PATIENT/CAREGIVER INSTRUCTIONS

Home Ventilator:

FOR Invasive and Non-Invasive Use

To be used in conjunction with ventilator equipment, prescribed by physician, and product-specific operating manual.

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Introduction

Your decision to use or provide mechanical ventilation and respiratory care in the home is an important one. We fully appreciate the concern and commitment that preceded this decision and Sound Oxygen Service is committed to helping you learn the techniques that you and your caregivers will need to make your ventilation a safe and positive experience.

While you are still in the hospital or care facility, your home ventilation education program will begin. This program will cover the mechanical and technical aspects of your home care and equipment.

This booklet has been provided to help you learn how to operate and care for your ventilator. Although it may seem like a tremendous amount of information, in time and with practice, you will become familiar with the care and use of the equipment. We require individuals sharing in the care of the ventilator and ventilated patient to become well acquainted with the information found within this manual. THIS BOOK IS ONLY A GUIDE. If you have any questions, we encourage you to follow up with your Sound Oxygen Respiratory Therapy team.

Sound Oxygen Service (SOS), in collaboration with your hospital or facility and physician, will provide support and training to your family and caregivers in order to successfully transition you home with a ventilator. All home ventilation plans require a strong caregiver support system. SOS will help coordinate with your physician and hospital to establish resources that may be necessary.

Each caregiver must be trained in the use and care of and be competent in the management of the following areas:

- The home ventilator and accessories
- General anatomy and physiology of the lung
- Respiratory care equipment
- Emergency procedures
- Community resources and support services

Once you are transitioned from the hospital to your home, our Respiratory Therapists will visit you on a regular basis to provide training reinforcement and routine equipment checks and maintenance. Our clinicians will contact you to

schedule these required visits. Caregivers must cooperate to ensure SOS is able to perform the prescribed activities and preventative maintenance on the equipment.

Your Home Ventilator

Your physician has prescribed a home ventilator system for you. This booklet will assist you in understanding general ventilator use, but each system also has its own product specific operating manual. Along with this booklet, you should keep the manufacturer's operating manual to refer to.

How the Lungs Work

The respiratory system is designed to bring oxygen into the body and expel carbon dioxide into the air. This very sophisticated system can be simply understood by dividing it into three separate areas:

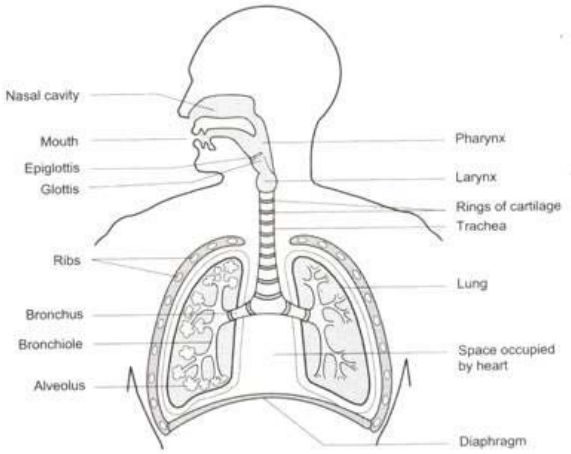
1. The upper airway, which includes the opening of the air passages of the nose, mouth and passages leading to the trachea (windpipe).
2. The trachea, bronchi and alveoli, which consist of the main windpipe, the vocal cords (voice box), the large air passage diving into each lung and air sac where the air which is inhaled comes into contact with the bloodstream.
3. The respiratory muscles, including the diaphragm and other breathing muscles that are responsible for the pumping action which draws air in and pushes it out of the body.

What Makes Up the Respiratory System?

Nose (nasal cavity)-Air enters the lungs at this point. As air passes through the nose, dust and other particles are removed, the air is warmed and moisture is added.

Mouth (oral cavity)-Air also enters the lungs at this point.

Throat (pharynx)-Airway between the mouth and voice box. (Your tonsils are here).



Human respiratory system

Voice box (larynx)-This is a group of incomplete cartilage rings, the largest being the Adam's apple, which you can feel and sometimes see on the front of your neck. Inside the Adam's apple are the vocal cords that produce your voice as you speak. The epiglottis is also located in the larynx. This is a flap that covers the windpipe during swallowing to prevent from choking.

