NATIONAL DISABILITY COUNCIL

Ventilator management

Introduction

A mechanical ventilator is a machine that helps people breathe when they are not able to breathe enough on their own. Also called a respirator or breathing machine, a ventilator is used to:

- Get oxygen into the lungs and body
- Help the body get rid of carbon dioxide through the lungs
- Ease the work of breathing—some people have difficulty breathing on their own
- Breathe for a person who is not breathing because of injury to the nervous system, like the brain or spinal cord or who has very weak muscles.

This policy aims to ensure:

- Evidenced-based standards of care are provided for safe and efficient management of mechanically-ventilated participants
- The needs, comfort and goals set for the patient with an acute ventilator or respiratory failure are met
- Every patient requiring ventilator management receives appropriate support relevant and proportionate to their individual needs and the specific ventilator used.

When a person breathes normally (spontaneous breathing), the diaphragm contracts on inhalation, moving toward the abdomen, and the chest wall expands. The space inside the thorax enlarges creating a vacuum that draws air into the lungs and helps to distribute the air evenly. In contrast, a ventilator pushes a warm, humidified mixture of oxygen and air into the lungs and creates positive pressure in the thorax during inhalation.

The correct care of a person who relies on mechanical ventilation is critical as they are at a greater risk of death or harm if inadequate or inappropriate care is provided. Key management personnel must ensure workers follow this policy and that participants have person-centred ventilation management plans.

Assessment

As part of the service entry process, a detailed assessment is required for a participant with ventilation needs. Family presence is recommended for the assessment meeting for additional information and support. This is especially important when verbal communication is difficult. It is important to determine the level of care required. Close liaison should be maintained with the multidisciplinary team including specialist nurses, physiotherapists, speech therapists and doctors. A coordinated team approach is best practice for this specialised area of care.

There must be a documented plan for assessment, management and review for each individual participant using a ventilator. The type of detail to evaluate at initial assessment includes, but are not limited to, the following:

- Participant history—the level of self-care management the participant is able to:
    - Learn the ventilator settings and understand what the alarm might mean
    - Can they change their own tube?
    - How well are they able to clear their own secretions by coughing?
    - Can they swallow?
- If they have a tracheostomy?
- If they have a larynx?
- Do they have a connection between oral airway and lungs?

- Communication strategy e.g. verbal, non-verbal, pen and paper, communication board or voice synthesiser
- Type and size of tracheostomy tube and when a routine change of tube is required
- Oxygen dependence
- How often is suction required
- Routine observations.

Risks of mechanical ventilation

There are many problems that can develop from ventilator use including:

- Infections such as pneumonia—the ET or trach tube allows bacteria to get into the lungs more easily
- Collapsed lung (pneumothorax)—a part of a lung that is weak can become too full of air and start to leak into the chest wall which causes the lung to start to collapse
- Lung damage—the pressure of putting air into the lungs with a ventilator can damage the lungs—this is why health professionals should set the ventilator to the lowest amount of pressure needed
- Side effects of medications—sedatives and pain medications can cause a person to seem confused or delirious while other medications to prevent muscle movement can cause muscle weakness
- Inability to stop using ventilator support—if a person's conditions do not improve, long term reliance on ventilation may be required.

Monitoring

People who rely on mechanical ventilation often require monitoring. Devices for monitoring include pulse oximeter (measures oxygen level and heart rate) or apnea monitor (measures heart rate and breathing rate). The person's medical practitioner will determine the need for monitoring and what ventilation adjustments are required.

Applicability

When

- Applies when participants are supported who require mechanical ventilation.

Who

- Applies to all employees, supervisors and key management personnel supporting participants with mechanical ventilation needs.

Documents relevant to this policy

- Ventilator management (easy read)

Ventilator management guidelines

As a guide:

- Participants requiring ventilation will only receive support from workers trained and proficient in ventilator management

- Ventilator and bedside alarms must be on at all times–never leave a participant unattended with alarms turned off
- Suction equipment, oxygen, and manual ventilation device (MVD) and masks must be readily available at the bedside of all participants with artificial airways
- Intubation supplies must be readily accessible for all patients with artificial airways
- The decision to wean a participant from ventilation support should only be made by a qualified health professional
- Maintain all ventilatory and monitoring equipment according to the manufacturer's instructions at all times in order to reduce the risk of failure.

Ventilator management responsibilities of workers

Participants that rely on ventilation are at greater risk of pneumonia (chest infection). Providers are responsible to care for and ensure participants are safe. This includes workers to:

- Read and understand this policy before providing support to ventilated participants
- Complete all required competencies and training before providing support to ventilated participants
- Work within their scope of practice and qualifications
- Wear appropriate PPE at all times
- Be competent in setting appropriate alarm settings
- Respond immediately to an audible ventilator alarm and assess the participant for respiratory distress or a disconnected ventilator
- Suction as required both orally and via the artificial airway
- Ensure the securement device goes around the head/neck and is comfortable for the patient
- Follow instructions of the responsible clinician which include:
    - Set up of the mechanical ventilator, accessories and tubing specific to participant's needs
    - Set up of in-line suction for ventilated participants
    - How to initiate ventilation, set the alarms and provide adjunctive ventilator equipment
    - Setting the ventilation parameters based on the participant's ideal body weight and medical condition
    - Adjusting ventilator settings in conjunction with the medical practitioner's orders
    - Monitor the ventilator and patient after setting changes and after re-initiating ventilator i.e. post transport
- Be knowledgeable of current and prescribed ventilator settings
- Follow the medical practitioner's orders and ventilator setting change requests
- Communicate medical practitioner's orders promptly with other relevant team members
- Assess the participant at regular intervals as directed by a medical practitioner
- Collect blood gases if ordered and arterial line is present.

Key management responsibilities when supervising workers supporting participants with ventilators

Responsibilities of supervisors are to:

- Ensure workers have current knowledge and a training plan to learn the standards of care for participants that require mechanical ventilation
- Provide workers education to provide excellent and confident care
- Ensure workers follow and comply with the Manage ventilator process
- Ensure workers know how to activate emergency support
- Ensure emergency airway equipment is available at all times including resuscitation bag and airway equipment
- Ensure supervisors have accreditation in Basic Life Support
- Regularly audit safe ventilator management practices
- Document all ventilator-related interventions, assessments and care provided in an observation chart including any abnormal findings
- Consider whether the participant needs physical restraints to prevent accidental removal of the ETT/tracheostomy tube.

Documentation

Workers must keep clear and legible records on the participants with ventilators. This should include:

- Type, size and location of airway
- Level of an endotracheal tube (ETT) at the teeth/gum once a shift, after any adjustments and daily in any case
- Ventilator settings at the onset of the shift, q4h and with any change in orders or patient's condition
- SaO2 and ETCO2 quarter hourly and with any change in orders or participant's condition
- Amount, consistency and color of tracheal secretions after each suction session on the flow sheet
- Unexpected outcomes and interventions.