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MECHANICAL VENTILATOR

I. STATEMENT OF THE POLICY

This policy shall serve as the primary guide for Respiratory Therapists and Healthcare Workers tasked and involved in the preparation, usage, and management of Mechanical Ventilators for patient use.

II. POLICY GUIDELINES

1. Written consent for intubation from the relative of the patient must be secured by the nurse on duty.
2. Relative of the patient must be informed of the necessary details for intubation and the tools and equipment needed that the relative should acquire from the Property or from an out source in cases where the Hospital's Mechanical Ventilators and/or supplies are unavailable.
3. Mechanical ventilator settings must be ordered by the attending physician or resident on duty.
4. In cases where there is no written and/or verbal order for the initial settings of the Mechanical Ventilator, the Respiratory Therapist will provide the standard initial settings for the patient.
5. Any changes made in the Mechanical Ventilator settings must have a written order by a Physician.
6. Once a patient has been extub ated, the ventilator will be left on stand-by at the patient's bedside for at least 24 hours and will only be pulled out with the approval of the Physician after the appropriate assessments have been made.

III. STORAGE POLICY OF MECHANICAL VENTILATORS

The Pulmonary Section currently has a stock room allocated for mechanical ventilators but the Respiratory Therapist mainly stays with other ancillary units specifically in the Physical Therapy Section during office hours and in the

Laboratory Section during night shifts, weekends and holidays. In addition to this, there are stationed Mechanical Ventilators in different areas of the Hospital for immediate provision when needed. Mechanical Ventilators are stationed as follows:

- Pulmonary Section stock room –13 Adult/ Pediatric Mechanical Ventilators, 1 transport ventilator, 1 High Flow Nasal Cannula
- Neonatal Intensive Care Unit – 3 Neonatal Mechanical Ventilators

IV. MANAGEMENT AND CARE POLICY

1. The management and care of Mechanical Ventilators is primarily handled by the Respiratory Therapists. In case a Mechanical Ventilator is in need of maintenance or replacement of parts etc., the Respiratory Therapist must immediately report it to the Property and have it on stand-by for repair.
2. Mechanical Ventilators are prepared and pulled out as per S.O.P. The Mechanical Ventilators are cleaned with surface cleaners before setting up for a new patient and before storage post patient use. The Respiratory Therapist must make sure that bacterial filters are being used to prevent the spread of infection.
3. Mechanical Ventilators that are deployed must also be monitored routinely and logged by the Respiratory Therapist on duty.
4. Mechanical Ventilators are cleaned and stored properly when not in use.
5. In cases where the RTs are unavailable, Nurses and other Healthcare Workers are tasked with these instead to avoid delays in patient management. There are 2 pre-calibrated and ready-to-use ventilators that are always on standby in the Stock room, Healthcare workers are required to log in the borrower’s book in such cases so as to keep track of the machines and supplies being utilized.

V. MECHANICAL VENTILATOR PREPARATION

1. The Respiratory Therapist must verify the written orders of the Physician and the consent from the relatives of the patient. In cases where there is no written order and/or verbal order for the initial settings of the Mechanical Ventilator, the Respiratory Therapists are authorized to provide one as long as the Physician is informed.
2. The Respiratory Therapist must secure the following supplies:
    a. Mechanical Ventilator Circuit (either open or closed, as needed)

        a.1. Mechanical Ventilator circuits should be replaced immediately since the Pulmonary Section only has a limited supply of circuits which are used for pre-calibrated and ready-to-use ventilators for immediate provision especially on days where there are no Respiratory Therapists on duty.

    b. 2 Bacterial Filters (for the inspiratory and expiratory limb)
    c. 2 Water Traps
    d. Humidifier (either reusable or disposable and must only be filled with distilled or sterile water)
    e. Flow Sensor or Proximal Line Pressure Sensor
    f. Nebulizer Kit

3. After setting up the circuit with the attachments, the mechanical ventilator shall be calibrated and will only be hooked to the patient once it passes the necessary calibration tests.
4. The Respiratory Therapist must verify if the endotracheal tube level is correct and if the pilot balloon is properly inflated.
5. The Respiratory Therapist must verify all connections and make sure that there are no leaks in the circuit connections before securing it to the patient's endotracheal tube.
6. The Respiratory Therapist will input the settings as ordered.

7. Once the patient is connected to the ventilator, the Respiratory Therapist must log the details into the monitoring logbook.
8. Since it is not yet possible for Respiratory Therapist to be on duty for 24 hours, charging of mechanical ventilator use must be made by the nurse on duty.