Trachea (windpipe)-This is the large air tube below the voice box that divides at its base into two branches (bronchi), one to each lung.

Large air tubes (bronchi)-These allow air to pass into the lungs. The large air tubes continue to divide into small air tubes (smaller bronchi and bronchioles).

Air sacs (alveoli)-Very small sacs which occur at the ends of the smaller air tubes and look like a cluster of grapes. This is where the oxygen is taken into the blood and carbon dioxide is removed from the blood. Carbon dioxide is removed from the body by breathing out (exhaling).

Diaphragm-The diaphragm is a dome-shaped muscle under the lungs and the primary muscle of respiration. Its movement causes air to be drawn in through the nose and mouth, down through the windpipe and air tubes and into the air sacs.

Air sacs (alveoli) in the lungs.

How We Breathe

Fresh air enters the upper airway through the mouth and nose, goes into the back of the throat and through the larynx or voice box into the main air passages. In the nose, air is warmed, filtered and humidified. The warmer air is able to hold on to more moisture. This is to prevent the air passages from drying out as the air passes into the lungs. The moist surfaces in the nose also filter dust particles and inhalants.

The heated, moistened and filtered air enters the trachea or windpipe. The trachea then divides into two main branches, or bronchi, that deliver air into the lungs. One branch serves the right lung and the other, the left. Inside the lungs, these airways divide many more times. They get smaller in size so that they may deliver air to the deepest areas of the lungs. Eventually these small airways end in alveoli where the body actually takes the oxygen from the air we breathe into our bloodstream. It is also here where the carbon dioxide is returned to the air from the bloodstream. There are hundreds of millions of these alveoli in each of our lungs. They are made of an elastic tissue that stretches when we breathe in and recoils and relaxes when we breathe out. There is a network of very thin blood vessels called capillaries surrounding each alveoli. Blood is pumped to the lungs to pick up a fresh supply of oxygen from the air sacs and to release into the air sacs the carbon dioxide from throughout our body.

How the Lungs Keep Clean

Ordinarily, the lungs are protected by the nose, which provides filtered, warmed and humidified air. Any remaining dust or particles become trapped in the mucus that lines the trachea and bronchi. This mucus is continually moving toward the top of the trachea by cells called “cilia” so that the mucus can be coughed out or swallowed. For this system to work properly, the cilia must be able to move the mucus forward. Smoking inhibits the cilia’s ability to do this. Drinking too little water can also make the mucus thick and hard to move.

Types of Ventilation

Ventilators are used both invasively and non-invasively.

Invasive ventilation is ventilation delivered through a tracheostomy. It may be used 24 hours a day or sometimes less depending on the

needs of the patient and prescription from the physician. The ventilator delivers volume breaths of air directly into the lungs. Sometimes supplemental oxygen is added to the breaths delivered by the ventilator.

Non-invasive ventilation (NIV) assistance or non-invasive positive pressure ventilation (NPPV) uses a nasal mask, face mask, or mouthpiece, connected to a ventilator to provide ventilation support during sleep or intermittently throughout the day. This support rests the lung muscles, and improves breathing performance during the day. If use is at night only, this is referred to as nocturnal NPPV. If use is intermittent, this may be referred to as "Mouthpiece" or "Sip and Puff" ventilation.

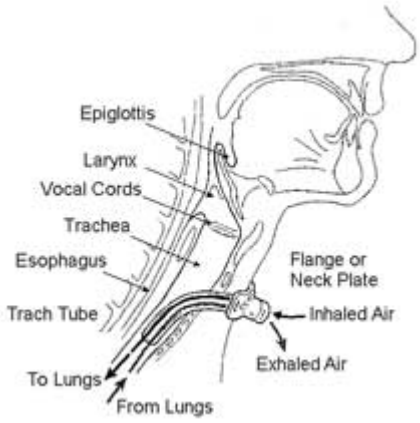
Tracheostomy

What is a Tracheostomy?

A tracheostomy is a surgically produced hole in the trachea. A tracheostomy tube is usually used to hold the hole open.

