

	<b>CORPORATE CLINICAL POLICY AND PROCEDURE</b>		Page 1 of 7
<b>Initiation and Titration of Oxygen Therapy</b>			
Signing Authority:	Chief Nursing Executive		
Approval Date:	30-10-2017	Effective Date:	30-06-2018

### **SCOPE:**

This policy and procedure applies to all nurses, Registered Respiratory Therapists (RRTs), Interprofessional Services Physiotherapists (IPS PTs), Interprofessional Services Occupational Therapists (IPS OTs), Medical Radiation Technologists (MRTs), and Chiropractors employed at the Royal Victoria Regional Health Centre (RVH) as well as professional staff with RVH privileges that are involved in the initiation, administration, weaning and discontinuation of oxygen to patients at RVH.

### **POLICY STATEMENT:**

It is the policy of RVH that the administration of oxygen (O<sub>2</sub>) at concentrations greater than ambient air, or O<sub>2</sub> 21%, shall be used in the treatment or prevention of hypoxia. Oxygen is a drug that requires a Most Responsible Provider's (MRP's) order or a medical directive enactment to administer.

1. In emergency situations, the Medical Directive HW-1 Administration of Oxygen shall be enacted by nurses, IPS OTs, RRTs, IPS PTs, MRTs and Chiropractors to administer oxygen therapy in the absence of an order from an MRP. The MRP shall be notified about the enactment of the medical directive as soon as possible.
2. Oxygen therapy shall be monitored to avoid toxic effects related to high concentrations of oxygen. Fraction of Inspired Oxygen (FiO<sub>2</sub>) or oxygen flow rate shall be reduced as soon as patient condition allows.
3. Oxygen shall be given continuously unless otherwise specified. PRN orders for oxygen shall specify the clinical situations and duration of the therapy for the particular patient.

### **DEFINITIONS:**

**Flow Rate:** Litres of oxygen delivered per minute (lpm).

**FiO<sub>2</sub>:** The fraction or percentage of oxygen being administered. FiO<sub>2</sub> can range from 0.21-1.0 or Oxygen percentage 21%-100%.

**High concentration of Oxygen:** FiO<sub>2</sub> greater than or equal to 0.60.

**Hypoxemia:** Decreased partial pressure of oxygen (PaO<sub>2</sub>) in arterial blood.

**Initiation and Titration of Oxygen Therapy**

**Hypoxia:** A condition in which there is insufficient oxygen to meet the metabolic demands of tissues and organs.

**Oxygen Saturation (SpO<sub>2</sub>):** This measurement, obtained through pulse oximetry, represents the ratio of oxygenated to non-oxygenated hemoglobin and is expressed as a percentage.

**Oxygen Therapy:** The administration of supplemental oxygen to a patient to prevent or reduce hypoxia.

**PROCEDURE:****Equipment:**

- a. Stethoscope
- b. Pulse oximetry
- c. Pulse oximetry probe (patient dependent)
- d. Oxygen delivery device, as per Appendix 1.
- e. Oxygen source

**Initiation of Oxygen Therapy**

1. Obtain an order for the initiation of oxygen and targeted SpO<sub>2</sub>, flow rate of oxygen or FiO<sub>2</sub> from the MRP or enact Medical Directive HW-1 Administration of Oxygen.
2. Perform risk assessment for additional precautions required, perform hand hygiene and don appropriate personal protective equipment (PPE), based on risk assessment.
3. Verify patient identification utilizing at least two patient identifiers.
4. Introduce self and the procedure to the patient using AIDET format.
5. Obtain verbal consent from the patient or substitute decision maker (SDM).
6. Perform and document a respiratory assessment, as per RVH Respiratory Assessment Policy.
7. Apply pulse oximeter to a location on the patient where the probe is able to detect a consistent and reliable signal. If nail polish is present on the finger or toe, this shall be removed as soon as possible, to allow for enhanced accuracy of SpO<sub>2</sub> monitoring.
8. The pulse oximeter sites shall be rotated a minimum of every four hours.
9. In adults and paediatric patients, pulse oximeter sites shall include:
  - a. finger
  - b. toe
  - c. ear lobe
  - d. forehead

