

	<b>RESPIRATORY SERVICES</b>	DATE CREATED: September 1988  DATE REVIEWED/REVISED: May 2015
<b>CLINICAL PROTOCOL</b>	TITLE: <u>CRITICAL CARE – Ventilator Management Protocols for Critical Care (ICU, CICU, ED) (Respiratory Therapy)</u> NUMBER: B-00-13-12010	RELATED DOCUMENTS:

This material has been prepared solely for use at Providence Health Care (PHC), Provincial Health Services Authority (PHSA) and Vancouver Coastal Health (VCH). PHC, PHSA and VCH accept no responsibility for use of this material by any person or organization not associated with PHC, PHSA and VCH. A printed copy of this document may not reflect the current electronic version.

## SITE APPLICABILITY:

ST. PAUL'S HOSPITAL  
MOUNT SAINT JOSEPH HOSPITAL

## POLICY STATEMENT:

The Respiratory Therapist will be responsible for:

- a) Ensuring that established ventilation protocols are adhered to;
- b) Ensuring that specific orders are obtained and documented for ventilation management not covered by, or deviating from, an existing ventilation protocol;
- c) Ensuring that regular monitoring of mechanical ventilation and assessment of the patient is performed as per [Ventilator Monitoring Protocol](#);
- d) Communicating their findings for all assessments, interventions, therapies, parameter changes, and patient response (or lack thereof) to the care team in an accurate, timely and concise manner;
- e) Overseeing the direct manipulation of the mechanical ventilator including parameter adjustments and adjunctive therapies for any patient requiring mechanical ventilation outside of the surgical suites, which includes (but is not limited to):
  - Invasive and non-invasive ventilation support
  - Specialty inhaled gas therapy
  - Aerosolized drug therapy when administered via the ventilator circuit

## GENERAL INFORMATION:

Ventilator orders and patient-ventilator care management are provided under three separate categories of ventilator management protocols:

1. Initial Orders
2. Ventilation and Oxygenation Goals
3. Weaning Protocol

## EXHIBITS:

- A. [Ventilator Monitoring Protocol](#)
- B. [Arterial Blood Gas Clinical Practice Guideline](#)
- C. [Weaning Protocol for ICU/CICU](#)
- D. [PEEP Titration Protocol](#)
- E. [Weaning Pathway for Patients Requiring Prolonged Mechanical Ventilation](#)

## INDICATIONS:

Indications for mechanical ventilation include:

- a) Inadequate oxygenation
- b) Inadequate ventilation
- c) Inability to protect the airway

## CONTRAINDICATIONS:

- 1. Untreated pneumothorax
- 2. Advance Directive indicating comfort measures only

## CAUTIONS:

Complications arising from mechanical ventilation may include:

- a) Pneumothorax
- b) Oxygen toxicity
- c) Hypotension
- d) Ventilator associated lung injury
- e) Ventilator associated pneumonia

## SPECIAL CONSIDERATIONS:

Arterial blood gases (ABGs) will be drawn in accordance with [Arterial Blood Gas Clinical Practice Guideline](#).

Lung protective strategy will be used for all patients requiring positive pressure ventilation. Lung protective strategy includes:

- Minimum inflation volume (6 – 8 mL/kg; 4 – 6 mL/kg when ARDS)
- Maintaining end inspiratory pressure **below 30 cm H<sub>2</sub>O** (unless utilizing esophageal pressure monitoring)
- Minimizing derecruitment of alveoli by using adequate PEEP
- Permissive hypercapnia
- Permissive hypoxemia

## REQUIRED SUPPLIES & EQUIPMENT:

- Mechanical ventilator

## VENTILATOR MANAGEMENT PROTOCOLS:

### 1. INITIAL ORDERS:

Upon initiation of ventilation support the following parameters are routinely ordered as part of the ICU Admission Orders:

- a) Ventilation mode
- b) Tidal Volume (6 +/-2 mL/kg) or a target range as specified by the physician based on Ideal Body Weight (IBW); or pressure control up to 30 cm H<sub>2</sub>O or a level as specified by the physician

## 2. VENTILATION AND OXYGENATION GOALS:

The maintenance and management of ventilation support by the Respiratory Therapist will be guided by the following targets or as specified by the physician:

### a) Minimum oxygen saturation:

- SpO<sub>2</sub> greater than or equal to 92%;
- Or, to maintain SpO<sub>2</sub> greater than or equal to \_\_\_\_\_%

### b) Minimum pH:

- pH greater than or equal to 7.25;
- Or, to maintain pH greater than or equal to \_\_\_\_\_%

The Respiratory Therapist will be responsible for obtaining written orders for ventilation parameters that fall outside of the protocol limits. All orders must be documented on the Prescriber's Order Sheet.

Ventilator parameters may be adjusted within the following ranges to enable the ventilation and oxygenation targets to be met:

### a) Ventilation mode:

- Independent ventilation changes may be made between the following modes:
  - VC, PC, PSV, CPAP, VC+, PRVC, NIV
- An order from the attending physician must be obtained for alternative modes:
  - NAVA, APRV, PAV+

### b) Tidal volume:

- 6 – 8 mL/kg
- 4 – 6 mL/kg in ARDS
- Based on ideal body weight

### c) Respiratory rate:

- 6 – 35 breaths per minute

### d) FiO<sub>2</sub>:

- 0.21 – 1.0

### e) PEEP or CPAP:

- 5 – 10 cm H<sub>2</sub>O

- F. Physician order required for PEEP/CPAP greater than 10 cm H<sub>2</sub>O unless using esophageal pressure tool or a [PEEP Titration Protocol](#)

## 3. WEANING PROTOCOL:

- G. All ventilated patients will have a daily weaning assessment performed (including spontaneous breathing trial) and a subsequent weaning plan initiated as per [Weaning Protocol for ICU/CICU](#) unless specified otherwise by the attending physician.

If the patient does not tolerate the weaning process they should be returned to the previous settings and the physician notified for further assessment and reevaluation of the weaning plan.

At MSJH a prolonged ventilation pathway may be utilized with patients who have had long term ventilatory support. The purpose of the pathway is to standardize and streamline the care of patients admitted to MSJH who are being actively weaned from prolonged mechanical ventilatory support. Refer to [Weaning Pathway for Patients Requiring Prolonged Mechanical Ventilation](#) for additional information.

## DOCUMENTATION, COMMUNICATION, EDUCATION:

- A. Ventilator settings and parameter changes must be clearly documented with supporting rationale on the Respiratory Critical Care flowsheet as per [Ventilator Monitoring Protocol](#).

**DEVELOPED BY:**

PHC Respiratory Services

**REVIEWED BY:**

Professional Practice Leader, PHC Respiratory Therapy  
Clinical Coordinator, PHC Respiratory Services  
ICU Core Respiratory Therapist, PHC Respiratory Services