A tracheostomy bypasses a person's nose and mouth and substitutes as his or her airway. That person breathes and coughs through the tracheostomy as long as it remains unobstructed.

When breathing through a tracheostomy, the air no longer passes through the nose where it normally would be warmed, filtered and humidified. Because of this, most patients require a heated humidifier which will warm and humidify the air delivered from the ventilator to the patient's lungs.

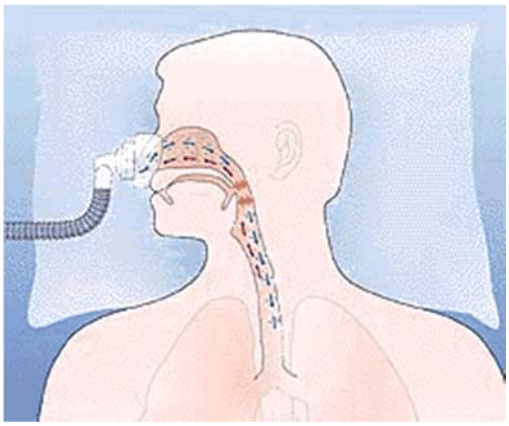


Some patients may only require the use of a heat moisture exchanger (HME) to provide the humidity needed. HMEs are also referred to as "artificial noses". This device retains the heat and moisture from the patient's exhaled air. The moisture is then returned to the air being inhaled on the next breath. This device also acts as a filter for keeping dirt, dust and bacteria from entering the lungs.

Normal speech occurs when the air passes through the vocal cords during exhalation. Because the tracheostomy is positioned below the voice box (larynx), airflow no longer moves through the larynx or vocal cords. Speaking aloud is difficult as long as the tracheostomy is open to the air. It is possible, in certain circumstances, to close off the tracheostomy and redirect air up the trachea through the vocal cords and to speak aloud. This may be done with a speaking valve, which requires a physician prescription.

Why Is a Tracheostomy Performed?

- To provide a secure airway for long-term mechanical ventilation
- To provide easy access for removal of secretions
- To bypass the nose or mouth when the upper airway is obstructed (often due to facial trauma or anatomical malformations



Non-Invasive Ventilation Interfaces

Some patients use ventilators at night, as needed, and occasionally for longer periods of time via a non-invasive interface (usually a mask). These interfaces are secured to the patient's face with a headgear specifically designed for the make and model of the interface.

There are four major interfaces that are used with non-invasive ventilation.

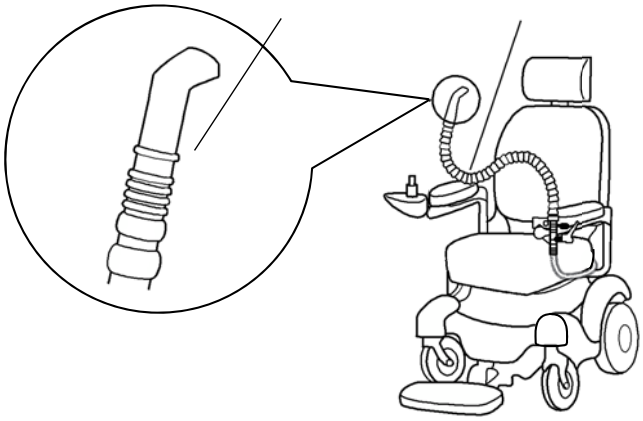
Nasal Mask: This type of interface covers the patient's nose.

Nasal Pillows: This type of interface fits into the nares (nostrils) of a patient's nose.

Full Face Mask: This type of interface covers the nose and mouth of a patient, enabling the patient to

breathe with both the nose and mouth, and is secured with headgear.

Mouth Piece Ventilation: This type of interface is used for intermittent on-demand ventilation. The patient initiates a breath through the mouthpiece or straw to receive ventilation.