## **Initiation and Titration of Oxygen Therapy**

- e. hand
  - f. wrist
10. Neonatal Intensive Care Unit (NICU) pulse oximeter probe sites include wrist, hand or foot and shall be rotated with every assessment.
  11. If SpO<sub>2</sub> is less than the ordered targeted saturation, or if in the absence of an order the SpO<sub>2</sub> is less than 90% according to the Medical Directive HW-1 Administration of Oxygen, apply oxygen using the appropriate oxygen delivery device, as listed in Appendix I: Oxygen Therapy Delivery Device.
  12. Increase the FiO<sub>2</sub> or oxygen flow rate until the targeted SpO<sub>2</sub> has been reached, according to Appendix II: Titration of Oxygen Therapy Decision Pathway.
  13. Once the targeted SpO<sub>2</sub> has been reached, consider weaning the FiO<sub>2</sub> or oxygen flow rate to provide the minimum amount of oxygen required to maintain appropriate SpO<sub>2</sub>.
  14. Assess and document the patient response to oxygen therapy after 15 minutes.
  15. Patients receiving high concentrations of oxygen in an acute situation shall have
    - a. vital signs, including blood pressure, pulse, respiration rate, dyspnea assessment, and pulse oximetry, level of consciousness and blood gases monitored, as per MRP order
    - b. RRT consult
  16. In the event of rapid deterioration of respiratory status, consider calling Critical Care Outreach Team (CCOT), if adult patient meets criteria.
  17. In the event the patient shows signs and symptoms of cardiac or respiratory compromise, activate code blue, as per adult code blue policy.
  18. Patients receiving high concentration oxygen for treatment of dyspnea in palliative patient can be managed in a non-critical care unit with specific MRP's orders. The RRT shall be notified.

### **Titration of Oxygen Therapy**

1. Perform risk assessment for additional precautions required, perform hand hygiene and don appropriate PPE, based on risk assessment.
2. Verify patient identification utilizing at least two patient identifiers.
3. Introduce self and the procedure to the patient using AIDET format.
4. Obtain verbal consent from the patient or SDM.
5. Perform and document a respiratory assessment, according to RVH Respiratory Assessment Policy and obtain the patient's SpO<sub>2</sub>.
6. Oxygen shall be titrated according to Appendix II: Titration of Oxygen Therapy Decision Pathway to achieve the targeted saturation for the patient, based on the order from the MRP or if in the absence of an order the SpO<sub>2</sub> is less than 90% according to the Medical Directive HW-1.
7. If changes in oxygen flow rate or FiO<sub>2</sub> are made the rationale for the change shall be documented. The patient response to changes in oxygen therapy shall be

## **Initiation and Titration of Oxygen Therapy**

assessed and documented 15 minutes after making a change in oxygen therapy and before making further changes in oxygen therapy.

### **Discontinuation of Oxygen Therapy**

1. Oxygen therapy may be discontinued when the patient has been successfully weaned from all oxygen requirements, including with exercise, and the patient's oxygen saturation is at the level ordered by the MRP on room air.

### **Transportation of Patients Receiving Oxygen Therapy**

1. Patients receiving oxygen therapy shall be accompanied by a nurse during transport to another department in RVH in the event:
  - a. the patient is receiving oxygen therapy at a flow rate greater than 6 lpm and/or
  - b. the patient is hemodynamically unstable, defined as symptomatic hypotension and/or signs and symptoms of hypo perfusion.

### **CROSS REFERENCES:**

RVH. (2016). Medical Directive HW-1: *Administration of oxygen.*

RVH. (2016). Medical Directive PT/OT-1: *Titration of oxygen for treatment.*

RVH. (2012): Policy & Procedure: *Respiratory Assessment*

### **REFERENCES:**

College of Occupational Therapists of Ontario (2000). *Guideline on the controlled acts and delegation.*

Canadian Pediatric Society. (2016) Neonatal Resuscitation Program (NRP)

College of Nurses of Ontario. (2013). Decisions about Procedures and Authority.

College of Physicians and Surgeons. (2012). Delegation of Controlled Act.

College of Physiotherapists of Ontario. (2016). Standards of Practice.

College of Respiratory Therapists of Ontario (2013). Oxygen Therapy Clinical Best Practice Guidelines.

Scanlan, C., Wilkins, R., Stoller, J. (2016). Egan's Fundamentals of Respiratory Care. St. Louis: Mosby.

**Initiation and Titration of Oxygen Therapy**

Heart and Stroke Foundation. (2015). ACLS Guidelines.

Humber River Hospital. (2015). Initiation and Titration of Oxygen Therapy.

