Providence Health Care	Department: **Respiratory Services**	Date Originated: September 1986 Date Revised: **November 2008**
PROCEDURE	Topic: Critical Care – Measurement of Vital Capacity (VC) and Tidal Volume (Vt) (Respiratory Therapy) Number: B-00-12-12027	Related Links: B-00-13-12003

APPLICABLE SITES:

St. Paul's Hospital
Mount Saint Joseph Hospital

GENERAL INFORMATION:

The measurement of spontaneous parameters such as Vital Capacity (VC) and Tidal Volume (Vt) may be a useful trending tool in specific patient situations which include:

a) Neuromuscular Disease:

- Vital Capacity measurements are preferred
- The trending of VC may indicate the progression or recovery of the disease process

b) Trach mask or T-piece trials:

- Tidal Volume measurements are preferred
- Spontaneous Vt should be obtained on all cuff inflated artificial airway patients when off the ventilator for weaning trials

EQUIPMENT:

- Wright's respirometer
- Pall filter
- 15mm connector
- 22mm connector
- Nose clips (for non-artificial airway patients)
- Personal protective equipment as appropriate
- Watch or clock with a second hand

PROCEDURE FOR OBTAINING VITAL CAPACITY (VC):

1. Gather and assemble equipment. Explain procedure to the patient.

2. Wash hands and don personal protective equipment as appropriate.

3. Place the patient in semi-Fowlers position if tolerated.

4. Instruct the patient on how to perform a Vital Capacity maneuver.

    a. Take a deep breath all the way in
    b. Slowly exhale completely

5. Connect the respirometer assembly to the patient's endotracheal or tracheostomy tube.

    NOTE: If the patient does not have an artificial airway, ensure there is an adequate seal around the mouthpiece and place nose clips on the patient during the procedure.

6. Measure the patient's Vital Capacity a minimum of 3 times for reproducibility of the test, while allowing the patient to rest between maneuvers.

7. Record the patient's VC on the Respiratory Services Flowsheet or in the Progress Notes of the patient record.

PROCEDURE FOR OBTAINING TIDAL VOLUME (Vt):

1. Gather and assemble equipment. Explain procedure to the patient.

2. Wash hands and don personal protective equipment as appropriate.

3. Place the patient in semi-Fowlers position if tolerated.

4. Instruct the patient to breathe normally while the measurement is obtained.

5. Measure the exhaled minute volume and respiratory rate.

6. Calculate and record the average tidal volume on the Respiratory Services Flowsheet or in the Progress Notes of the patient record.

SPECIAL CONSIDERATIONS:

For ventilated patients, measurements shall be done via the ventilator while in CPAP mode without pressure support. Resume previous ventilator settings when complete.