Introduction to the Ventilator

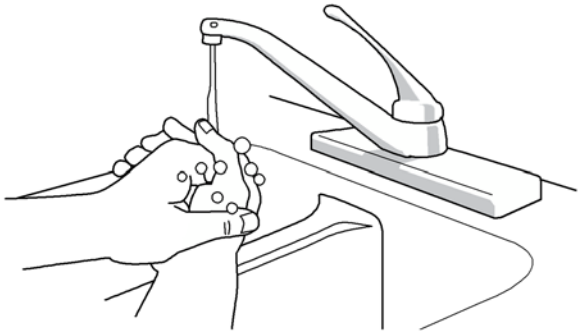
This section of the manual covers the ventilator and its operations, other related support equipment, and general care procedures. This section should be referred to frequently to ensure a safe environment for home ventilation.

Learning the process of home ventilation requires a serious commitment and a lot of practice. As you study and review this booklet and machine manual, questions will arise. Please do not hesitate to call us. Your SOS Respiratory Therapist is always available as a resource.

Maintaining the Ventilator

The ventilator, like any piece of equipment, needs routing maintenance. Your SOS clinician will monitor the equipment on each follow-up visit. There are, however, certain ventilator observations that must be performed on a routine basis.

It is extremely important for you to wash your hands before working with the ventilator or the patient. Some caregivers prefer to use gloves when performing care.



Ventilator Check (Monitoring)

It is vitally important that the ventilator be checked regularly to guarantee proper function of the ventilator and to protect against accidental changes that may occur within the controls. Our SOS Respiratory Therapists will schedule routine visits with the patient and or the caregivers.

Caregivers must remain within close proximity of the patient at all times to allow immediate response to alarms and/or patient distress.

Changing the Patient Circuit (Tubing)

The patient circuit includes all the parts that make up the ventilator tubing and humidification system, and must be changed and or cleaned on a routine basis. This will prevent the patient from getting an infection and will provide a system that is as clean as possible. Routine cleaning and/or changing the circuit is required. Check with your SOS Respiratory Therapist to establish the frequency of circuit changes ordered by the physician. If not specified by your physician or the manufacturer, circuits should be changed/cleaned weekly. A spare ventilator circuit must be available for use at all times.

The importance of equipment cleaning and disinfection cannot be overemphasized. Ventilator patients are highly susceptible to respiratory infections. A very likely source of such an infection is equipment that is being used and not cleaned or supplies not being replaced on a regular basis. FOR SUCCESSFUL HOME VENTILATION, YOU MUST KEEP THE EQUIPMENT VERY CLEAN.

Water Accumulation in the Ventilator Tubing

Water accumulation in the patient tubing should be removed by draining the water into a container and then emptying the container into the toilet. Remember to clean the container after you have dumped the water out. If too much water accumulates in the tubing it will make a “gurgling” noise in the ventilator tubing during inspiration. The amount of water in the tubing will vary, depending on the temperature of the water in the humidifier and the ambient air temperature. **Do not drain condensation back into the humidifier chamber.**

Reminder: The heater/humidifier must always be placed lower than the patient's head. Humidifiers that are kept above the level of the patient's head may cause water in the tubing to flow into the patient's tracheostomy tube and cause it to go into the lungs.

Depletion of the Water Level in the Humidifier

When the water level in the humidifier is low, it must be refilled. If you have been provided a gravity feed water system which provides a continuous flow of water in to the humidifier, refilling occurs by replacing the water bag. This is usually required every 24-48 hours. If you do not use the gravity feed water system, distilled water is added until the humidifier reaches the "full" line on the chamber assembly. This is usually done every 4-6 hours.

When adding water to the humidifier, the patient can be connected directly to the ventilator and by -passing the humidifier.

Distilled or sterile water is required for use in your humidifier.

Humidifier Temperature

The temperature of the inspired gas should be monitored with a temperature probe kept in line with the circuit, and close to the patient. The temperature should be kept close to body temperature (about 98.6 degrees F or 37 degrees C)

CAUTION: This is particularly important since high temperatures can cause airway burns or irritation and lower temperatures may lead to inadequate humidification and mucus plugging.

Troubleshooting

Some problems may occur during home ventilation. Usually these problems are easily resolved and there is no cause for major alarm. When such situations arise, they should be dealt with quickly and calmly, so as not to cause undue anxiety to the patient. Directions for troubleshooting the ventilator are located in your ventilator manual and in this booklet under "Ventilator Troubleshooting Guide".

