscle group may indicate significant hypercapnea with hypoxia.

- **Head bobbing** (extension of the head on inhalation and forward movement on exhalation) and **nasal flaring** (opening of the nostrils to allow the passage of more air) are additional indicators of accessory muscle use and respiratory distress.

**Appendix**

- Appendix A: Oxygen Device Considerations

**Version History**

<table>
<thead>
<tr>
<th>DATE</th>
<th>DOCUMENT NUMBER and TITLE</th>
<th>ACTION TAKEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-Apr-2019</td>
<td>C-05-13-60134 Oxygen Therapy</td>
<td>Approved at: BCCH Best Practice Committee</td>
</tr>
</tbody>
</table>

**Disclaimer**

This document is intended for use within BC Children’s and BC Women’s Hospitals only. Any other use or reliance is at your sole risk. The content does not constitute and is not in substitution of professional medical advice. Provincial Health Services Authority (PHSA) assumes no liability arising from use or reliance on this document. This document is protected by copyright and may only be reprinted in whole or in part with the prior written approval of PHSA.
Appendix A: Oxygen Delivery Devices

Low Flow Oxygen Delivery Systems

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Flow Rates</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Flow Nasal Cannula</td>
<td>Lightweight cannula with two soft prongs that fit in the nares.</td>
<td>It is important to follow flow rate guidelines as dry mucous membranes from oxygen delivery may lead to thick secretions that are more difficult to mobilize.</td>
<td>Use adhesives (such as Duoderm™, Tender-grips™, and/or Tegaderm™) to secure nasal cannula. Change weekly or PRN. Never trim nasal cannula. Contraindicated in patients with anatomical nasal obstruction. Position the tubing over the ears and secure under chin. This decreases risk of strangulation. Check nares and cannula for patency. Suction nares and change cannula PRN. Patient able to feed with nasal cannula insitu. May be more comfortable than a mask. Mouth breathing reduces FiO₂. Nasal cannula must be removed from nares when oxygen flow turned off.</td>
</tr>
<tr>
<td></td>
<td>Sizes available:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>Size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-2yrs</td>
<td>Infant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1-3yrs</td>
<td>Intermediate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2-12yrs</td>
<td>Pediatric</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;12yrs</td>
<td>Adult</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nasal cannula size should be approximately half the diameter of the nares.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Face Mask</td>
<td>A soft mask with vents allowing for dilution of oxygen.</td>
<td>6-10L/min of oxygen flow is needed to prevent rebreathing of carbon dioxide and hypercapnea.</td>
<td>Ensure mask covers the mouth and nose of patient. If mask covers the eyes, it is too large. Secure mask by adjusting nose clip and elastic strap. Mask must be removed for feeding. Monitor for signs of hypercapnea including: increasing agitation, rapid and deep respiration, dyspnea, and progressive lethargy. Use of a simple mask is for emergency management and is not recommended for ongoing oxygen therapy. Attempt to change to nasal cannula when able. Can be placed over nasal cannula for sudden</td>
</tr>
<tr>
<td></td>
<td>Sizes available:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>Size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;8 years</td>
<td>Pediatric</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;8 years</td>
<td>Adult</td>
<td></td>
</tr>
</tbody>
</table>
OXYGEN THERAPY & DELIVERY

DOCUMENT TYPE: PROCEDURE

<table>
<thead>
<tr>
<th>Device</th>
<th>Description</th>
<th>Flow Rates</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blow-By Oxygen</td>
<td>A simple face mask that is not secured to the patient.</td>
<td>Minimum of 6L/min required.</td>
<td>This is NOT a recommended oxygen therapy. If used, a physician must write a covering order (ie. palliative patients). Only to be used if patient does not tolerate nasal cannula or face mask. Attempt to change to nasal cannula or face mask when able.</td>
</tr>
<tr>
<td>Non-Rebreather Mask</td>
<td>A mask with an oxygen reservoir bag and a one-way valve system which prevents exhaled gases mixing with oxygen flow.</td>
<td>10-15L/min of oxygen is needed to ensure the oxygen reservoir bag does not collapse during inspiration resulting in rebreathing of carbon dioxide. This allows for delivery of up to 95% oxygen.</td>
<td>Monitor for signs of hypercapnea including: increasing agitation, rapid and deep respiration, dyspnea, and progressive lethargy. If required, Respiratory Therapist and Physician to assess immediately.</td>
</tr>
<tr>
<td>High Flow Humidified Nasal Prong</td>
<td>Oxygen delivery device that delivers a heated and humidified mixture of air and oxygen at a flowrate that meets or exceeds the patient’s peak inspiratory flow. The high flowrate prevents room air entrainment, and therefore provides a precise FiO₂ based on the set O₂%. See High Flow Humidified nasal Prong Oxygen Therapy procedure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Invasive Positive Pressure Ventilation</td>
<td>NIPPV therapy uses a machine to provide positive airway pressure(s) through a mask interface. The prescribed pressure(s) will help the patient by reducing their work of breathing and improving their ability to exchange oxygen and carbon dioxide. NIPPV provides support to patients with upper airway obstruction, hypoventilation and respiratory distress. It may or may not include oxygen therapy. See Non-Invasive Positive Pressure Ventilation (NIPPV) Management On Inpatient Units At BCCH or Non-Invasive Positive Airway Pressure Ventilation (NIPAPV) Management At SHHC procedures.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>