Northern Health Respiratory Therapy Department. (2015). Respiratory Care and Oxygen Therapy.

Ontario. (1991). Respiratory Therapy Act.

Saskatoon Health Region. (2015). Oxygen Administration Policy & Procedure.  
Toronto East General Hospital. (2013). Oxygen Therapy.

**Initiation and Titration of Oxygen Therapy  
Appendix I: Oxygen Therapy Delivery Device**

Appendix I: Oxygen Therapy Delivery Device

<b>Oxygen Therapy Delivery Device</b>	<b>Flow Rate</b>	<b>Concentration of Oxygen Administered to Patient</b>
Nasal Cannula	1-6 lpm	23-45%
Nasal Cannula for Neonates	0.02-less than 1 lpm	Variable
Simple Mask	6-10 lpm	35-55%
Venturi Mask *The flow rate of oxygen is dependent upon the oxygen concentration required.	2 lpm (blue)	24%
	4 lpm (yellow)	28%
	6 lpm (white)	31%
	8 lpm (green)	35%
	8 lpm (pink)	40%
	12 lpm (orange)	50%
Oxymask™	1-15 lpm	24-90%
Non-Rebreather Mask	10lpm to flush	60-100%
Small Volume Nebulizer with Mask *for medication delivery only	6-8 lpm	*Not to be used for the delivery of oxygen therapy
Low Flow Large Volume Nebulizer for use with: 1. Mask 2. Tracheostomy Mask 3. Face Tent	10 lpm	35-50%
High Flow Large Volume Nebulizer for use with: 1. Mask 2. Tracheostomy Mask 3. Face Tent	15 lpm – flush	60-100%
Opti-Flow©	50-55 lpm	35-100%

**Initiation and Titration of Oxygen Therapy**  
**Appendix II: Titration of Oxygen Therapy Decision Pathway**

Appendix II: Titration of Oxygen Therapy Decision Pathway

<b>SpO<sub>2</sub> Level</b>	<b>Action</b>	<b>Follow-Up</b>
SpO <sub>2</sub> within normal parameters of MRP's order	If patient's SpO <sub>2</sub> is greater than the MRP's order, wean oxygen, as tolerated	Continue to wean oxygen as tolerated. Assess SpO <sub>2</sub> 15 minutes following changes to oxygen. Assess for exercise tolerance.
<b>Phase I</b>		
SpO <sub>2</sub> less than MRP's order <b>without</b> any of the following symptoms: <ul style="list-style-type: none"> <li>• Increased respiratory rate</li> <li>• Increased heart rate</li> <li>• Increased blood pressure</li> <li>• Dyspnea</li> <li>• Decreased air entry</li> <li>• Abnormal breath sounds</li> </ul>	Titrate oxygen as required, to achieve SpO <sub>2</sub> , as per MRP's order or if in the absence of an order the SpO <sub>2</sub> is less than 90% according to the Medical Directive HW-1	Repeat SpO <sub>2</sub> q15 minutes following changes to oxygen. Continue to titrate oxygen as required. If patient is requiring FiO <sub>2</sub> greater than 0.50 or oxygen flow rate greater than 6 lpm, proceed to Phase II.
<b>Phase II</b>		
SpO <sub>2</sub> less than MRP's order <b>with</b> any of the following symptoms: <ul style="list-style-type: none"> <li>• Increased respiratory rate</li> <li>• Increased heart rate</li> <li>• Increased blood pressure</li> <li>• Dyspnea</li> <li>• Decreased air entry</li> <li>• Abnormal breath sounds</li> </ul>	Continue to titrate oxygen as required. Notify MRP. Notify the RRT for an assessment. Consider consulting CCOT.	Patient may require continuous monitoring for rapid deterioration of respiratory status. Continue to titrate oxygen as required. Consider changing oxygen therapy device interface.
<b>Phase III</b>		
SpO <sub>2</sub> less than MRP's order <b>with severe respiratory distress</b>	Consider consulting CCOT.  <b>Notify Physician STAT</b>  <b>Notify RRT STAT</b>  <b>Place non-rebreather mask on patient to maintain oxygen levels</b>	Continuous monitoring required for rapid deterioration of respiratory status.  Implement new orders from MRP and prepare for transfer to a higher level of care as appropriate. In the event of respiratory or cardiac arrest, initiate code blue and administer 100% oxygen via bag valve mask.