Patient Monitoring

In the event of a malfunction, it is important to know if there is a patient issue (e.g., the patient needs suctioning, a bronchodilator treatment, etc.) or if the equipment has malfunctioned. If the ventilator alarm activates, always look at and attend to the patient first, then address the alarm situation. Routinely monitor the patient's color, mental status and other vital signs as appropriate.

Do not make any changes or adjustments to the ventilator settings. If ventilator setting changes are ordered by the prescribing physician, they will contact your SOS Respiratory Therapist to make those changes.

Ventilator Monitoring

The ventilator must also be monitored routinely for tidal volume setting, respiratory rate, system pressure and alarm function. Mechanical problems, such as punctures or kinks in the tubing, malfunction of the exhalation valve, changes in the respiratory rate, alarm failure, or the patient's condition, can result in insufficient or decreased ventilation to the patient. Routine monitoring of the ventilator and tubing can help identify potential problems before they create difficulties.

The ventilator is equipped with safety alarms. These alarms are sensitive to low and high pressures in the ventilator circuit or airway. Bronchospasm (coughing) or excessive secretions may cause the ventilator to alarm. Under no circumstances, shall the patient disconnect alarm (low pressure or low exhaled volume) or high pressure alarm be disabled. In order for one to hear and react to these alarms, someone must always be within hearing range of the alarm. Audible alarms must be loud enough to be heard by all caregivers in all areas of the home.

The caregivers should keep an accurate record of the patient's prescribed settings. This will help ensure the physician's orders are followed and will alert the caregiver if settings change. Caregivers should observe the following settings:

1. Ventilator Mode (i.e., AC/PC, SIMV etc.)
2. Oxygen liter flow (if applicable)
3. Tidal Volume (if the ventilator is set in volume mode)

4. Breath rate setting- on the ventilator
5. Breath rate –patient
6. Patient pressure (Peak Inspiratory Pressure or PIP)
7. Inspiratory time
8. Trigger/sensitivity (breathing effort)
9. Low pressure alarm setting
10. High pressure alarm setting
11. Positive End Expiratory Pressure (PEEP)
12. Pressure Support (if applicable)
13. Humidifier heater setting
14. Temperature
15. Battery life (internal and external)

Changing the Ventilator Circuit and the Heated Humidifier Chamber

As stated previously, it is essential that the patient circuit and humidifier chamber (f applicable) be cleaned or changed frequently to percent the patient from getting an infection. The circuit must be changed or cleaned weekly or as directed from your physician or according to manufacturer recommendations.

NOTE: The heated humidifier chamber should be changed or cleaned at the same interval as the ventilator circuit.

Equipment Required

- Clean patient circuit
- Clean humidifier chamber, if applicable
- Manual resuscitator
- Oxygen source, if needed
- Secondary ventilator, if available

Instructions

It is highly recommended that two people be available when changing the ventilator circuit. However, if only one person is available the following procedure should be followed:

1. Wash your hands or apply gloves.
2. Place the manual resuscitator at the patient's side.
3. Have the clean circuit assembled and ready for use. SKIP TO STEP 6 IF YOU ARE NOT USING A HEATED HUMIDIFIER
4. Connect the clean patient circuit to the clean humidifier chamber.
5. Fill the clean humidifier chamber with distilled water, or change the continuous feed water bag.
6. If a second ventilator is available, place the patient on

the secondary ventilator. If a second ventilator is not available, tell the patient you are going to interrupt their ventilation for 1 or 2 breaths.

7. Ventilate the patient with the manual resuscitator during the circuit/humidifier change process.
8. Disconnect the dirty tubing from the ventilator and patient.
9. Remove the dirty humidifier chamber and replace it with a clean one.
10. Connect the clean circuit to the ventilator and test for leaks.
11. Connect the short connective tube from the humidifier chamber inlet to the ventilator.
12. Reconnect the patient and ensure proper operation of the ventilator and circuit.
13. Observe the patient's chest and pressure displayed on the ventilator during the next inspiration. Both should rise.
14. Observe ventilator settings
15. If the ventilator does not appear to be functioning correctly, ventilate the patient with a manual resuscitator bag until the problem can be corrected or until the patient is placed on the secondary ventilator.
16. Wash your hands thoroughly to maintain clean conditions.