VI. METERED DOSE INHALER (MDI) IN MECHANICALLY VENTILATED PATIENTS

1. Respiratory Therapist can assist or administer MDI as ordered by the attending physician, given that the patient can provide their own MDI adapter.
2. It is not advisable for the MDI to be given via ET since it is ineffective and is a waste of medication.

VII. NEBULIZATION OF MECHANICALLY VENTILATED PATIENTS

1. The Respiratory Therapist must make sure that the nebulizer kit has the necessary connectors.
2. Medications to be administered must be in nebules or ampoules and should be verified accordingly to ensure that the medication is indeed indicated to be delivered as an aerosol.
3. Medication must be properly deposited into the nebulizer kit. Most ventilators have a built-in compressor for nebulization, so the Respiratory Therapist will only need to press the appropriate button. In case the ventilator does not have a built-in compressor for nebulization, one can use an external nebulizer.
4. The nebulizer kit must be cleaned after every treatment and stored in a dry place to prevent the growth of bacteria and to prevent contamination.
5. If the Respiratory Therapist is unavailable, the Nurse on duty is tasked to perform the above-mentioned.

VIII. WEANING AND EXTUBATION OF MECHANICALLY VENTILATED PATIENTS

1. Weaning will only be done once the necessary assessments have been made.
2. The Respiratory Therapist must verify the written order for weaning and the kind of weaning maneuver that will be utilized as ordered by the Physician.
    2.A. Weaning modes/methods are as follows:
        2. a. Pressure Support Mode
        2. b. CPAP/BIPAP Mode
        2. c. SIMV Mode
        2. d. T-piece Weaning
        2. e. Adaptive Support Ventilation

3. Weaning must be collaboratively supervised by the Respiratory Therapist and the Nurse on duty. The patient's vital signs and general appearance (if grimacing, breathing with too much effort, cyanotic, clammy skin, etc.) must be closely monitored and observed.
4. Weaning should be halted at the first sign of distress and Physician must be informed.
5. Arterial Blood Gas shall be extracted by the Respiratory Therapist or Nurse on duty at the Physician's request.
6. Once the patient has been successfully weaned from the mechanical ventilator, the physician will be informed and would be the one to order the patient's extubation.
7. Nebulization with epinephrine, corticosteroids, or bronchodilators must be administered prior to extubation to help ease the swelling as ordered by the physician.
8. Extubation will be done by the Resident on duty.

IX. TRANSPORT OF MECHANICALLY VENTILATED PATIENT

1. Mechanically ventilated patients in need of outside treatments like Hemodialysis, 2D Echo and CT scan will be assisted in transit by the Respiratory Therapist until they arrive at the facility.
2. The Respiratory Therapist should return to the hospital with the ambulance once the mechanically ventilated patient is transferred safely at the other facility since there is only one (1) Respiratory therapist per duty.

X. OUTSOURCING OF MECHANICAL VENTILATOR

1. The patient's relatives will be given the option to decide which ventilator out source company to rent from.
2. Respiratory technician from the outside source should set up the ventilator with its circuits and the necessary connections, as assisted by Respiratory Therapist on duty.
3. The Respiratory Therapist must make sure that the rented ventilators are working properly, that there are no leaks and that the circuits and their connectors are connected properly.
4. In cases where the Respiratory Therapist is unable to troubleshoot the rented ventilator, the relative will be asked to inform the outsource company of the situation to have them troubleshoot their own machine or replace the whole ventilator if found to be unfixable.

POSTURAL DRAINAGE THERAPY

1. The Respiratory must be informed by the Nurse on duty about the request for Postural drainage, Turning, Percussion/Chest Physiotherapy, and Vibration.

2. The Respiratory Therapist must verify the Physician's order for Postural drainage, Turning, Percussion/Chest Physiotherapy, and Vibration. Contraindication for each treatment must be strictly observed.
3. The Respiratory Therapist must inform the relative/patient of the procedure and must be instructed accordingly.

INCENTIVE SPIROMETRY

1. The Respiratory Therapist must verify the Physician's order for Incentive Spirometry. The number of repetitions and the frequency of the treatment shall be ordered by the doctor.
2. Patient must be compliant and able to follow instructions so that they can sustain maximal inspiration properly.
3. Patients requiring oxygen support via face mask or greater, may not proceed with the treatment due to the risk of aggravating the patient's status.
4. Patient's relative must obtain the device before proceeding with the procedure.
5. The Respiratory Therapist must inform the relative/patient of the procedure and must be instructed how to perform the maneuvers and how to properly clean the device after use.