The Manual Resuscitator

A manual resuscitator is a bag and valve device that is used to deliver a volume of air to the patient's lungs. It is used at times when normal mechanical ventilation is either inconvenient or impossible. (i.e., for troubleshooting ventilator issues, changing the ventilator circuit, or during equipment failure/emergency). It may also be used to hyperoxygenate or hyperinflate patients following suctioning.

The patient valve on the manual resuscitator connects directly onto the patient's tracheostomy tube. By squeezing the bag, air is pushed though the valve and into the patient's lungs. When the bag is released, exhaled air escapes through the patient valve and into the room. Fresh air enters through a check valve and refills the bag. A mask is supplied for use in the event that emergency bag/mask ventilation is required.

Equipment Needed

- Manual resuscitator

- Oxygen source, if ordered

Instructions

1. Explain the procedure to the patient.
2. Connect the manual resuscitator to the tracheostomy tube.
3. If the patient breathes on his/her own, squeeze the bag as he/she begins to inhale, attempting to synchronize the breaths you are giving the patient with his/her own breaths. If the patient does not breathe on their own, begin squeezing the bag as soon as it is connected to the tracheostomy tube.
4. Observe the chest while squeezing the bag. Continue to squeeze the bag until the chest rises.
5. Release the bag when an observable rise in the chest has occurred.
6. Repeat this squeeze/release cycle at the same respiratory rate at which the ventilator is set. Allow a 1:2 ratio for moving air in and out of the lungs. Exhalation should always be about twice as long as inspiration.
7. Wash your hands thoroughly to maintain clean conditions.

NOTE:

- Oxygen may be added, if prescribed, to the manual resuscitator to provide oxygen to the patient during the suctioning procedure.
- A face mask should also be available in case the tracheostomy site closes and the patient must be ventilated through the nose.
- If it is necessary to use a face mask for manual resuscitation, it may be necessary to obstruct the opening to the tracheostomy site to alleviate leaks.

Introduction to Respiratory Care Procedures

Maintaining an open and clear airway is the most important part of home ventilation. As previously discussed, the airway is the pathway for air to get to the alveoli in the lung. This allows oxygen to be taken into the blood stream and carbon dioxide to be removed. The primary goal of airway care

is to prevent obstruction of the airway so that the movement of air into the lungs is not restricted. A totally obstructed airway is a medical emergency which requires immediate action.

Therefore, this section will discuss the respiratory care procedures which are necessary to:

- Maintain a clear airway
- Avoid an obstructed airway
- Relieve an obstruction, should one occur

Suctioning: Why It Is Necessary

Coughing is the normal way a person clears his or her airway of secretions. When the ability to cough is weak or absent, secretions will build up in the lungs and airway. Secretions interfere with the lung's ability to get oxygen to the alveoli, and they can also cause the patient to have a difficult time breathing. When secretions begin to accumulate, suctioning the airway will be necessary. Suctioning removes the secretions from the airways and allow the patient to breathe easier. Your discharging facility will provide training on the proper suctioning procedure. If this has not already taken place, please inform your SOS Respiratory Therapist so training can be scheduled.

Tracheostomy Care, Tube Changes, and Maintaining and Clearing the Airway, and Stoma Care

Your discharging facility will provide training on the proper techniques for tracheostomy care, tube changes, suction, maintaining and cleaning the airway, emergency reinsertion of the tracheostomy tube, stoma care, and manual resuscitator use. If this has not already taken place, please inform your SOS Respiratory Therapist to help facilitate that training in the facility.

Tracheostomy tube must be changed routinely to minimize the chance of secretion build up and respiratory infection. The frequency that the tube needs to be changed will depend on what your physician orders. As a safety precaution, another trach tube of the same size, as well as a tube one size smaller, should always be available.

Please note: Your SOS Respiratory Therapist will not perform the trach tube change. Only a physician, nurse

or trained caregiver may change the trach tube in the home. DO NOT attempt to change the tracheostomy tube unless you have been trained to do so.

Early Warning Signs

It is important for you to be aware of the signs and symptoms that may indicate infection or heart and lung problems. Early recognition of these symptoms could help avoid more serious complications.

Infection

Improper equipment cleaning or failure to routinely clean the equipment can lead to respiratory infections. Likewise, improper aseptic techniques during suction, tracheostomy change or stoma care can lead to infection. Changes in sputum consistency, volume, color, amount and odor are all indications that should be observed for signs of infection. Dramatic changes in these clinical signs and symptoms could be a sign of infection and should be reported to the physician.

If any of these occur, notify your physician immediately.

Breathing Symptoms

- Increased shortness of breath
- Wheezing
- Increased coughing
- Increased respiratory rate
- Increased accessory muscle use

Sputum Changes

- Color
- Increase in quantity
- Change in thickness or consistency
- Presence of blood

Tracheostomy Site Symptoms

- Pulsating tracheostomy tube
- Bleeding at the tracheostomy stoma
- Discharge or odor from the tracheostomy area
- Swelling or redness around the tracheostomy stoma

Physical Body Symptoms

- Fever
- Loss of appetite
- Rapid weight gain
- Swelling of thee feet, ankles or legs
- Headaches
- Sleepiness
- Visual disturbances
- Dizziness
- Cyanosis (blue skin color around nose and mouth)
- Confusion or anxiety

If you are having trouble with the **equipment**, call Sound Oxygen Service.

If the patient is experiencing any **physical problems**, call the patient's physician.

If the patient is experiencing severe physical problems, call 911!

Emergency Procedures

Emergency Reinsertion of the Tracheostomy Tube

Manipulation of the tube during suctioning or tracheostomy care can lead to tube displacement. Consequently, when providing tracheostomy care, the tube must always be stabilized. If the tracheostomy tube accidentally falls out, follow the instructions for reinsertion of the tracheostomy tube provided by your discharging facility. If the facility instructions are not available, please see the below reminders.

If you have difficulty reinserting the tracheostomy tube, call 911!

1. Replace the trach tube, using a new sterile trach tube, as instructed by the facility staff OR
2. Reinsert the original trach tube OR
3. Occlude the stoma and use the manual resuscitator bag and mask to ventilate the patient at a rate of 8-16 breaths per minute until medical assistance can be summoned.

During tube reinsertion, observe the patient's color and if possible, count their pulse rate. If their color becomes bluish or the pulse rate significantly changes, stop trying to insert the tube, occlude the stoma and ventilate with the manual resuscitator bag and mask until medical assistance can be obtained. If the patient cannot breathe on their own, you must reinsert the tube within 30 seconds or ventilate until reinsertion is possible. If unable to reinsert the tube, ventilate the patient and call 911.

You may want to have access to a trach tube which is one size smaller than the tube the patient uses. Inserting this tube will be easier than the standard tube if the airway is swollen.

NOTE: Tube reinsertion can be a difficult procedure. It is very important to practice changing the

trach tube in the facility before the patient goes home.

Power Failure

Home ventilators have an internal battery and an external battery will be provided. In the event of a power failure, the ventilator will automatically switch to the internal battery unless the external battery is connected. The external battery must always be kept full charged and connected to the ventilator in the event of a power failure. Internal and external battery duration varies by ventilator model, settings, and age of battery. Check the manufacturer manual for estimated battery duration.

NOTE: The internal battery is intended for use during short periods while switching between external power sources, emergency situations, or when the user needs to be mobile. The length of time the ventilator will operation on internal power depends on many factors such as device settings, battery charge levels and condition or age of the battery.

For patients who rely on the ventilator for full time life support, it is critical that at least one fully charged external battery is available when the patient is mobile or does not have access to an A/C power source, and that the patient make arrangements to get to an A/C power source as soon as possible.

The internal battery is NOT intended to serve as a primary power source. It should only be used when other sources are not available, or briefly when necessary- for example, when changing power sources.

It is important to mark the circuit breather or fuse in your home that controls the ventilator.

The local power company should be notified that you are using life support equipment in your home. You will receive a letter from your SOS Respiratory therapist to complete and provide to your local utility providers.

Equipment Failure

If a problem arises with the home ventilator, those in attendance must hand ventilate the patient using the manual resuscitator bag. As soon as the patient is being ventilated adequately with the resuscitator, troubleshoot the equipment and attempt to correct the problem. If the patient has a secondary ventilator, place the patient on his or her secondary system and attempt to

troubleshoot the primary ventilator problem. **If at any time during this process the patient exhibits difficulty in breathing call 911.**

After the patient is stabilized and using the secondary ventilator and if the equipment issues have not been corrected, contact your SOS Respiratory Therapist.

Safety Precautions

Use all equipment safely.

- Never change ventilator settings
- If oxygen is used with the ventilator, always turn off the oxygen flow before turning off the ventilator
- Always bleed the oxygen into the ventilator following the manufacturer's recommended method
- Respond immediately to any alarm. It may indicate a potentially life-threatening event. Refer to the ventilator operator's manual for information regarding alarms on your model of ventilator.
- Always remain within proximity of the ventilated patient at all times to allow for immediate response to alarms and/or patient distress.

Never immerse the ventilator or any electrical equipment in water.

Never plug in the ventilator if it is wet or damp. Moisture always increases the potential of electrical shock.

Do not store any liquid on top of the ventilator.

Never plug the ventilator into an electrical outlet that is being used to supply power to another major appliance.

Plug the ventilator into an electrical outlet that is NOT being used to supply electricity to other major appliances. If you need to use the same outlet that is shared by other equipment, make sure the other appliances are NOT being used at the same time.

Never try to repair the ventilator. The ventilator is considered lifesaving

medical equipment and must be worked on by a professional. Contact your SOS Respiratory Therapist if you feel your ventilator is not working appropriately.

Never use your ventilator with an extension cord or power strip. Plug the power cord directly into the wall outlet.

Follow emergency and natural disaster instructions. In the event of an emergency or natural disaster, follow the instructions of your local authorities broadcast by radio or television.

Ventilator Troubleshooting Guide

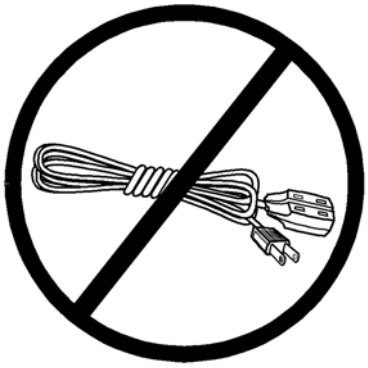
In learning to use the ventilator, occasionally, problem situations may arise. The information provided below, although certainly not all-inclusive, lists the most common problems that arise and how they may be solved.

SITUATION #1:

Low pressure alarm sounds frequently.

Solution:

1. Always check the patient first.



2. Ensure that the trach adapter is firmly connected to the trach tube.
3. Verify that the patient is properly connected to the ventilator and that all connections are secure.
4. Check that the humidifier is securely attached to the ventilator and the circuit.
5. Check that the low pressure alarm is at the correct setting.
6. Check the cuff of the trach for leaks.
7. Check the exhalation valve for leaks.
8. If there is any question if the patient is being ventilated, use the manual resuscitator.

SITUATION #2:

Patient ventilation pressure has dropped markedly.

Solution: See Situation #1 solutions.

SITUATION #3:

High pressure alarm sounds frequently.

NOTE: Frequent coughing will initiate the high pressure alarm.

Solution:

1. Always check the patient first.
2. Check for kinks or crimps in the tubing.
3. Suction the patient if needed.
4. Check that the high alarm is at the correct setting (not too low).
5. Check for and remove any water in the circuit that may be present.
6. Check the trach tube for obstruction (change the inner cannula if applicable)

SITUATION #4:

Low power alarm is sounding.

Solution:

The internal battery is running down. Connect the ventilator to a wall circuit for external battery power source. If no other source is available, remove the patient from the ventilator and ventilate with a manual resuscitation bag.

NOTE: IF YOU ARE EVER IN DOUBT OF THE VENTILATOR'S WORKING STATUS OR IF THE PATIENT IS IN DISTRESS, CALL 911!

CONTACT US:

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